





To be more innovative the DIB needs to be more diverse

Diversity, equity, and inclusion in the defense industry

About the authors

Kwasi Mitchell | kwmitchell@deloitte.com

Kwasi Mitchell is chief purpose officer of Deloitte. He is responsible for driving a firmwide strategy around Deloitte's commitments to areas including, but not limited to, diversity, equity, and inclusion; sustainability and climate change; and education and workforce development.

Carey Miller | caremiller@deloitte.com

Carey Miller is a managing director with Deloitte & Touche LLP, specializing in working with clients in the Huntsville geography to address cyber resilience, workforce transformation, IT modernization, and digital engineering. She has more than 20 years of federal experience developing comprehensive cybersecurity strategies and capabilities, including those that address third-party cyber risk and improve the resiliency of platforms, weapons systems, and ICS/SCADA systems. Miller is an advocate for increased STEM education and for promoting the next generation of cyber warriors. Miller is a past Federal 100 award winner and a recognized cyber industry luminary, driving both cyber innovation and workforce diversity.

Joe Mariani | Jmariani@deloitte.com

Joe Mariani is a research manager with Deloitte's Center for Government Insights. His research focuses on innovation and technology adoption for both national security organizations and commercial businesses. His previous work includes experience as a consultant to the defense and intelligence industries, high school science teacher, and Marine Corps intelligence officer.

Adam Routh | adrouth@deloitte.com

Adam Routh is a manager with Deloitte's Center for Government Insights and a PhD student in the Defence Studies Department at King's College London. His research areas include space policy, the future of defense, and great power competition. Routh's research has addressed US national space policy, space governance, the challenges and requirements of the future military force, and emerging technologies. His analysis has been featured on the nightly news and the John Batchelor Show and published in *National Review, The Hill, The National Interest, SpaceNews*, The Space Review, Real Clear Defense, and *Defense News* among other outlets. Routh previously worked for the Defense Program at the Center for a New American Security (CNAS). Prior to CNAS, he worked in the private sector where he facilitated training for Department of Defense components. He also served as a team leader with the US Army's 75th Ranger Regiment.

Contents

Introduction	2
Individuals and their connections are the key to innovation	4
Network equals net worth	6
Disparities due to structural barriers	8
Disparities in education limit pipeline of diverse talent	9
We can go to the moon, we can go to Mars, are we willing to tackle this challenge?	15
Appendix—methodology	19
Endnotes	20

Introduction

MAGINE A HALL of fame of US defense innovation. Who would you find there? Maybe you would think of the inventors of the helicopter, gas mask, and GPS as some of the most revolutionary minds. Then you would find yourself staring at portraits of a Ukrainian immigrant working in Connecticut, a Cleveland businessman born to former slaves, and an African American woman from rural Virginia among many others responsible for those inventions.1 But what if the US military didn't have access to those brilliant minds? There might not have been helicopters to rescue wounded soldiers, gas masks to protect them from smoke and chemicals, or GPS to help them navigate foreign lands. The value of these innovations is hard to measure, not just for the military but the world. These and countless other examples demonstrate the importance of diversity in unlocking innovation.

But innovation requires more than just the next hot technology. It takes fresh ideas, new strategies, unorthodox approaches to hard problems.² In short, innovation requires diverse thinking, and diverse thinking demands people from diverse backgrounds.³

While the US Defense Industrial Base (DIB) has made significant strides in improving diversity, women and minorities are still underrepresented in the ranks of both ownership and the broader DIB workforce. To be more innovative the DIB needs to be more diverse.

The stubborn persistence of these gaps is a challenge not just to the industry, but to all of us as individuals. We pride ourselves as being inclusive leaders and coworkers, but these gaps still persist. Our analysis of contracting, workforce, and other trends suggests that the roots of these gaps stretch



far past any individual and into the deeper social issues. Structural disparities in education or access to social and financial capital can hinder members of a marginalized community from breaking into the DIB. But above all, social issues rest on how we interact in groups, communities, and even industries.

While the structural barriers to greater diversity will be similar across the country, the specifics will

vary from place to place. So to better understand the core drivers of diversity in the DIB, we have gathered interviews and quantitative data about Huntsville, Alabama as a use case. Based on that data, we identify several recommendations that everyone—whether from business, government, or community organizations—can work together on to help ensure the DIB is as inclusive and as innovative as it can be.

WHAT EXACTLY DO THESE TERMS MEAN?

Defense Industrial Base (DIB)—We use a broad definition of the DIB in line with Department of Defense's (DoD's) definition as "the industrial complex that enables research and development as well as design, production, delivery and maintenance of military weapons systems/software systems, subsystems and components or parts, as well as purchased services to meet US military requirements."⁴

Diversity—The representation, in a group, of various facets of identity, including (but not limited to) race, ethnicity, nationality, gender identity, LGBTQ+ status, socioeconomic status, ability, religions, and age.⁵

Equity—The outcome of diversity, inclusion, and antioppression wherein all people have fair access, opportunity, resources, and power to thrive, with consideration for elimination of historical and systemic barriers and privileges that cause oppression. Equality, by comparison, is when all people are treated identically, without consideration for historical and systemic barriers and privileges.⁶

Inclusion—The actions taken to understand, embrace, and leverage the unique strengths and facets of identity for all individuals so that all feel welcomed, valued, and supported.⁷

Individuals and their connections are the key to innovation

HE DIB IS a people industry. A few companies may have solutions or technologies that others cannot match, but for the vast majority—even the largest companies—maintaining a competitive edge depends on talent. A skilled and diverse workforce is more likely to innovate, and an experienced workforce is more likely to deliver results on time. As a result, competition for skilled, experienced talent in the DIB can be intense.

Success in the DIB, then, rests on access to talent. But access to talent is yet another people problem. A job seeker may scour the web and various job posting websites to find the right job, but the sheer number of job postings and job seekers can render ineffectual the effort to connect the right talent to the right job. In other words, a typical job seeker will struggle to find the right opportunity unless they have a connection that helps them even know where to look, and a company cannot find talent unless they know where to look for that talent.

Both of these problems rest on relationships.

Job seekers need relationships to find the right positions, and companies need the right relationships to find the candidates they need. The health and innovativeness of the DIB as an industry depend on both companies and individuals creating those relationships as efficiently as possible. In some sense, innovation depends on networking.

Some of the most studied innovation hubs in the world such as Silicon Valley or Boston-Cambridge first appeared because the right mix of people was brought into close proximity and allowed to make social connections. Fostering connections between government, companies, and talent is one major factor in creating an innovative DIB.

Here we can turn to a real-world case study to see these forces in action. Huntsville, Alabama, is a positive outlier in networking culture and business collaboration. Business leaders almost universally reported to us that they found their peers to be open and interested in networking, even in cases where they might be competitors on another deal.

The results of this culture are clear to see in the growth and productivity of the industry in the Huntsville areas. Madison County, where Huntsville is located, ranks seventh among all US counties for defense contract spending.10 That demand, along with additional work from NASA and the research universities in the area, has created a rich innovation ecosystem. In fact, Huntsville has the highest number of engineers per capita in the United States.11 And the economic benefit of this relationship-based innovation ecosystem is evident. Huntsville is on par with or better than national averages across education, income to mortgage ratios, per-capita household income across races, unemployment rates across races, and the percentage of minority groups below the poverty line.12

But even in the positive environment of Huntsville there are problems that limit the diversity, and therefore, innovativeness of the DIB. For example, while Huntsville's rates of business ownership by minorities and women are better than national averages, they are still below representation. Minorities make up 34% of Huntsville's metro population, yet account for only 27% of business owners. While that number is above the national average of 18%, Huntsville also has a larger minority population than the national average, meaning that there is actually a larger gap in representation of minority business owners in Huntsville than in the nation as a whole.¹³ Women, similarly, are 51% of the population and 47% of the labor force in Huntsville, but only 44% of business owners. The true number for solely women-owned businesses (i.e., not owned jointly with a man) is likely even lower—in the high-20% range.14

These statistics do not mean that Huntsville is not paying attention to diversity. In fact, quite the opposite, Huntsville is doing better than the national average on many of these measures. But that is exactly why these continued disparities are so striking: In some ways, Huntsville is a positive outlier, yet even it suffers from the exact same lack of diversity as the rest of the country. If this lack of diversity is not due to inattention or lack of interest, then it must stem from more difficult, structural factors about how the industry itself operates. This is particularly striking because the same challenges with diversity that appear in Huntsville occur at the national level as well. For example, the mid-20% range for sole female business ownership in Huntsville is also consistent with estimates of female executives in the entire aerospace and defense industry, estimated at between 19%-25%.15

For other minority groups, representation can be even lower among executive ranks: It is estimated that Black or African Americans make up only 5% and Latinos a mere 4% of executives in aerospace and defense. ¹⁶

These are more than just interesting statistics; they have a real impact on performance and on lives. For companies, research from numerous industries shows that greater diversity in workforce and leadership lead to increased revenue and corporate performance. For example, manufacturing companies that increased their representation of women in leadership by 30 percentage points, saw a 15% increase in corporate revenue.17 That boost in revenue can also be a boon to local communities. Black or African Americans in Huntsville have nearly double the rate of unemployment of white residents, and Latinos see roughly half the average household wage.18 So increases in employment in high-paying industries such as the DIB can be a significant economic benefit to these communities.

But above all, greater diversity in the DIB is about mission. The DIB is not just any industry. It exists to help the country prevent and win wars. To do that, it needs the most innovative people and the most innovative companies. Research continually shows that innovation comes from combining diverse sets of ideas, and that diverse companies produce innovations at a higher rate. People from diverse backgrounds bring diverse sets of experience with them, exactly what is needed to address complex problems. A lack of diversity in the DIB is leaving innovation on the table at a time when it is critically needed.

"Network equals net worth"

O FIND THE root of these challenges with diversity, we first need to understand what makes companies successful in the DIB.

Companies and individuals are both more likely to succeed if they have significant social capital—that is, the set of relationships with customers, partners, and others. Those relationships provide better knowledge of what opportunities exist, what customers are looking for in certain bids, what technology solutions are emerging, and where to find the right talent for particular tasks. And those connections are important to the DIB itself: They help create efficiency in the industry and provide assurances that those selected for a job can deliver as promised.

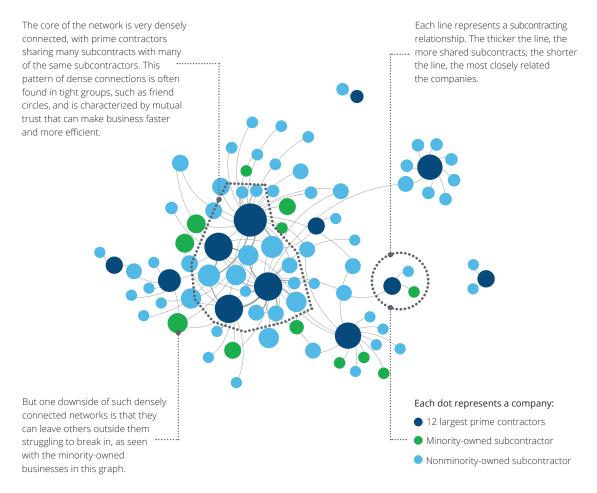
But these densely connected networks can also make it difficult for newcomers to break into the industry. Without something of value to tradewhether that be a new technology or the owner's personal relationships—new entrants, whether companies or individuals, will likely find themselves relegated to junior partnership roles that hinder their long-term growth.22 The problem for the DIB is that these things of value are not uniformly distributed. Certain populations have greater access to things that the DIB values, making it easier for them to enter the industry. For example, retired military officers may often have existing personal relationships with clients and be able to speak their language, making them more attractive hires than nonveterans. Individually, these decisions are rational and good for each company and individual, but if every company follows suit, it can unintentionally create a more homogenous workforce than desired, effectively making it more difficult to get diverse perspectives.

To be successful, new entrants trying to break into the DIB, whether as individuals looking for jobs or companies looking for work, need to find something the wider network values. The challenge is that the individuals in that wider network tend to gravitate toward those like themselves. Many of us are naturally more comfortable with those like ourselves, who share similar backgrounds, hobbies, ways of talking, and so on. Research on everything from hiring decisions to business partnership formation show that these ties of sameness, called homophily, play an important if subconscious role in many business decisions.²³

How much companies/individuals seek sameness is variable. The more homophily in a network, the harder it will be for underrepresented minorities to break into the main network and be successful.24 This phenomenon has been seen in everything from collaborations to academic citations, so it is no surprise when we see it in Huntsville's DIB ecosystem as well. Take subcontracting relationships for example. With the major defense contractors being so large and dominant in the industry, subcontracting can be a key lifeline for small businesses. When examining the subcontracting relationships for the largest 12 defense contractors in Huntsville, we find that, while minority-owned companies make up 29% of businesses in our sample (on par with the 27% of all businesses in Huntsville that are minority owned), they received only 8% of all subcontracts and 4% of all subcontracting dollars awarded.25 By graphing these relationships, we can also see how many minority-owned companies exist-almost literally—at the edges of the business ecosystem, struggling to break in (figure 1).

FIGURE 1

Minority-owned companies can often find themselves literally at the edge of the network in Huntsville



Note: Size of bubble represents total subcontracting transactions. Source: Deloitte analysis of subcontract data from Bloomberg Government.

But there is no magic knob to change how comfortable we are with similarity or difference. Those preferences and the social connections they produce are determined both by our individual decisions and the social structures we find ourselves in. Our natural tendency to seek those like us can amplify initial disparities and create

even more closed off networks.²⁶ The current state of diversity in any industry then, is inextricable from both our social connections and our collective history. In other words, the disparities in access to the DIB network are due to structural disparities in wider American society.

Disparities due to structural barriers

O, WHAT CAUSES these disparities? To begin with, it's not purely individual bias.

Huntsville helps illustrate the challenge here as well. We spoke with more than 30 business, government, and local leaders in Huntsville, and nearly all reported a generally inclusive and welcoming business culture with a strong emphasis on individual networking. Yet Huntsville's portion of the DIB still experiences many of the same challenges with diversity, equity, and inclusion

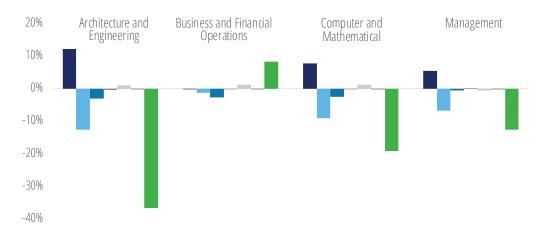
(DE&I) as the wider industry. Clearly, the roots of the disparities lie deeper. If success in the DIB requires good education, solid personal contacts, and knowledge of the industry, then inequalities in these factors can effectively keep segments of the population from becoming integral members of the DIB. Therefore, making progress on diversity in the DIB requires looking at long-standing inequalities in education, access to social networks, business capital, and other factors.

FIGURE 2

Women and minorities in Huntsville are underrepresented in several key fields within the DIB

- White Black or African American Hispanic or Latino American Indian or Alaskan Native Asian
- Native Hawaiian or other Pacific Islanders ■Women

Over/Underrepresentation in Hunstville for key occupation fields



Source: Deloitte analysis.

Disparities in education limit pipeline of diverse talent

AKE THE TALENT pipeline for example.
Employment data shows that women and minorities in Huntsville are severely underrepresented in whole fields key to the DIB, such as architecture, engineering, computer science, and mathematics (figure 2).²⁷ High-demand, low-density occupations where any available talent is quickly acquired can present great opportunities to increase diversity. There are several such occupations in Huntsville ranging from systems

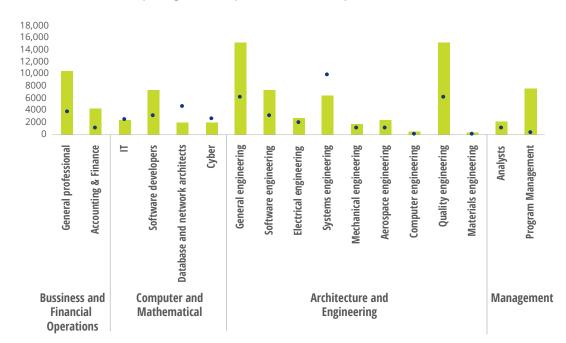
engineer and cyber professionals to welders and skilled maintenance personnel. These occupations present thousands more job postings every year than there are qualified individuals (figure 3).²⁸ Yet, when looking at the degrees needed for these occupations, we find that not only are regional institutions not producing enough talent, but minorities and women are significantly underrepresented in key areas such as engineering, math, and science (figure 4).²⁹

FIGURE 3

Several occupations in Huntsville have greater demand than there are available workers







Source: Deloitte analysis of data from JobsEQ, US Bureau of Labor Statistics, and Statista.

Nor are these numbers unique to Huntsville. The same trends are seen nationwide. Black or African American undergraduates continue to be the least likely to earn a bachelor's degree in science, technology, engineering, and mathematics (STEM) fields compared to all other race/ethnic categories.30 And with the exception of Asians (who earn more STEM degrees than all other race/ethnic categories), minorities constantly earn fewer STEM degrees than nonminority groups.³¹ Similarly, when it comes to physics, engineering, and computer science, women make up only 20% of bachelor's level graduates.32 While these numbers are improving, education barriers continue to impede greater diversity in key skills required by the DIB. But what creates these barriers?

Before a student can earn the necessary degree, they must first get into college. And before they can get into college, they need both the desire and ability to gain admittance. Both factors are strongly determined by environment and education starting at an early age. In lower income areas, disparities in educational outcomes can appear as early as pre-k and grow through elementary, middle, and high school. These barriers exist due to poverty at

home and within schools, poor racial representation among teachers, lack of access to internet at home, and many other factors.³³ Even routine access to Wi-Fi can be a significant barrier. For example, the Huntsville school district has replaced textbooks with school-issued computers, making access to internet connectivity important for staying up on schoolwork.³⁴

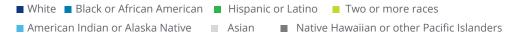
The sum of these barriers can be seen in outcomes. While Huntsville boasts an above average high school graduation rate, there can be stark disparities in outcomes for minority groups. For example, minority students (except for Asians) graduate at a lower rate than white students.³⁵

Separate from academic ability, desire to pursue a college education and a STEM degree specifically, can be a function of the social environment a student finds themselves in. If they see many STEM workers or other college-educated individuals around them, they may be more likely to feel that such a degree offers a reasonable path for them. But without such examples in their social circle, college and a STEM degree may just never even seem like an option.³⁶

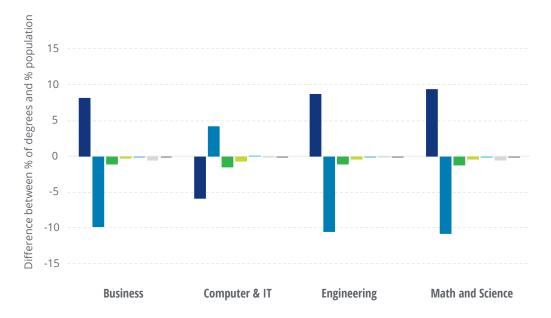


FIGURE 4

Regional universities are not producing diverse talent to fill need in high-demand fields



Over/underepresentation in Huntsville for bachelor's degrees in key fields



Source: Deloitte analysis of degree completion data from Institute of Education Sciences (IES), National Center for Education Statistics (NCES), and ethnic make-up of enrollment data from Data USA.



But the challenges to a diverse DIB workforce do not end with college graduation. For those new graduates who are qualified, finding the DIB an attractive workplace often requires seeing one's self in the workforce. An important characteristic for many who consider joining a firm or a sector is knowing they will be welcomed and can succeed and grow professionally. One apparent metric here is simply seeing others of a similar race or gender among managers and executives across the organization. Educational disparities decades ago can, therefore, still be a limiting factor for entry-level talent today.

While underrepresented groups are graduating from college at improving rates, 30 years ago, when today's executives were in college, the disparity was much greater. In the 1990s, when many of today's executives were in college, enrollment among Black or African Americans was 10% lower than today compared to only 4% lower for Whites. For Hispanic or Latino groups, in 1990 only 15% were enrolled in college compared to 36% today.37 This means that minority representation among senior executives is even lower than in the DIB as a whole.³⁸ This can create a lack of role models or mentors for those who come after, making greater diversity in the executive ranks difficult even as diversity improves among junior professionals.

Filling gaps in diversity at mid- and senior career levels is also made all the more difficult based on government talent demands. Government contract language mandating certain levels of experience, often more than five years, can limit the number of opportunities that today's more diverse graduates have to break into the DIB. For example, in 2020, more than a quarter of all job postings in Huntsville required more than nine years of experience.³⁹

Ultimately, education barriers cast a long shadow over the DIB workforce. Today's disparities in education not only reduce the number of qualified workers, particularly for minority groups, but disparities from decades ago can still discourage the talent that does exist from joining an organization that does not look like them or their communities.

Disparities in career support limit retention of a diverse workforce

Improving rates of education mean that entry-level talent in the DIB is more diverse than ever, but keeping that talent remains a problem. A lack of career support, such as flexible parental leave, caregiving support, flexible work schedules, and the ability to work remotely, can play a major role in talent's decision to stay in the DIB.⁴⁰ And while progress is being made—COVID-19 being a major catalyst—there is still room to improve.

If the DIB is to become more diverse, today's more diverse young talent must not only join, but remain in the DIB's workforce (figure 5). But the impact of COVID-19 has shown just how fragile those gains in diversity can be, with women especially dropping out of the workforce at significant rates. ⁴¹ Across the DIB, women comprise only 25.5% of executives, and that number shrinks even further in specific career fields like engineering. ⁴²

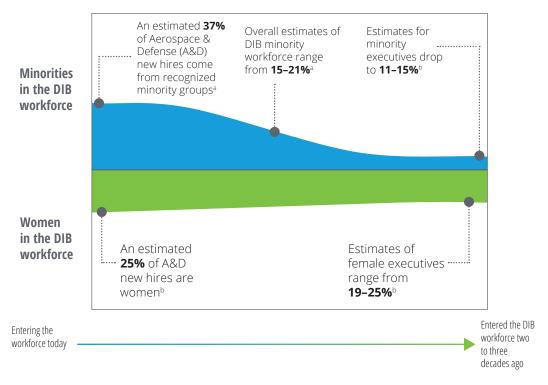
Retaining these women in the workforce and attracting others rests on solving key structural issues around balancing work and parenthood.⁴³ When it comes to the impact of managing work and a family, women often bear the brunt. In fact, only 76.4% of mothers with children 18 years of age or younger remain in the workforce compared to 93.4% of fathers.⁴⁴ The time away from work can

impact women throughout their career in both earnings and position attainment.⁴⁵

But the need to improve is about more than making up for the disparities women may face in the workforce. These issues are increasingly important to all young workers. Generally speaking, both millennial and Generation Z women are more professionally ambitious than their male peers,

while many millennial and Gen Z men are as interested in being a caregiver as they are in being a breadwinner.⁴⁶ Ultimately, recruiting and retaining more women, and likely younger generations across the board, requires adjusting career support to account for the expectations of talent because if the talent cannot find what they are looking for in the DIB they will find it in other sectors.

Recent progress on diversity in the DIB means that retaining diverse, young workers is critical to making the overall DIB more diverse



Note: Numbers reflect estimates for both DIB specifically and A&D industry more broadly, but similar trends appear in industries ranging from manufacturing to automotive. For example, women make up an estimated 25% of the A&D workforce and 29% of the broader manufacturing workforce, while minorities account for 37% of A&D workforce compared to 34% of broader manufacturing industry.

Source: Deloitte analysis of a) "Vital Signs 20201: The health and readiness of the Defense Industrial Base" by the National Defense Industrial Association and b) "The face of aerospace and defense" by Aviation Week Network, September 2020.

Disparities in business infrastructure limit growth potential

The DIB is an unusual industry. It effectively has only one buyer and is home to a small number of truly massive companies along with a wide array of medium and small businesses. For those looking to break in, competition can be fierce. Small businesses can receive some reprieve if they qualify for accelerators or other programs that can speed growth. For example, the Small Business Administration's 8(a) program offers businesses from disadvantaged groups a protected growth path.

However, in a market where size can be everything, these programs can often leave companies coming up short of the scale it takes to compete in the DIB. The three largest DIB companies averaged more than US\$30 billion in government work in 2019 alone.⁴⁷ Even among the relatively smaller companies headquartered in Huntsville, the three leading firms pulled in an average of half a billion in government work during the same period.⁴⁸ To put those numbers in context, the largest firms in Huntsville win five times more work in a single year than an 8(a) small business is allowed to make over the entire course of its nine-year time in the program.⁴⁹ For the largest DIB companies nationally, that number balloons to 300 times!

The goal of the 8(a) program is certainly not to grow small businesses into behemoth defense contractors overnight, but such disparity isn't the difference between small and big fish, it's the difference between small fish and whales. In other sectors, a company with US\$100 million in earned work over nine years would be a raving success. That isn't necessarily the case in the DIB. After all, the DIB is a people industry. More than patents or products, success in the DIB is determined by the expertise and knowledge of people. When larger firms have the resources to attract limited talent while small businesses do not, it can not only

impose barriers to entry but also make it nearly impossible to grow.

If smaller companies cannot compete and win government work on their own, they will be relegated to junior partnerships where their influence, input, and value of adding diversity is diminished.

Aside from formal programs, capital is a key ingredient in allowing businesses to grow. Yet for minority groups, accessing capital can be more difficult than for nonminority groups. With less personal and intergenerational wealth to draw on, minorities often need to turn to lending when starting a business.50 Yet, these groups tend to be denied traditional loans at twice the rate of nonminority groups.⁵¹ As a result of this and other factors, minority groups tend to rely on less traditional sources of financing, often incurring greater cost and personal financial risk in the process.52 For instance, Blacks or African Americans and Hispanics tend to leverage personal or family savings over other sources of capital despite having one-tenth the wealth of non-Hispanic Whites.53 Similarly, rather than using bank loans, Black-owned businesses often rely on credit cards with higher interest rates.54 Starting a business with less capital or lower access to affordable lending ultimately means more financial risk. And when what is at stake is family savings or personal debt, the risk can be too high—especially for groups trying to overcome generational poverty.

Capital and accelerator programs are critical infrastructure for small businesses. Like power lines or water pipes, they enable growth to a scale where businesses can compete on their own merits. But without sufficient access to that business infrastructure, minority-owned businesses can be left on the periphery of the broader DIB network of businesses. And when too many new entrants to the DIB are left outside the core network, the network can lack diversity and fresh ideas.

"We can go to the moon, we can go to Mars, are we willing to tackle this challenge?"

HE STRUCTURAL BARRIERS to greater diversity in the DIB exist in everything from early childhood education to small business contracting rules. Clearly, these are systemic challenges that cannot be overcome with one simple change. And while many of the below

changes are being considered today, progress depends on the coordinated action of all DIB stakeholders—businesses, communities, and federal, state, and local governments—all working together to create a more equitable (and innovative) industry (figure 6).



CULTURE CHANGE UNDERPINS IT ALL

Above all, greater diversity, equity, and inclusion (DE&I) is about changing people's attitudes and behaviors. That starts with culture in government, in business, and in our communities.

- Community groups should look to create opportunities for greater social mixing between different communities within a city or region.
- Leaders in business and government should define a clear vision for DE&I, showing how diversity improves the mission. Our research suggests that this clarity can improve not only employee engagement, but also public trust in government organizations.
- Businesses, government agencies, and even whole industries should periodically assess key DE&I
 metrics, paying special attention to positive and negative outliers, to understand what is working well
 and what needs to improve.
- Businesses should examine their talent lifecycle (recruiting, evaluation, promotion, assignments, etc.) for policies that may unintentionally inhibit diversity. Similarly, government should examine all decisions that impact industry behavior whether funding, hiring, authorities, or other policy decisions to ensure diverse perspectives are reflected.

At a personal level, consider internal discussion groups to help ensure that diversity does not end in paper policies, but creates a truly inclusive atmosphere within an organization and for its partners/clients.

FIGURE 6

Progress in reducing structural barriers is only possible through coordinated action across all stakeholders

Educational barriers Career support barriers Business infrastructure barriers



- Where feasible, consider replacing years-experience and degree requirements in federal contracts with alternative measures of expertise to allow opportunities for new talent to enter industry.
- Create defined contract metrics for talent experience from basic to intermediate to expert skill levels to give defined pathways of progress.
- Coordinate disparate planning around small business management, DE&I, and communication with local communities.

- Expansion of paid parental and medical leave programs can help keep diverse populations, especially young women, in the workforce.
- Emphasize diverse recruiting within the federal government, especially in STEM fields, to help model diversity to industry.
- Increase the flexibility of work schedules and locations.

- Consider government- sponsored venture capital targeting minorityowned defense companies specifically.
- Increase or eliminate size caps for programs like 8(a) within DIB industries to help businesses grow to competitive scales before graduating.
- Study the impact that the need for cleared staff and facilities has on ability of new, diverse entrants to compete in DIB.



State and local governments

- Expand access to COOP, internship, and other paid-work programs that can provide both income and valuable work experience to those facing financial or family-care barriers to higher education.
- Encourage greater use of two-year and technical colleges and/or consider programs such as automatic admission/ scholarships for all qualified HS graduates from the catchment area.
- Expand access to funded pre-k and afterschool care to increase workforce participation rates among young parents.
- Work to create alternate forms of credit such as microlending programs for minority-owned small businesses.
- Consider entrepreneurial training courses and toolkits targeting underrepresented minorities.



Businesses and community groups

- Create internship programs to give young talent experience.
- Expand in-school and summer programs to expose young students especially those from minority and less fortunate backgrounds to work in DIB fields.
- Tailor recruitment and educational messaging around more culturally resonant themes such as community benefit rather than individual advancement.
- Engage communities to learn their true needs and tailor workforce development and education programs to match.

- Take advantage of remote work to tap into new talent pools and give current workers more flexibility.
- Expand corporate parental and family leave programs.
- Expand existing mentorship programs for every stage of career with express intent of introducing mentors/ mentees to those they may not have otherwise encountered.
- Create B2B (especially large to small business) groups to share DE&I lessons learned and best practices.

- Expand outreach to credit unions and other forms of lending to build relationships with small business community.
- Convene minority-owned business leaders within the DIB to better understand their needs.
- Consider outreach to midcareer professionals encouraging entrepreneurship, could provide templates for business launch or provide matchmaking to link experienced mid-career professionals with those wanting to start a businesses.

Source: Deloitte analysis.

This list of recommendations is not—and cannot be—exhaustive. Societies evolve, and so complex structural problems evolve too. Therefore, it is vital that stakeholders measure progress with objective metrics to understand how things are changing and determine which interventions are working and which are not. These metrics can range from the basic, such as capturing real data about the composition of the DIB workforce for the first time, to the more targeted, such as capturing data on growth and survival rates for minority-owned small businesses. Without these metrics it will be difficult to see if the DIB is making progress toward a more inclusive and innovative future.

Improving DE&I is an ongoing process, not an end in itself. After all, the goal of greater DE&I in the DIB is not to reach certain demographic targets or meet a set of numbers; it is to try and create more equitable access to the industry so that good ideas can prosper, no matter who they come from. Key battlefield innovations such as the helicopter, gas mask, and GPS were only possible through the efforts of diverse workforces including key contributions from underrepresented groups. Without an intentional effort at creating more diversity in the DIB now, the country may find itself without needed innovations, unprepared for the next conflict.

Improving DE&I is an ongoing process, not an end in itself.

Appendix—methodology

HIS RESEARCH WAS based on more than 30 interviews with business, government, and community leaders in Huntsville. We then used those interviews to guide quantitative research to help uncover the often-hidden structural barriers that stood in the way of greater participation in the DIB. Data sets used included business and

demographic data from Huntsville Madison County Chamber of Commerce, proprietary databases of job postings and employment data, US Census Annual Business Survey, American Community Survey, education and demographic data from Data USA, and data on government contractors from GovWin and Bloomberg Government.



Endnotes

- 1. The famed inventors were Igor Sikorsky, Ukrainian immigrant, for the helicopter; Garrett Morgan, son of former slaves, for early gas masks; and Gladys West, whose work on satellite geodesy paved the way for GPS.
- 2. Gautam Ahuja, "Collaboration networks, structural holes, and innovation: A longitudinal study," *Administrative Science Quarterly* 45, no. 3 (2000): pp. 425–55.
- 3. For more on the relationship between greater diversity and greater innovation see: Sylvia Ann Hewlett, Melinda Marshall, and Laura Sherbin, "How diversity can drive innovation," *Harvard Business Review*, December 2013; Christian R. Østergaard, Bram Timmermans, and Kari Kristinsson, "Does a different view create something new? The effect of employee diversity on innovation," *Research Policy* 40, no. 3 (2011): 500–509.
- 4. C. Todd Lopez, "DOD focuses on sustaining industrial base through pandemic," DoD, May 5, 2020.
- 5. Deloitte, The equity imperative: The need for business to take bold action now, February 2021.
- 6. Ibid.
- 7. Ibid.
- 8. Ronald S. Burt, "Structural holes and good ideas," American Journal of Sociology 110, no. 2 (2004): pp. 349–99.
- 9. Phil Budden and Fiona Murray, *Innovation ecosystems and the university*, MIT Lab for Innovation Science and Policy and MIT Innovation Initiative, October 2015.
- 10. Defense Spending by State, Fiscal Year 2019 (oea.gov), 17.
- 11. Forbes, "The top 10 cities for engineers," February 24, 2015.
- 12. Ryan Hankins, "Can we identify and map economic and racial disparities in the region," Tableau Public, December 17, 2020.
- 13. According to the US Census data, racial and ethnic minorities make up 23.7% of the population and according to the Census' Annual Business Survey, 18.3% of business owners are minorities, for a gap of 5.4 percentage points. This is compared to Huntsville's numbers of 34% of the population and 27% of business owners for a gap of 7 percentage points.
- 14. The Federal Reserve "Small Business Credit Survey", shows that nationally, 21% of businesses are owned solely by women, compared to 37% owned either solely or in equal partnership with a man. This breakdown is seen in other data such as the "US Census Annual Business Survey" which found a rate of sole woman ownership at 19.9%. Since data from Huntsville does not discriminate between sole and joint ownership, we extrapolate that the rate of solely women-owned businesses in Huntsville is likely slightly above the national average putting it in the mid- to low-20% range.
- 15. National Defense Industrial Association, *Vital signs 2021*, 2021; Aviation Week Network, "The face of aerospace and defense," September 25, 2020.
- 16. Aviation Week Network, "The face of aerospace and defense."
- 17. Craig Giffi et al., *Women in manufacturing: Stepping up to make an impact that matters*, Deloitte, The Manufacturing Institute, and APICS, 2017.
- 18. Data from Huntsville Madison Country Chamber of Commerce: Hankins, "Can we identify and map economic and racial disparities in the region."

- 19. For more on how diversity helps the discovery of innovative ideas see: Ahuja, "Collaboration networks, structural holes, and innovation." For more on how diversity can make a company more innovative, see: Hewlett, Marshall, and Sherbin, "How diversity can drive innovation."
- 20. Gordon Walker, Bruce Kogut, and Weijian Shan, "Social capital, structural holes and the formation of an industry network," *Organization Science* 8. no. 21 (1997).
- 21. Ibid.
- 22. Gautam Ahuja, Francisco Polidoro Jr., and Will Mitchell, "Structural homophily or social asymmetry? The formation of alliances by poorly embedded firms," *Strategic Management Journal* 30, no. 9 (2009).
- 23. Lauren A. Rivera, "Hiring as cultural matching: The case of elite professional service firms," *American Sociological Review* 77, no. 6 (2012): 999–1022.
- 24. Fariba Karimi et al., "Homophily influences ranking of minorities in social networks," Scientific Reports 8, (2018).
- 25. Subcontracting data taken from Bloomberg Government, and socioeconomic status of companies derived from GovWin.
- 26. Karimi et al., "Homophily influences ranking of minorities in social networks."
- 27. Author's analysis of Huntsville employment data.
- 28. Labor Market Analysis of North Alabama. Deloitte client deliverable for Huntsville Madison Chamber of Commerce, October 31, 2019.
- 29. Rates were estimated based on enrollment breakdown by race/ethnicity and degrees granted by six of the colleges/universities that provide much of Huntsville's talent as reported by local business leaders in a series of interviews. These figures assume an even distribution of students of all races across all degree fields, and so are likely optimistic given what we know from national figures about underrepresentation of minorities in STEM fields.
- 30. Bill Hussar et al., *The condition of education 2020*, Institute of Education Sciences, May 2020.
- 31. Ibid.
- 32. Catherine Hill, Christianne Corbett, and Andresse St. Rose, *Why So Few?*, American Association of University Women, March 2020.
- 33. Jinghong Cai, *Black students in the condition of education 2020*, National School Boards Association, June 23, 2020.
- 34. Margo Gray, "Huntsville city schools get digital textbooks," WAFF, June 18, 2012.
- 35. Hussar et al., *The condition of education 2020.*
- 36. Jiyun Elizabeth L. Shin, Sheri R. Levy, and Bonita London, "Effects of role model exposure on STEM and non-STEM student engagement," *Journal of Applied Social Psychology* 46, no. 7 (2016).
- 37. National Center for Education Statistics, "College participation rates," 2016.
- 38. Can use the aerospace and defense (A&D) industry as a useful proxy with 37% minority new hires compared to only 11%–15% minority executives. See: NDIA, *Vital signs 2021*; Aviation Week Network, "The face of aerospace and defense."
- 39. Authors' analysis of job posting data from Burning Glass. Results are for all job postings in the Huntsville MSA between January 1, 2020 and December 31, 2020.

- 40. Our research in the manufacturing industry identified work-life balance issues as one of the top issues driving women out of the industry. Other research has shown significant gains in workforce participation from programs such as parental leave.
- 41. Titan Alon et al., *The impact Of COVID-19 on gender equality*, National Bureau of Economic Research, April 2020; National Women's Law Center, *A year of strength and loss*, March 2021.
- 42. Aviation Week Network, "The face of aerospace and defense."
- 43. AAUW, "The motherhood penalty," accessed May 25, 2021.
- 44. US Bureau of Labour Statistics, "Employment characteristics of families—2020," news release, April 21, 2021.
- 45. AAUW, "The motherhood penalty."
- 46. Eileen Patten and Kim Parker, "A gender reversal on career aspirations," Pew Research Center, April 19, 2012.
- 47. Bloomberg Government, *BGOV200: Federal industry leaders 2019*, 2019.
- 48. Ibid.
- 49. The 8(a) program helps small businesses owned by economically disadvantaged people or groups succeed by creating a more equitable business environment via limits on competition, education, management, and technical assistance. For more see: Small Business Administration, "8(a) business development program," accessed May 25, 2021; Congressional Research Service, SBA's "8(a) Program": Overview, history, and current issues, December 17, 2020.
- 50. Neil Bhutta et al., "Disparities in wealth by race and ethnicity in the 2019 survey of consumer finances," September 28, 2020.
- 51. Federal Reserve, "Availability of credit to small businesses," September 2017.
- 52. Alicia Robb, Financing patterns and credit market experiences, Small Business Administration, February 2018.
- 53. Ibid.
- 54. Ibid.

Acknowledgments

The authors would like to thank the more than three dozen Huntsville community, business, and government leaders who graciously offered their time and personal stories in support of this research. They'd also like to thank **Akash Keyal** and **Sushumna Agarwal** of the Deloitte Center for Government Insights for their critical analysis and research support. Finally, the authors would like to thank the Huntsville Chamber of Commerce for its support connecting the research team with members of the Huntsville community.

Contact us

Our insights can help you take advantage of change. If you're looking for fresh ideas to address your challenges, we should talk.

Industry leadership

Kwasi Mitchell, PhD

Chief purpose officer | Principal, Deloitte Consulting LLP +1 571 814 7801 | kwmitchell@deloitte.com

Kwasi Mitchell serves as the chief purpose officer of Deloitte. He is responsible for driving a firmwide strategy around Deloitte's commitments to areas including, but not limited to, diversity, equity, and inclusion; sustainability and climate change; and education and workforce development.

Carey Miller

Managing director | Deloitte and Touche LLP +1 256 665 9655 | caremiller@deloitte.com

Carey Miller is a managing director with Deloitte and Touche LLP, specializing in working with clients in the Huntsville geography to address cyber resilience, workforce transformation, IT modernization, and digital engineering.

The Deloitte Center for Government Insights

Joe Mariani

Defense, Security & Justice research lead | The Deloitte Center for Government Insights | Deloitte Service LP

+1 312 486 2150 | jmariani@deloitte.com

Joe Mariani is a research manager with the Deloitte Center for Government Insights where his research focused on innovation and technology adoption by both commercial businesses and national security organizations.

Adam Routh

Defense, Security & Justice research lead | The Deloitte Center for Government Insights | Deloitte Service LP

+1 202 220 2633 | adrouth@deloitte.com

Adam Routh is a research manager with the Deloitte Center for Government Insights and a PhD candidate in the Defence Studies Department at King's College London. He leads research on defense and security topics.

About the Deloitte Center for Government Insights

The Deloitte Center for Government Insights shares inspiring stories of government innovation, looking at what's behind the adoption of new technologies and management practices. We produce cutting edge research that guides public officials without burying them in jargon and minutiae, crystalizing essential insights in an easy-to-absorb format. Through research, forums, and immersive workshops, our goal is to provide public officials, policy professionals, and members of the media with fresh insights that advance an understanding of what is possible in government transformation.

Deloitte offers national security consulting and advisory services to clients across the Department of Homeland Security, the Department of Justice, and the intelligence community. From cyber and logistics to data visualization and mission analytics, personnel, and finance, we bring insights from our client experience and research to drive bold and lasting results in the national security and intelligence sector. People, ideas, technology, and outcomes—all designed for impact. Read more about our defense, security, and justice services on Deloitte.com.



Sign up for Deloitte Insights updates at www.deloitte.com/insights.



Follow @DeloitteInsight

Deloitte Insights contributors

Editorial: Ramani Moses, Aparna Prusty, Dilip Poddar, and Nairita Gangopadhyay

Creative: Sanaa Saifi and Kevin Weier

Audience development: Alexandra Kawecki

Cover artwork: Kevin Weier

About Deloitte Insights

Deloitte Insights publishes original articles, reports and periodicals that provide insights for businesses, the public sector and NGOs. Our goal is to draw upon research and experience from throughout our professional services organization, and that of coauthors in academia and business, to advance the conversation on a broad spectrum of topics of interest to executives and government leaders.

Deloitte Insights is an imprint of Deloitte Development LLC.

About this publication

This publication contains general information only, and none of Deloitte Touche Tohmatsu Limited, its member firms, or its and their affiliates are, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your finances or your business. Before making any decision or taking any action that may affect your finances or your business, you should consult a qualified professional adviser.

None of Deloitte Touche Tohmatsu Limited, its member firms, or its and their respective affiliates shall be responsible for any loss whatsoever sustained by any person who relies on this publication.

About Deloitte

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. In the United States, Deloitte refers to one or more of the US member firms of DTTL, their related entities that operate using the "Deloitte" name in the United States and their respective affiliates. Certain services may not be available to attest clients under the rules and regulations of public accounting. Please see www.deloitte.com/about to learn more about our global network of member firms.

Copyright © 2021 Deloitte Development LLC. All rights reserved. Member of Deloitte Touche Tohmatsu Limited