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THE LABOR CRISIS AND THE FUTURE OF THE HEARTLAND

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HEARTLAND FORWARD
AN INSTITUTE FOR ECONOMIC RENEWAL

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Described by the New York Times as "America's uber-geographer," Joel Kotkin is an internationally recognized authority on global, economic, political and social trends. His latest book, The Coming of Neo Feudalism: A Warning to the Global Middle Class, deals with the issue of declining upward mobility and growing inequality in almost all middle and highincome countries. Mr. Kotkin is the presidential fellow in urban futures at Chapman University in Orange, California and executive director of the Houston-based Center for Opportunity Urbanism. He is senior fellow for Heartland Forward and Executive Editor of the widely read website NewGeography.com. He is a regular contributor to the National Review, City Journal, Daily Beast, Quillette and American Mind. Kotkin recently completed several studies including on Texas urbanism, the future of localism, the changing role of transit in America, and, most recently, California's lurch towards feudalism. He is co-author of a report published in 2018 on the revival of the American Heartland for the Center for Opportunity Urbanism. As director of the Center for Demographics and Policy at Chapman, he was the lead author of a major study on housing, and recently, with Marshall Toplansky, published a strategic analysis for Orange County, CA.

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ABOUT HEARTLAND FORWARD

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

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

EXECUTIVE SUMMARY

While topics like "The Great Resignation" and "the labor shortage" have gained traction in popular discourse, much of these discussions overly simplify trends that have been brewing for decades. Indeed, some states like South Dakota, Nebraska, Vermont, Kansas and Indiana[1] face a shortage of workers, and it is true that in the aggregate, some types of workers — namely younger workers — are trending toward a type of work that is different from that of their parents' generation, preferring a lifestyle near affordable amenities and a flexible work schedule. Yet, these narratives often leave out the reality that (1) this shift predates the pandemic and that (2) there are, in fact, some opportunities within its wake if policymakers and firms can capitalize on these changes.

This report first attempts to add clarity to some common perceptions of the labor market:

- **What are the demographic and economic shifts we are seeing?** On this front, we explore how male labor participation, for example, is dropping at higher rates than female and how declining birth rates transnationally make this problem not only unique to the U.S.

- **What do we make of the "revolt against work" attitudes of young people?** While many young people have expressed a reluctance to take low wages and face uncertainty, we are seeing the current usual median weekly wage rise for full-time workers. This disruption is particularly marked toward the lower-end of the job spectrum in industries such as hospitality, entertainment and retail suffering the most.

- **What are the effects of the changing, high volatile labor market?** The pandemic accelerated the prevalence (and fear of) of artificial intelligence in the labor market. Yet, long-term the data shows that the most vulnerable jobs will actually be the "laptop" class while professions such as plumbing and machine maintenance cannot be automated away.

- **Where are these shortages the worst?** Unlike white-collar business service or tech firms, manufacturing and healthcare businesses need workers with specialized skills who can't do their jobs remotely and require training as well. Here is where we see the most opportunity. Many heartland states like Nebraska, Minnesota and Ohio have invested in job training programs and pipelines for crucial industries.

What does this mean for opportunity in the heartland and how can policymakers capitalize on this trend?

- **Investments in training initiatives, even those thought to be declining industries, will pay off.** The labor shortage could provide opportunities for advancement even in some of the hardest hit, most economic vulnerable populations of the heartland. New training initiatives in the St. Louis area, for example, are providing practical skills training in places like East St. Louis, Illinois, and the inner city on the other side of the Mississippi, with particular emphasis on construction and solar installation skills.

- **Quality of life and ability to attract talent is becoming a potentially positive differentiator for the heartland.** The growing gap in costs, plus greater opportunity, is driving a critical demographic shift toward the middle of the country. Long dismissed as primarily an aging region that people are leaving, the heartland has gotten relatively younger and now has about the same age profile as the rest of the country.

- **Policymakers should learn how to tap into the region's growing foreign-born population.** Immigrants, including recent refugees from Afghanistan, have become key targets for manufacturers across the region, in cities such as St. Louis, which have become recent havens. These newcomers, like other recent immigrants, are heading to these labor-short, lower-cost cities rather than high-cost, deindustrializing states like California. This willing labor force will need to be matched with training, childcare needs and for some acquisition of English.

INTRODUCTION

The COVID-19 pandemic has reshaped the economic and employment landscape in dramatic ways. The fear of contagion, the testing and vaccine regimes, and the rise of digital alternatives have changed every community and made labor scarce in many places.

The current labor shortage already existed prior to the pandemic, and it has simply gotten worse. The consultancy Manpower notes that the percentage of firms reporting shortages of labor more than doubled between 2015 and 2020, to 70%.[2] Covid, of course, worsened the situation dramatically. By March 2021, over 19 million people had applied for jobless benefits, even when 7 million jobs were open. Today, well into the post-pandemic economy, labor participation rates have dropped to levels not seen since the industrial dislocations of the 1970s. "The people shortage was already coming," notes the consultancy EMSI in a recent report. "It was already here. All 2020 did is act as an accelerant."[3]

More than ever, people, their skills and determination matter. The future of economic development will be shaped not only by such traditional factors as environmental regulation, taxes, or subsidies, but the availability of labor, most particularly skilled blue-collar workers. This is driven long term by critical global demographic shifts — not only in America — brought about by declining fertility rates, and a shrinking supply of labor. By 2028, Korn Ferry projects there will be a deficit of at least six million workers.[4]

In this new situation, the key priority falls to attracting and training your workforce. As the digital revolution has reduced the need to locate in expensive, demographically aging Northeastern and California metropolitan areas, new opportunities are emerging in much of the heartland. Workers are achieving a kind of leverage not seen since the Second World War, and they are choosing their jobs not only for income, but for what their salaries can actually pay for in terms of such basic things as housing, daily expenses, good schools, and ease of commute.

In many ways, these new conditions play to the heartland's strengths, such as a tradition of skilled labor, and lower costs, which make blue-collar and middle management positions more rewarding than in highly priced locales. Even fertility could play a powerful role, as young families move to the heartland. Once seen as old and irrelevant, many heartland regions now have younger profiles than the great eastern or west coast states, particularly in Texas, as the coastal centers have seen their workforces and birthrates decline.[5]

Exploiting these demographic and workforce advantages could prove critical to the region's future prospects. Fortunately, this challenge is being embraced across the heartland, with the proliferation of job and skills training programs. The new labor situation may pose many difficulties, but it also presents an opportunity for the heartland to create a better future for its inhabitants. (See accompanying piece by Mark Schill on our website.) This report describes the trends that are reshaping the way businesses interact with labor and how the heartland can capitalize on them.

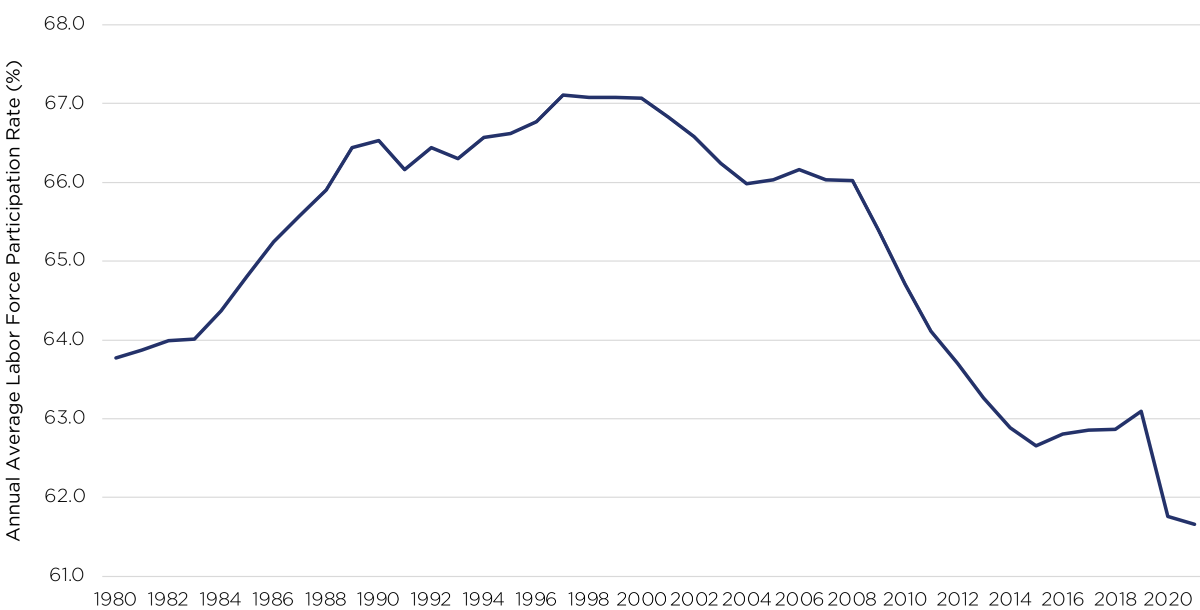
DEMOGRAPHIC AND ECONOMIC SHIFTS

A decade ago, Gallup's Jim Clifton wrote about The Coming Jobs War, predicting a global struggle for good jobs. Now we face a quite different reality: plenty of work but many people are not interested. In the U.S., labor force participation fell from its peak of 67.1% in 2000 to 61% now, down from 64.7% in 2010.[6] Males have in particular been leaving the workforce, a phenomenon that extends from boomers to millennials. Indeed, among younger males, the trend has been to stay at home with parents longer and work only part-time. Since 1980 male labor participation rates dropped by five percentage points.[7] An estimated one-third of American working age males are not in the labor force, suffering high rates of incarceration, drug, alcohol and other health issues.[8, 9] Add to this the "Great Retirement," when 3.2 million more retired in the third quarter 2020 than in the same quarter in 2019 (rising from 25.4 million to 28.6 million) according to the Pew Research Center, creating a silver tsunami of baby boomers.[10]

This situation is unlikely to improve soon, and it could lessen as our birth rates hit record lows; by some projections, not only will the labor force begin to shrink, but, by 2060, so will the overall population. The swelling of the boomer generation, amplified by the dramatic growth of women into the workforce drove economic prosperity. But the boomers, with fewer children by household, barely replaced themselves, and set in motion what EMSI, economic data analytics advisors, describes as a "demographic drought."[11]

This has profound implications for business. Nearly 90% of companies surveyed by the U.S. Chamber of Commerce cited a lack of available workers slowing the economy, more than twice as many as blamed pandemic restrictions.[12] And despite the increase in demand for workers, labor force participation rates have remained well below historic norms.[13] In the U.S., notes the Chamber of Commerce, there were four available workers for every job in 2012, a number that is now barely 1.4, half the historic average.[14] This has been made worse by the decision of boomers — at a record level in 2021 — to leave the workforce, reflecting to some degree frustrations with the pandemic economy but also the relative wealth of that demographic group, arguably the wealthiest in history.[15]

U.S. LABOR PARTICIPATION RATE, 1980-2021



Source: Federal Reserve Bank of St. Louis.

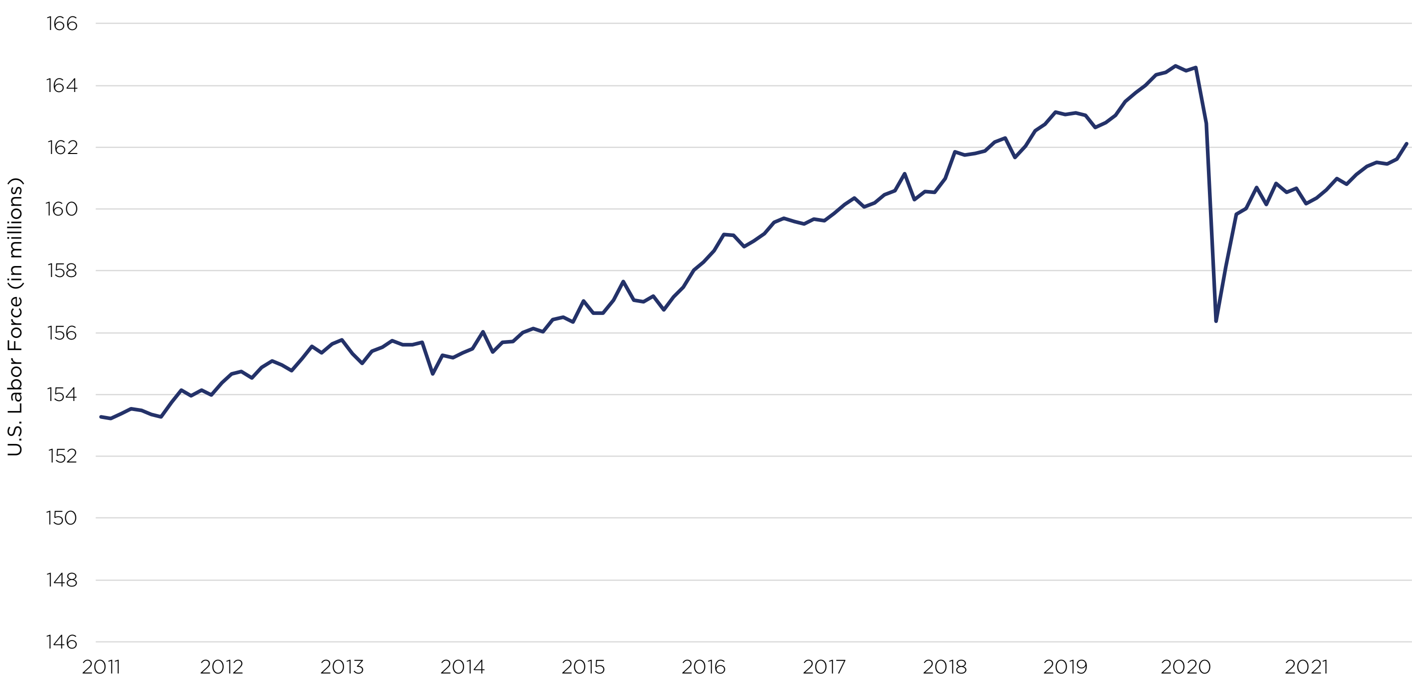
Some quit work sooner than planned, taking advantage of surging stock prices and home values; others did so under duress, having lost jobs in the recession and facing little prospect of finding employment again. Whatever the reasons, workers last year quit jobs at a record level – more than 4.5 million in November 2021 – and the overall workforce remains 2.4 million below the pre-pandemic high. Despite the high demand for labor, the number of Americans unemployed for at least a year reached 2.9 million in June, which is equal to about 29% of all the jobless.[16]

In the face of an all-time high of workers quitting jobs in 2021 and the decades-long decline in labor force participation, the second half of 2021 also saw record numbers of hires with several months of more than 6.5 million per month. This is more than any time since 2000. This suggests that while some workers may be leaving the workforce, many more are quitting in favor of better opportunities.

Although the pandemic clearly worsened labor shortages, long-term demographics suggest the workers may be hard to find in the coming decades. U.S. population growth between 16 years old and 64 years old has dropped from 20% in the 1980's to less than 5% last decade.[17]

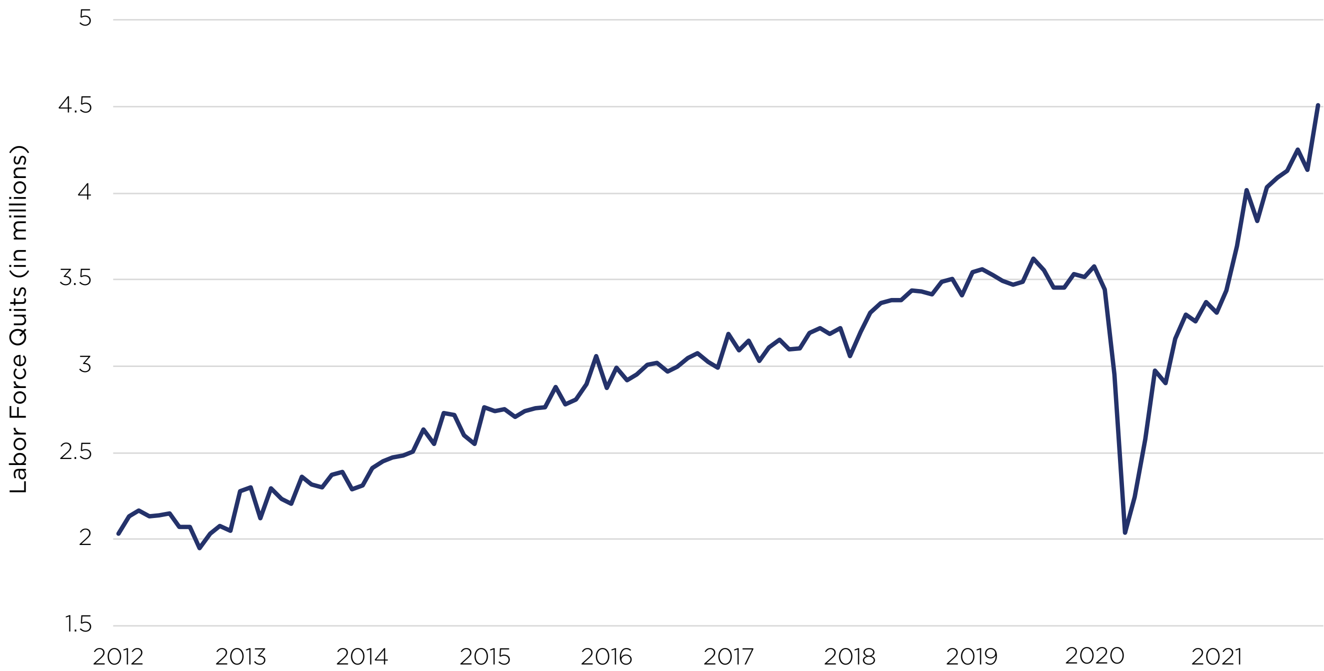
This is not a uniquely American experience. Almost all industrial powers face a growing worker shortage. This includes China, whose population is expected to decline, though there are multiple estimates. The United Nations expects a decline of about 10% by 2065,[18] though a Xi'an Jiaotong University (China) report expects China's population to halve by 2065.[19] Between 2020 and 2021, there was a slight decline (0.2%) in its under 60 population.[20] Germany, a long established industrial powerhouse, suffers from a persistent lack of new workers, a factor in the notable slowing of their formidable manufacturing sector.[21] Beyond the numbers lie the problem of attitudes.

U.S. LABOR FORCE SIZE, JANUARY 2011 – NOVEMBER 2021



Source: U.S. Bureau of Labor, Local Area Unemployment Statistics

U.S. LABOR FORCE QUITS BY MONTH, JANUARY 2012 - NOVEMBER 2021



Source: U.S. Bureau of Labor, Job Openings and Labor Turnover Survey

A REVOLT AGAINST WORK?

Among some young people — even in China — there is a reluctance to embrace hard work, instead seeking to "lay flat" as they essentially avoid the congestion and stress of urban life.[22] Increasingly, many adopt the notion that work simply does not pay off. Many jobs that could support families have disappeared, and most new opportunities tend to be low wage service work.[23]

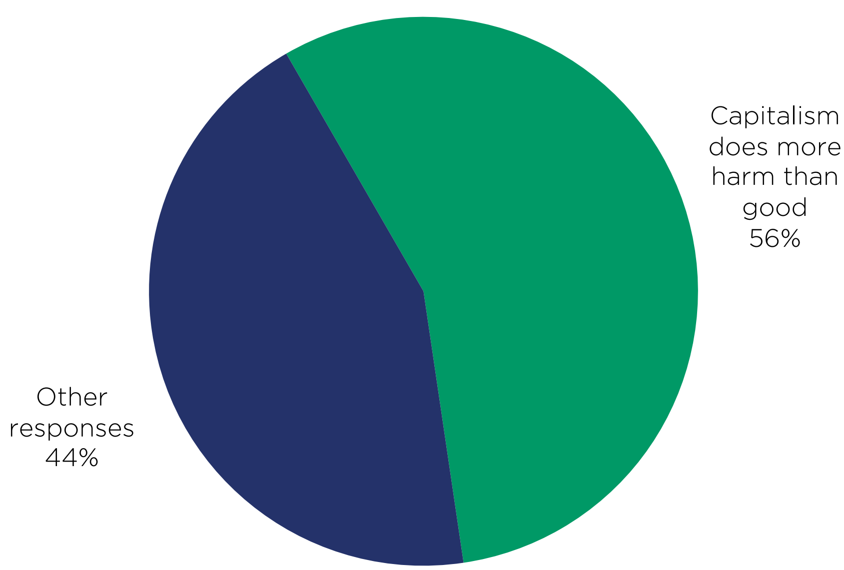
Indeed, one widely cited reason for the recent labor shortages relates to a post-pandemic reluctance to take low wages and face uncertainty, which is common in the "gig" economy where pay and hours are often uncertain.[24] There is even a systemic breakdown towards the market system itself. A strong majority of people in 28 countries around the world, according to a recent Edelman survey, believe capitalism does more harm than good. More than four in five worries about job loss, most particularly from automation.[25]

Rising wages point to a shift towards a workers' market for labor, particularly in recent years. Since 2015, the current usual median weekly wage for full-time workers rose more than 25% nationally to roughly $1,000. In the five preceding years that figure grew less than 7%. So, while some wage growth may be pandemic-induced, the virus appears to be more of an accelerant than an igniter.

"It's a workers labor market now, and increasingly so for blue-collar workers," notes Becky Frankiewicz, president of Manpower, Inc. "We have plenty of demand and not enough workers."[26]

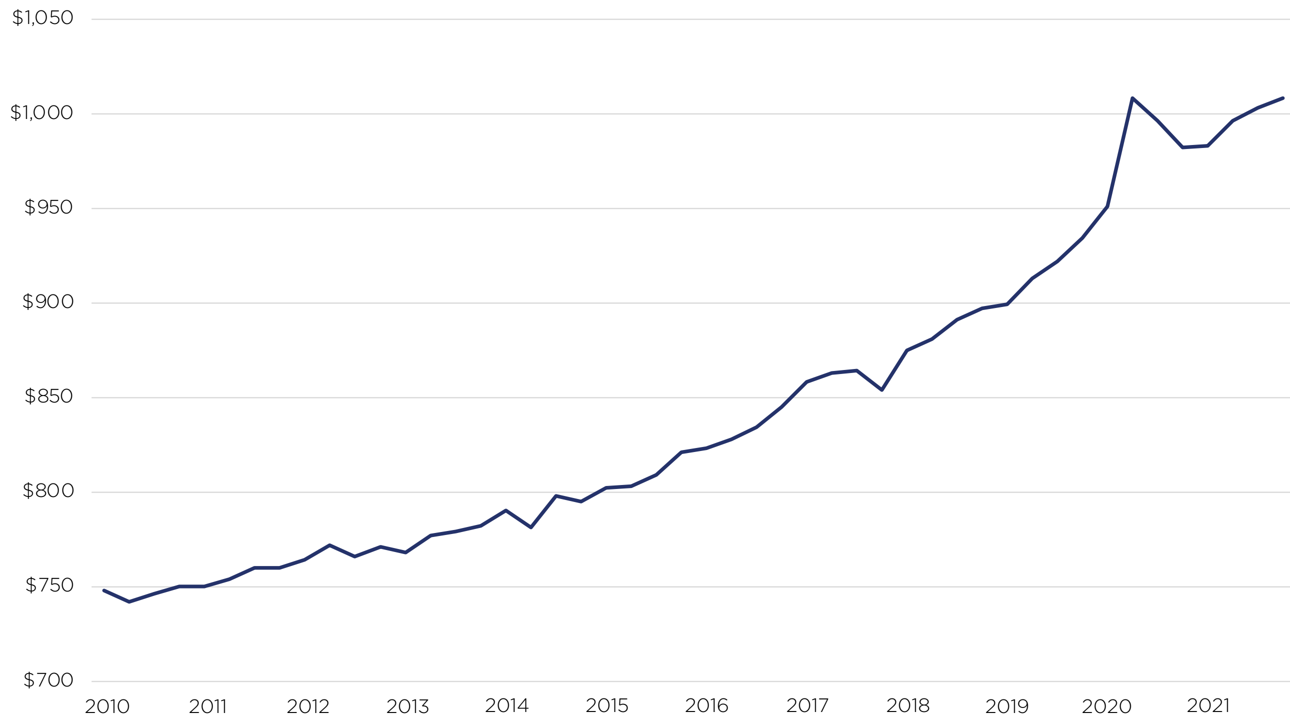
The disruption is particularly marked towards the lower end of the job spectrum. As of November 2021, sectors relying on lower-paid workers – such as hospitality, entertainment, and retail – suffered the most churn with high quit rates and high hiring rates. More than 6% of hospitality workers resigned in November 2021, followed by retail (4.4%), and professional services (3.7%). Health care resignations reached 3%, a 20 year high and more than double the rate in 2010.

INTERNATIONAL SURVEY ON INEQUALITY. CAPITALISM DOES MORE HARM THAN GOOD?



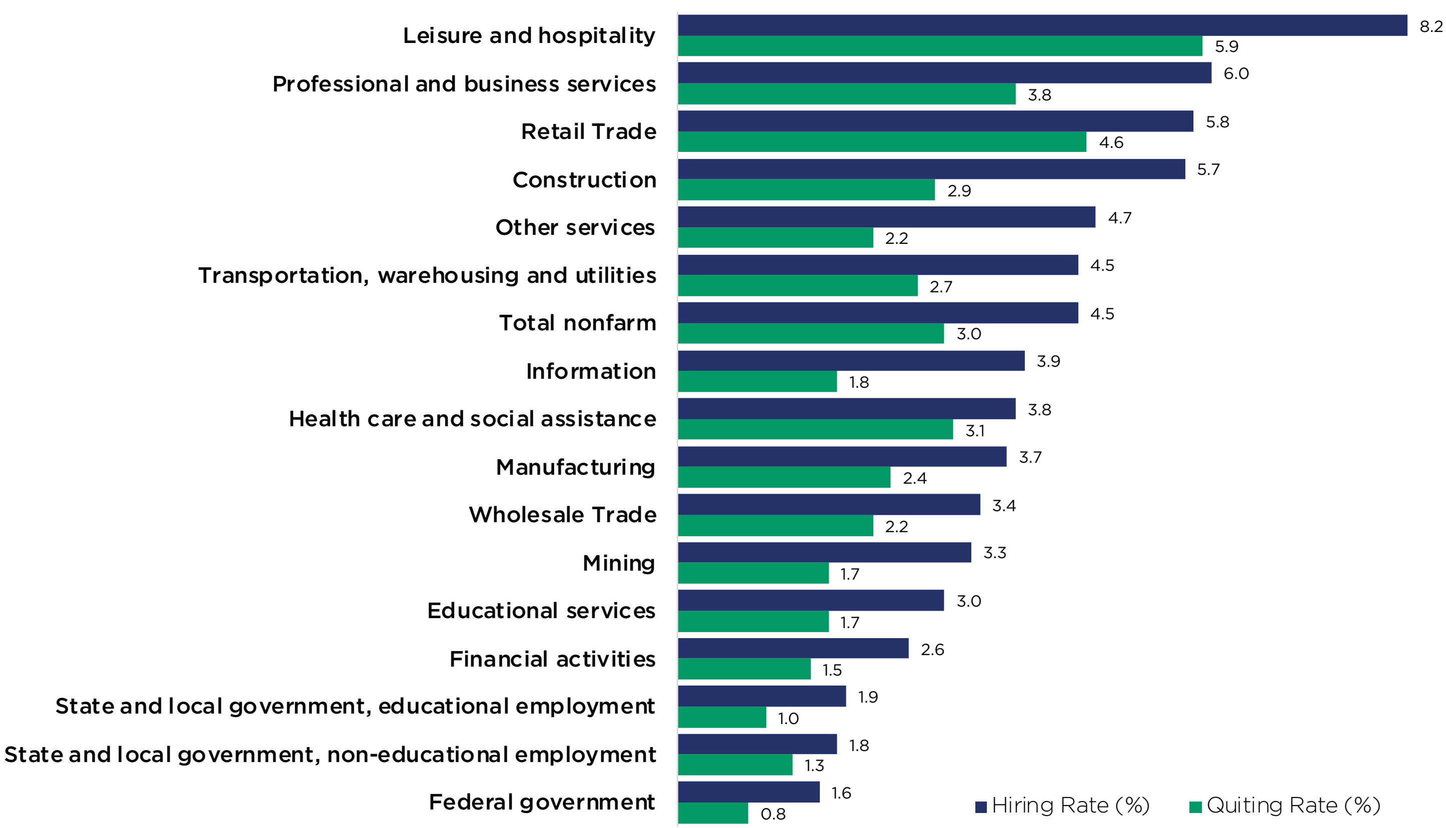
Source: Edelman

MEDIAN USUAL WEEKLY EARNINGS FOR FULL-TIME WORKERS, Q1 2010 – Q4 2021



Source: U.S. Bureau of Labor, Current Population Survey

HIRING AND QUIT RATES BY INDUSTRY, NOVEMBER 2021



Source: U.S. Bureau of Labor, Job Openings and Labor Turnover Survey

THE CHANGING, HIGHLY VOLATILE LABOR MARKET

Some reluctance to seek employment may be linked to concerns, not at all unfounded, that many jobs will be eliminated by automation. And to be sure, opportunities could be further reduced by technology, which could accelerate the loss of many kinds of jobs that once provided a means of upward mobility: postal workers, switchboard operators, machinists, computer operators, bank tellers, travel agents. For the 90 million Americans who work in such jobs — and their counterparts elsewhere — the future could be bleak.[27]

The pandemic clearly accelerated this process, notably in the service sector. With the shift to online and takeout food, chains like McDonald's are perfecting electronic delivery systems that reduce the need for human labor.[28] Yet in the supply chain crisis, it's not a shortage of engineers or financial analysts that is hurting most, or where demand may be greatest. Instead, it's the often disdained, and dismissed, blue-collar workers, including those with skills that are most needed, and missed when not available. After all, when the pandemic hit, it was their efforts, and risks that they took, that kept society functioning as the "laptop class" stayed behind their screens.[29]

Similarly, as the reach of artificial intelligence (AI) grows, it won't just be the low-end workers who suffer, but also those who now have jobs such as computer programmers. CEOs and top technologists may survive the robotic tsunami, but many more ordinary tech and service jobs won't be so fortunate for long-respected professions like paralegals andaccountants.[30] Automation of information, former Google China President Kai-Fu Lee suggests, will end up wiping out the "coders." Lee, a venture capitalist and author of "AI 2041: Ten Visions for Our Future," predicts, "a lot of employees are going to feel like turkeys waiting for Thanksgiving."[31]

An automation index developed by economic data firm EMSI suggests that hands-on, productive occupations will be the most susceptible to automation. These include food preparation, buildings and grounds, production, transportation, farming and repair. These jobs comprise about 54 million workers, roughly one-third of the nation's workforce. Yet because this work is critical to a functioning society, these jobs are not likely to be totally eliminated, but rather they will continue to become higher-skill and higher-wage as technology improves.[32]

Indeed, as both Lee and Silicon Valley entrepreneur and venture investor Rony Abovitz suggest, AI cannot do everything. In the new labor market, it's better for service workers, but even more for people who can install plumbing systems or maintain machines.

"It's the end of the white-collar knowledge work," Abovitz currently founder of AI startup Sun and Thunder suggests. Instead, he predicts that the future will be shaped more by the rise of this sophisticated, technically capable blue-collar worker."[33]

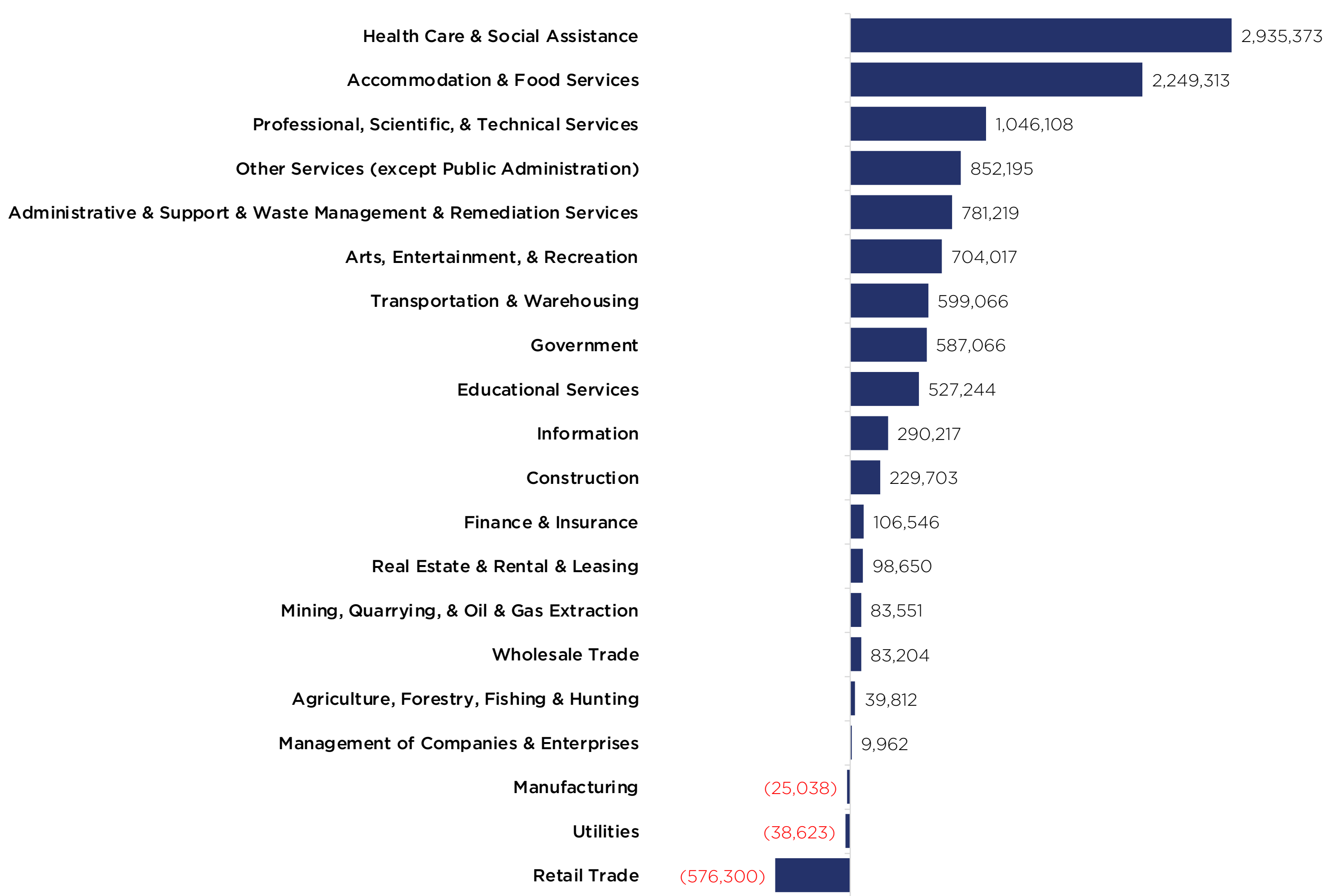
INDUSTRIES WITH THE WORST SHORTAGES

Despite these trends, President Biden and politicians of both parties talk about having factory workers and oil riggers "learn to code."[34] But in the real world, companies are crying most for skilled, dependable workers who can do all the basic tasks, like drivers, machine tool operators and welders. Louisville, a major center for transporting goods, now faces a shortfall and the local Chamber has shifted its focus from attracting hipster college graduates to people whose labor is needed in a place where living costs allow blue-collar workers a decent quality of life. "You can have a good life here in our community without a degree," suggests Sarah Davasher-Wisdom, CEO of the regional Chamber.[35]

Unlike white-collar business service or tech firms, manufacturing and healthcare businesses need workers with specialized skills who can't do their jobs remotely and require training as well. Filling these positions means more than just filling slots and raising wages; they also require training, mentorship and nurturing.

Healthcare is a particularly critical area, with some of the most rapid projected job growth. It is projected to add nearly three million jobs in the United States over the next decade, more than any other sector.

PROJECTED U.S. JOB GROWTH BY SECTOR, 2021-2031



Source: EMSI

"Healthcare like everywhere else continues to be tight back, starting before the pandemic hit," notes David Brown, president and CEO, Greater Omaha Chamber. "So, nursing primarily, the technicians, medical technicians, that's always been a challenge.

Even though we've got three medical systems and lab nursing schools, there's still just not enough. So that's been one of our challenges. Some states, like Nebraska, are so short on nurses that they are now paying $5,000 bonuses for those who take a job in a local hospital."[36]

Efforts in Omaha, Nebraska, have included medical training to extensive job training efforts, with a special emphasis on recruiting students from the fast-growing Latino community.[37] Across the heartland, the demand for nurses is particularly acute, including for long-term care facilities, many of which are major employers in small communities. Sign-on incentives of $5,000-$20,000 are common across the state of North Dakota, and, while the pandemic has exacerbated the situation, most bonus programs pre-date COVID-19 with the state's Department of Commerce pitching in an additional $4,000 relocation incentive. Yet, it is becoming harder to recruit staff from outside the region, notes Adam Broers, a human resources director for an assisted living facility in Fargo, North Dakota. "Oftentimes it seems like we may get applicants from outside the area, and we just aren't seeing that," he said.[38]

In Minnesota, staffing shortages have prevented 70% of nursing homes from admitting new residents. The state has responded with a tuition waiver program to train 1,000 new Certified Nursing Assistants, including Crystal Haugen, a 33-year-old completing a certification program at Minneapolis College. She saw intrinsic value in a transition to work as a caregiver. "I was already going to do it regardless," she said. "I just knew that since COVID happened there's been a shortage everywhere job-wise, and I'd rather just have the background and knowledge to be able to help."

TIME FOR A MORE PRACTICAL APPROACH TO LABOR FORCE TRAINING

Omaha's response to its shortfalls, the Chamber's Brown suggests, has been a rapid expansion of the internship program Intern Omaha, which has relations with a dozen local employers and emphasizes ties between skills-training and companies. There's a clear need for building housing and other infrastructure and providing medical care, but he sees this demand could be satisfied with intensely targeted skills training; most employers now prefer this for many jobs over a college degree.[39] He projects that the region will need at least 25,000 internships to meet future needs. "So, we've got to have businesses and educators talking more than they ever have. "Cause I think with new technologies and new trends, businesses acknowledge it quicker than academics do. And we've got to make sure that that communication is happening pretty regularly."[40]

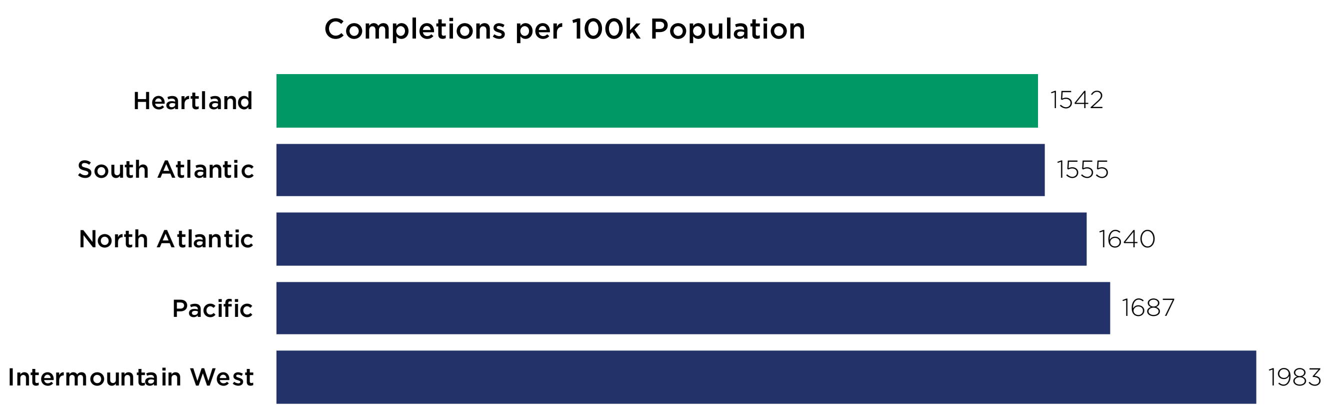
Such coordination between industry and educational institutions, notes a recent Rand study, are critical to making such programs work. The Louisiana Department of Education, for example, works closely with local employers to identify the skills needed locally and builds high-quality certification programs that gave students a marketable credential upon graduation. School officials there reported that the vocational program — called Jump Start — was most effective when local employers were actively engaged.

Chevron, with several private foundations, led the Appalachia Partnership Initiative that provides STEM teacher training and workforce development programs across a tristate region — Ohio, West Virginia, and Pennsylvania — around Greater Pittsburgh.[41]

Such job-related training is particularly imbedded in the heartland. Although it still slightly lags the coasts for bachelor's degrees, the heartland benefits from a high degree of participation at community colleges, and certificate programs play an outsized role in the region. In fact, the four states with the highest percentage of associate's degree graduates are all in the region: North Dakota, South Dakota, Minnesota, and Iowa. Generally speaking, smaller metropolitan and micropolitan areas, which are predominant in much of the heartland, also boast considerably higher rates. New York, Los Angeles, San Francisco, and Washington sit near the bottom.

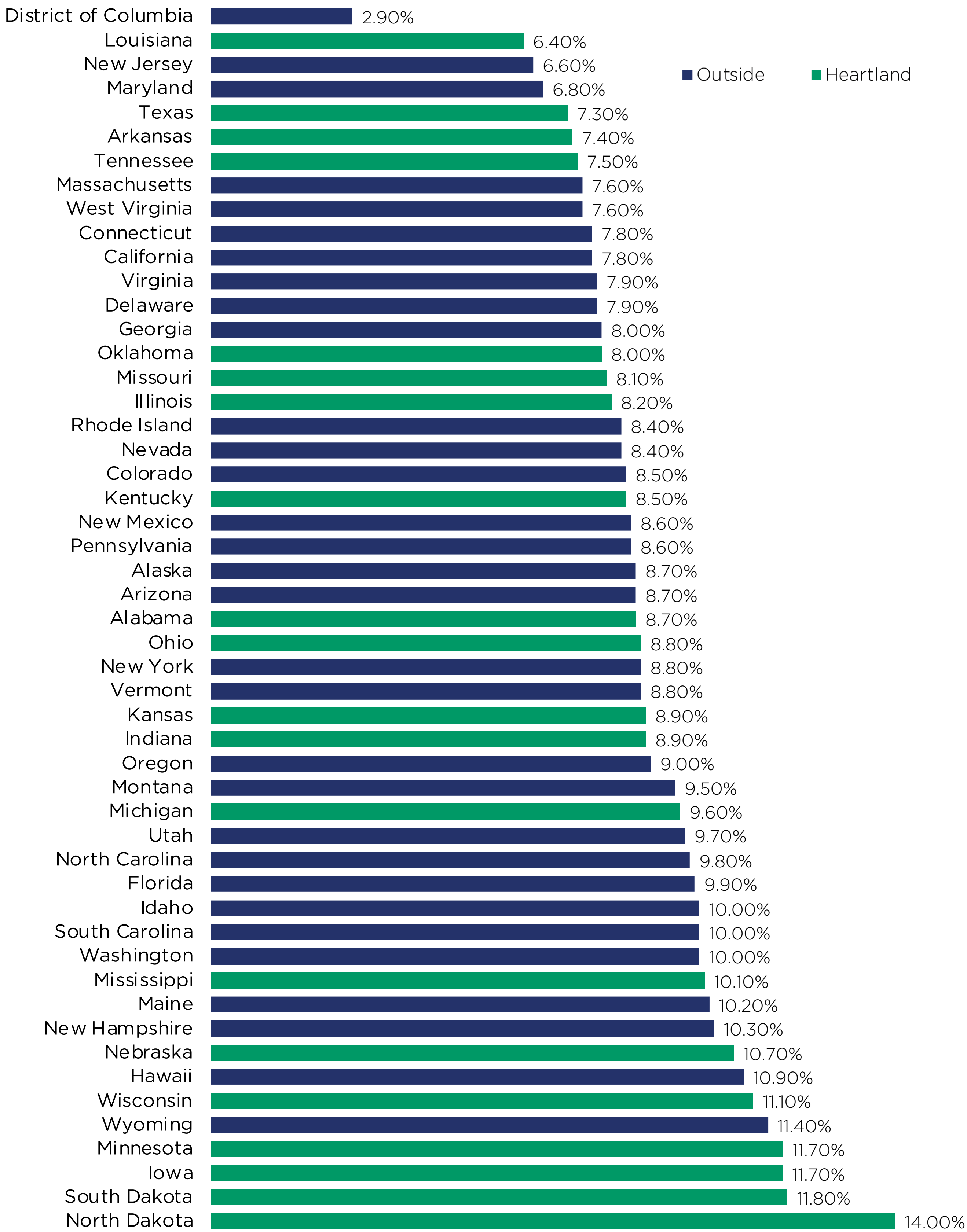
This trend may be accelerating. In the past decade, the heartland grew its population with associate's degrees by roughly twice the rate experienced in the Pacific or the Northeast. It also leapt ahead of the country in terms of certificate programs.

TOTAL DEGREE COMPLETIONS RATE BY REGION, 2020



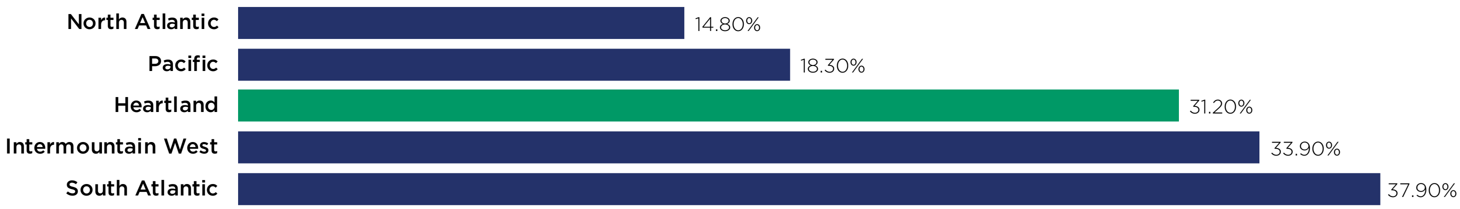
Source: National Center for Education Statistics, obtained via EMSI

SHARE OF RESIDENTS WITH A TWO-YEAR DEGREE, 2020



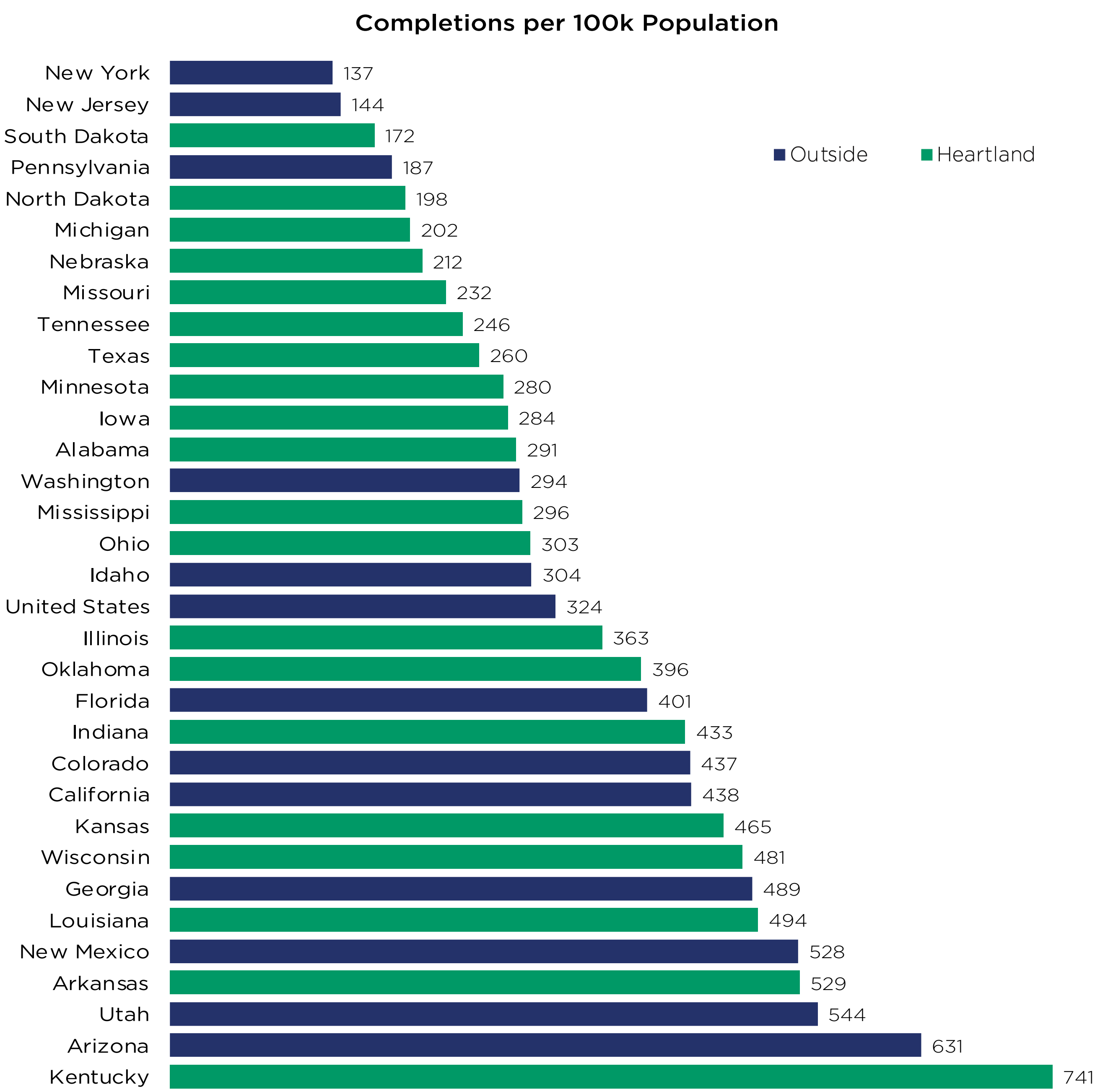
Source: U.S. Census American Community Survey, EMSI Estimates

GROWTH OF RESIDENTS WITH A TWO-YEAR DEGREE, 2010-2020



Source: U.S. Census American Community Survey, EMSI Estimates

CERTIFICATE COMPLETION RATE BY STATE, 2020



Source: National Center for Education Statistics, obtained via EMSI

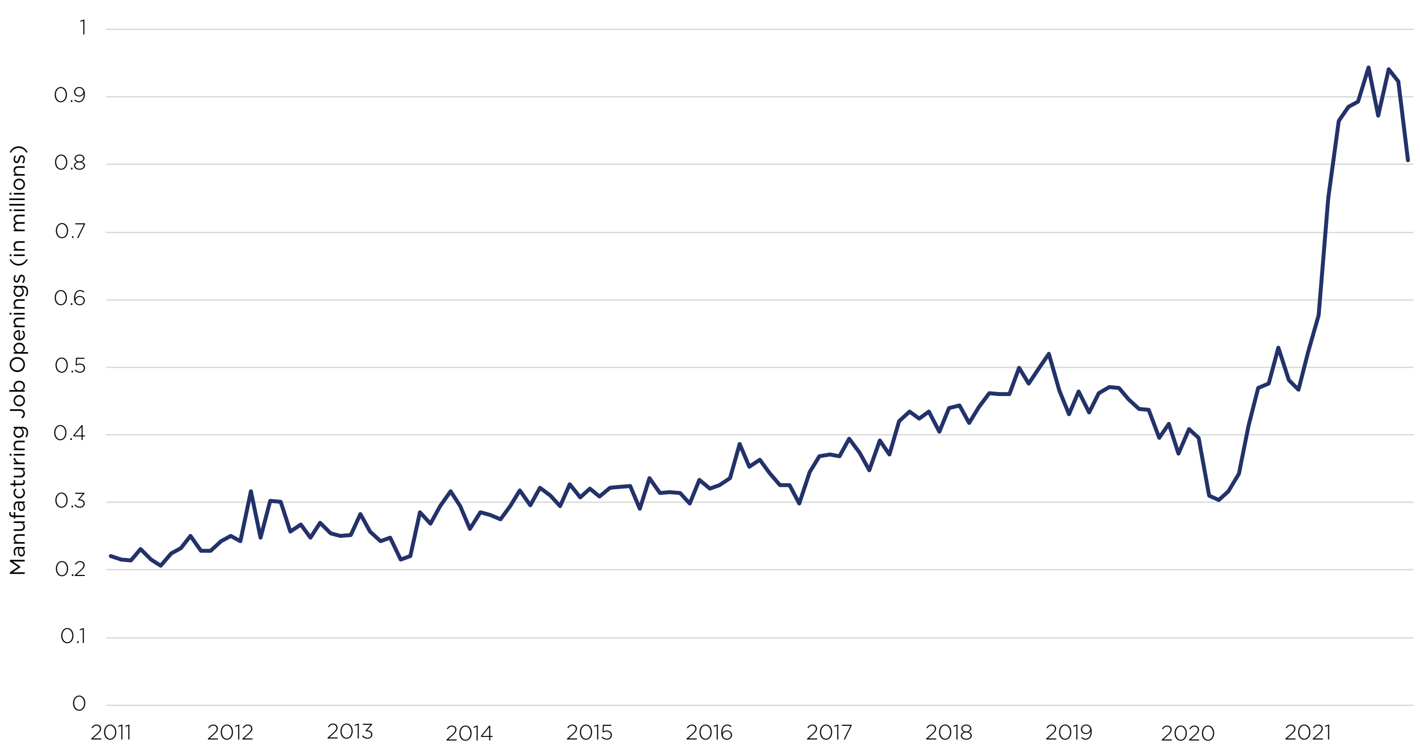
CRISIS AND OPPORTUNITY ON THE FACTORY FLOOR

The current labor shortage, and predictions for its continuance, suggest that skills in such fields as manufacturing, logistics and home-building, are likely to remain long in demand. [42] Ned Hill, who is affiliated with the Ohio Manufacturing Institute at The Ohio State University's College of Engineering, believes the greatest future demand will not be for the unskilled, semi-skilled or from the current college environment, which continues to churn out a vast number of credentialed workers who have little in the way of usable skills.

Even among those who manage to finish, more than 40% of recent graduates aged 22 years old to 27 years old are underemployed, meaning that they're working in jobs that don't require their degree, the Federal Reserve Bank of New York reports.[43] This incongruence has arisen even though, after nonwage benefits are counted, manufacturing workers earn 13% more in hourly compensation than comparable workers elsewhere in the private sector and employment in the industry has grown this decade.[44,45,46]

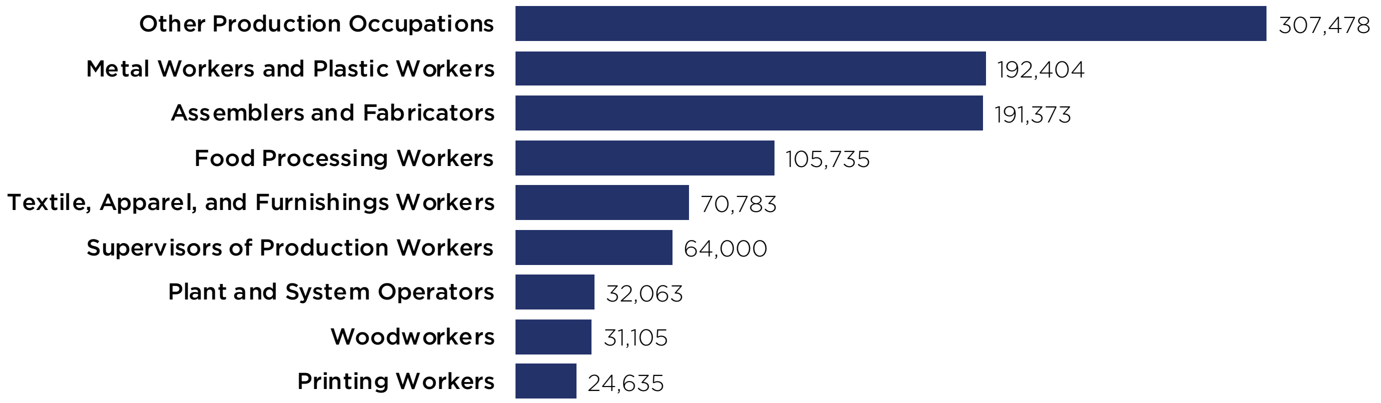
The problem, Hill suggests, is that over recent decades schools have pushed students into four-year programs with little practical use, as younger generations have avoided anything connected with manual skills. A generation or two that has avoided industrial skills is a big part of the problem. "We have to prepare for the silver tsunami," suggests Ned Hill, professor at The Ohio State University's John Glenn College of Public Affairs.

U.S. MANUFACTURING SECTOR OPENINGS, JANUARY 2011 - NOVEMBER 2021



Source: U.S. Bureau of Labor, Job Openings and Labor Turnover Survey

PROJECTED AVERAGE ANNUAL JOB OPENINGS FOR PRODUCTION WORKERS, 2021-2031



Source: EMSI

Hill suggests that the manufacturing workforce over the age of 55 has doubled in the last 10 years to 20% of active workers. And there is no deep bench of talent waiting to replace retirees — 50% of the active workers are above the age of forty-five. As many as 600,000 new manufacturing jobs are expected to be generated this decade which cannot be filled. The current shortage of welders could grow to 400,000 by 2024. Amid a mild recovery in the U.S., by late 2021, nearly one million manufacturing jobs were left unfilled.[47]

Today, the most severe shortages, notes Liz Herrera, human relations expert at Hendrickson, an Ohio-based firm that specializes in heavy duty suspensions for trucks, are closer to the assembly line. "We are all in the same boat, and we need people with special skills," she notes. "That's the big challenge."

The good news is that more heartland manufacturers support programs that offer technical skills. As other parts of the country have largely avoided such training, Ohio, Kentucky, Nebraska and Tennessee also have developed flexible training programs following the successful approach employed in European countries like Germany, Sweden and Denmark.[48] Tennessee has used its training program as a lure for car companies such as Ford and other manufacturers; it's become a critical part of its success in transforming the state into a center for the emerging electric car industry.[49] Tennessee has developed programs not only for welders and other skilled workers, but has employed and developed an extensive apprenticeship system to cope with the perennial shortage of teachers and training of cyber security professionals. [50]

LIFE CHANGING OPPORTUNITIES

For students, the pitch is largely economic and has led to the growth of trade school options for the heartland region's new generation. This approach to education is, as Area Development put it, "in overdrive" around the country, particularly in the manufacturing growth regions of the heartland. Up to 4.9 million low-wage U.S. workers may need to transition into higher-wage roles and develop new skills to remain employed in the digital economy, according to McKinsey.[51] Thus, in early 2020, Coursera launched its Workforce Recovery Initiative to help governments respond to the unemployment crisis caused by the pandemic. To date, this program has supported displaced workers in more than 25 states by providing free access to thousands of online courses for skills training.[52]

The labor shortage could provide opportunities for advancement even in some of the hardest hit, most economic vulnerable populations of the heartland. New training initiatives in the St. Louis area, for example, are providing practical skills training in places like East St. Louis, Illinois and the inner city on the other side of the Mississippi, with particular emphasis on construction and solar installation skills. They are certainly meeting a need: According to data published in the 2021 State of the St. Louis Workforce report, which surveys regional employers, skilled trades were the most in-demand business function last year, with 74% of firms who employ such workers reporting a shortage of applicants. That's a 14% increase over what was reported in 2020. Programs have also been developed to provide technicians and other specialists for the area's burgeoning biotechnology industry.[53]

"Employers need to be more strategic about growing talent, particularly with middle-skills jobs – those that require more than a high school diploma but less than a four-year college degree, such as a quality control analyst or a laboratory technician – being the most in-demand," said Jeff Pittman, chancellor of St. Louis Community College.[54] This may well be the rising force in American education. Indeed a survey taken in 2020 found that only a third of undergraduates see their educations as advancing their career goals, and barely one in five think the bachelor's degree is worth the cost.[55] The vast majority of young people , according to surveys by EMSI, prioritize such things as finding a good paying job over the social uplift and hefty tuitions associated with four-year colleges.[56] A recent survey of 175 higher education leaders found that 80% consider student success a critical priority, but just 11% saw significant increases in the numbers of non-traditional students and two-thirds felt their institution struggled to meet the needs of these students.[57] Overall college enrollment is not simply dropping, but has fallen a full 11% in the past decade.[58]

Grand Island's Central Community College welding instructor Michael Snell suggests that manufacturing skills guarantee a better shot at a higher wage job.

"This gives you an opportunity, right when you get out of high school, or even in high school, to have a good job, and some kind of direction in life. Even if you don't want to be a welder forever, at least you can use that to get to where you want to go. Snell said, "Manufacturing is the backbone of the world. There are just so many different avenues to go with manufacturing, whether you're going to be a welder, or start off as a welder, and then possibly move into something else. There are just so many different avenues to take."[59]

The appeal is strongest to those who need to improve their conditions, particularly for their families. In places like Ohio, where new plants are growing in numbers second only to Texas, concern over worker training and recruitment has led to a proliferation of training programs.[60] "We really need practical skills more than anything for our business," notes Andrew Lower, who helps run the factory floor for TDK's 420-person plant, up from 30 in 1999, that makes components for Tesla as well as for numerous firms who build semiconductor- making and medical equipment. "There's an imbedded history of manufacturing skills. This is a place that celebrates people who dress in blues and work in a factory."

This is particularly critical for smaller firms who lack the internal resources of a TDK but represent the vast majority of employers. The state has a long history of technical training, going back to the late 1820s, as the state began its early industrial phase.[61] In more recent years, the state has implemented career training alternatives for specific skills, with a 98% graduation rate, with the vast majority finding jobs or advancing to higher education.[62]

To meet the need for labor, local companies in places like Central Ohio have developed the local Career and Technology Center, called C-TEC, which essentially collaborates with companies, local high schools, and colleges to train skilled workers. Joyce Malainy, the school's superintendent, has expanded its apprenticeship program by 29% over the last five years, seen a sizable increase in advance job placements and added 35 new manufacturing partners.

This is an effort that allows new opportunities for non-college-bound students whose previous options would tend towards low paid service employment. C-TEC has developed alliances with the local NAACP and seeks to reach others challenged by life's circumstances. Students who sometimes struggled with high school learn to operate complex machinery, including 3-D printers and robotic arms.

"I used to worry about what I would do after graduation," local high-school senior Ian Kinkaid told me. "Now I have skills with 3-D printers. I feel confident for the workforce. Society will need these skills." These programs appeal to college grads, whose underemployment rate is nearly 50%, while those with a technical education enjoy a higher chance of their preferred employment, according to the U.S. Department of Education.[63,64] Indeed, the U.S. Department of Education reports people with career and technical educations are also more likely to be employed than their counterparts with more academic credentials.

Other C-TEC students credit it for helping turn around their lives. Tracy Garrison, a native of a small Piedmont town of less than seven thousand residents in North Carolina, struggled with her early life, getting pregnant at 14. Married with three kids and little education, she struggled to support them.

"My children finally got old enough, so I can do something better for them," Garrison, now a 31-year-old machining student. Garrison's machining skills are aiding her prospects at her current employer, a local plastics firm. "Before I started this program, I felt I couldn't do anything," she notes. "Now I feel I can do anything."

A CRITICAL OPENING FOR THE HEARTLAND

In the past, the heartland's expertise and concentration on basic industry had a devastating effect on many communities as foreign countries, notably China, came to dominate manufacturing. This created a sense that the region would remain hopelessly behind in a new economic regime where the only Americans with prospects lived on the coasts, working in technology, finance, professional services and leisure-related activities.

Yet that paradigm is shifting now. COVID-19, if nothing else, suggests what the price of de-industrialization can be. In the early months of the crisis, the U.S. could not produce medical equipment, notably masks and some drugs, since most production had shifted to China. Even the production of basic chemical products was difficult and pandemic-driven shortage of chips crippled auto and other production. The endless conga line of ships evident in and around the Los Angeles-Long Beach harbor illustrated the sad dependence of our country on others, notably our most powerful political rival.[65]

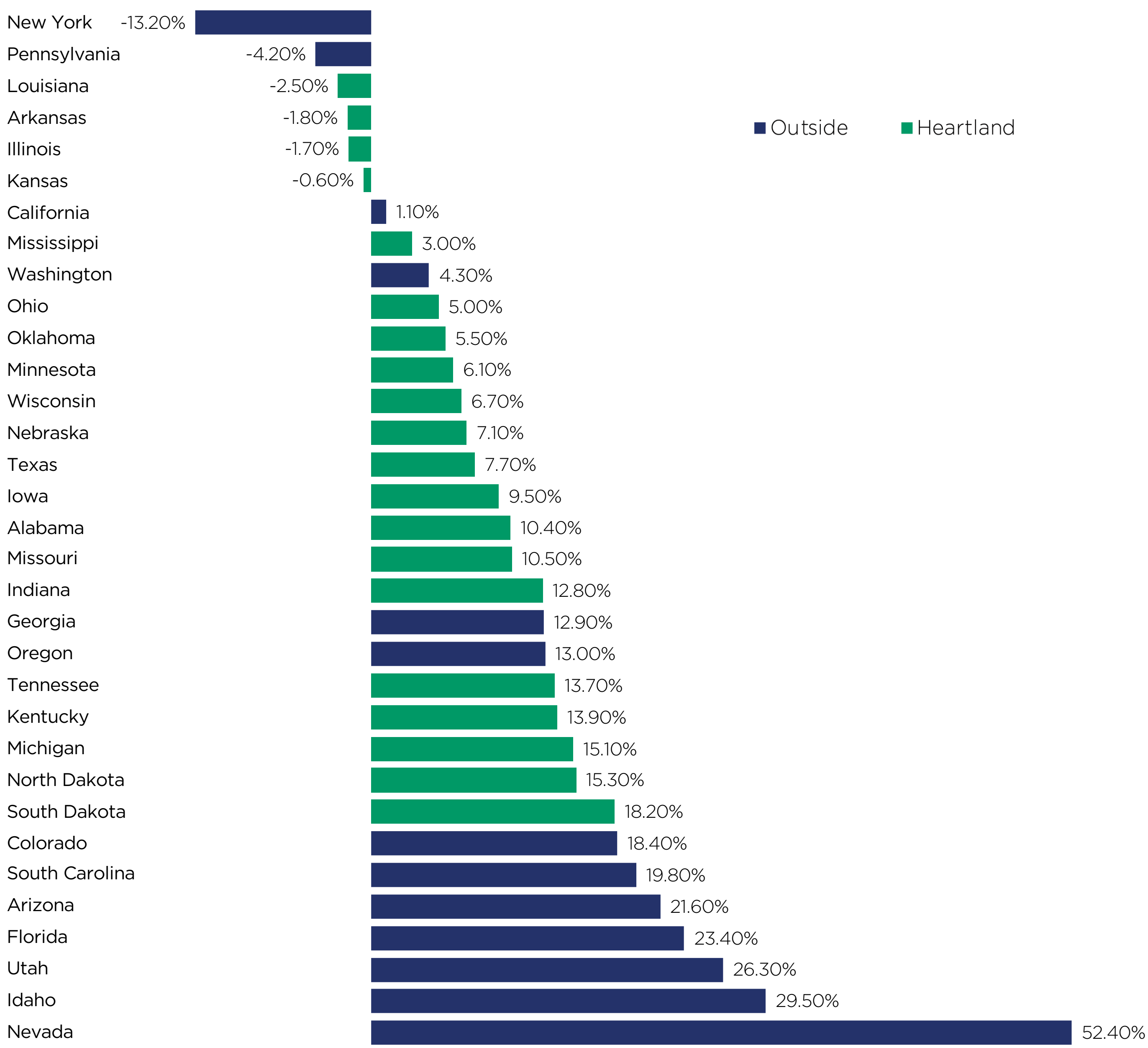
Critically some firms now recognize the need for a course correction. In the face of China's ambition to dominate semiconductors and other advanced technologies, there are signs of a shift in chip production back home.[66] Taiwan Semiconductor Manufacturing Company's decision to build a $12 billion new plant in Arizona and Samsung's plan to build a $17 billion facility in Texas, shows how the strongest Asian firms outside China see the U.S. as an ideal base for high-end chips.[67] On January 21, 2022, at the White House with President Biden, Intel CEO Pat Gelsinger announced construction of a $20 billion chip plant in the Columbus metropolitan area (New Albany in Licking County). The New Albany site investment could eventually reach $100 billion and become the world's largest chip-making complex, in what Gelsinger referred to as the "Silicon Heartland."[68,69] This is in addition to $20 billion investments in Intel's two Arizona plants.[70]

The shift towards reshoring, which we detailed in a previous report,[71] has made the production and transportation of goods major growth industries. Supply chain issues, impacting virtually the entire global economy, including the U.S., China, and Germany, are expected to last at least through this year. It is leading to serious rethinking about locating supply chains closer to the domestic market.[72] This is changing the corporate playbook for companies and leading a return back to the U.S. market. After losing seven million jobs between 1979 and 2010, manufacturing companies have added more than one million workers.[73,74] Similarly, the value of production from America's factories has jumped from $1.7 trillion in 2010 to $2.1 trillion last year and now accounts for 12% of our gross domestic product (GDP).[75,76]

It seems like those prime beneficiaries are likely to be states in the South, the Southwest and parts of the old Rust Belt: places where costs are lower, natural resources often abundant, and a pro-industry spirit still exists. Ohio, for example, after losing a half million factory jobs between 1990 and 2010, has gained 100,000 jobs back since then, and appears to have recovered its losses from COVID-19.[77] Almost all the states with the fastest industrial GDP growth are outside the coasts, led by Texas, Michigan, Florida, Kentucky, Tennessee, Arizona, Ohio, Minnesota and North Dakota.[78] These are also the states that, according to Supply Chain Digest, offer the best conditions for manufacturers; of the top 10 all are either in the South, the Midwest or the Mountain region.[79]

In contrast, the worst manufacturing performance was in the highly regulated mega states of California and New York.[80,81] California, the ultimate late 20th century advanced industrial region, has lost 700,000 industrial jobs in the current one.[82] New York City, which had one million such jobs in 1950, saw employment drop from 200,000 in 2000 to roughly 40,000 today. This pattern has held the past five years.[83,84,85]

MANUFACTURING JOB GROWTH BY STATE, 2010-2021

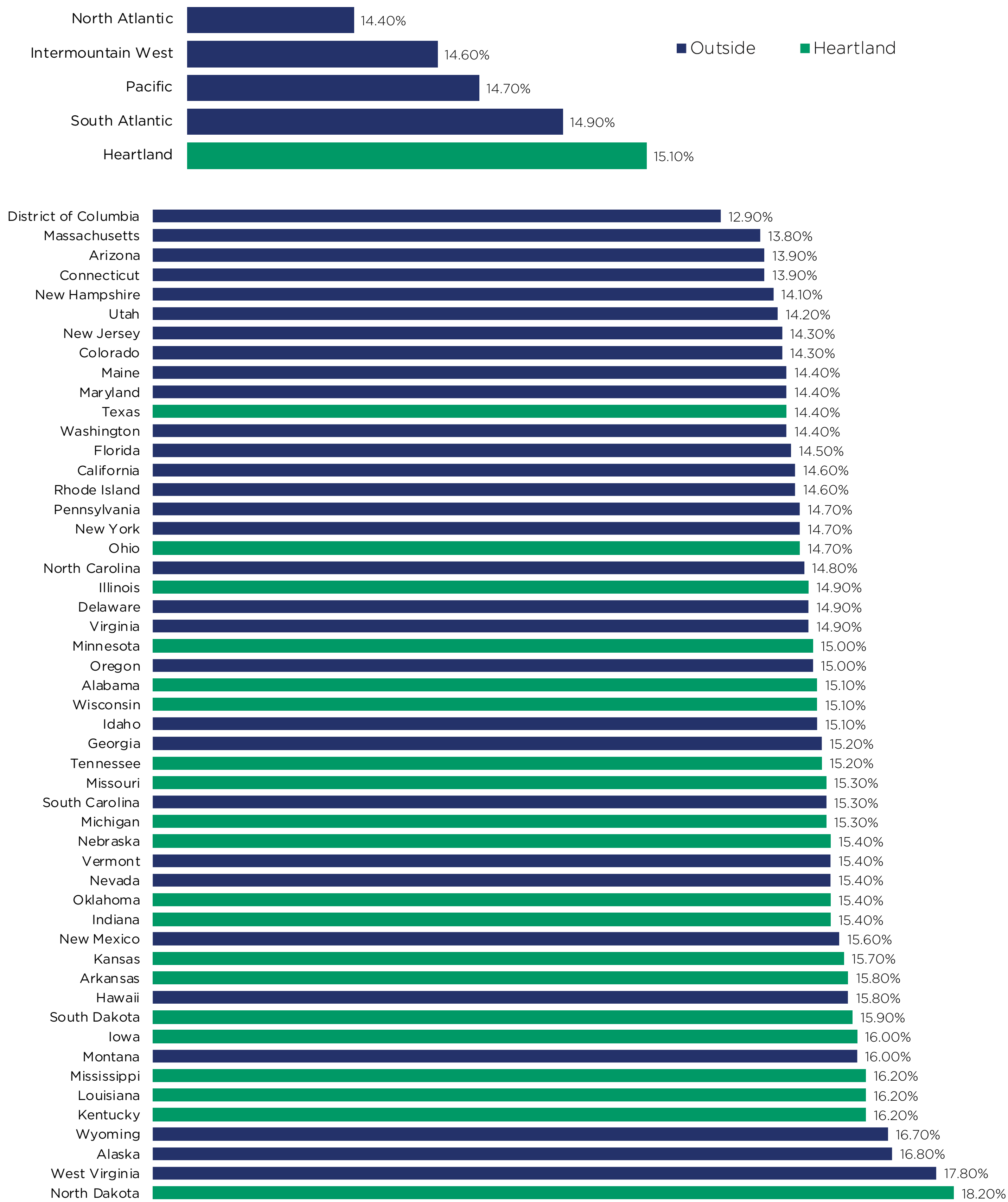


Source: EMSI

The pandemic, and the need for goods-production, has shifted the contours of the American recovery. Despite booms on Wall Street and Silicon Valley, most heartland states — notably all the Great Lakes states, outside Illinois — as well as those in the South and Intermountain West have recovered faster than California, New York or other northeastern states, with lower unemployment and better job creation.[86] Among the nation's 51 major metros, heartland regions accounted for four of the five lowest unemployment rates, and 13 of the top 15. New York, Los Angeles, and San Francisco clung to the bottom.[87]

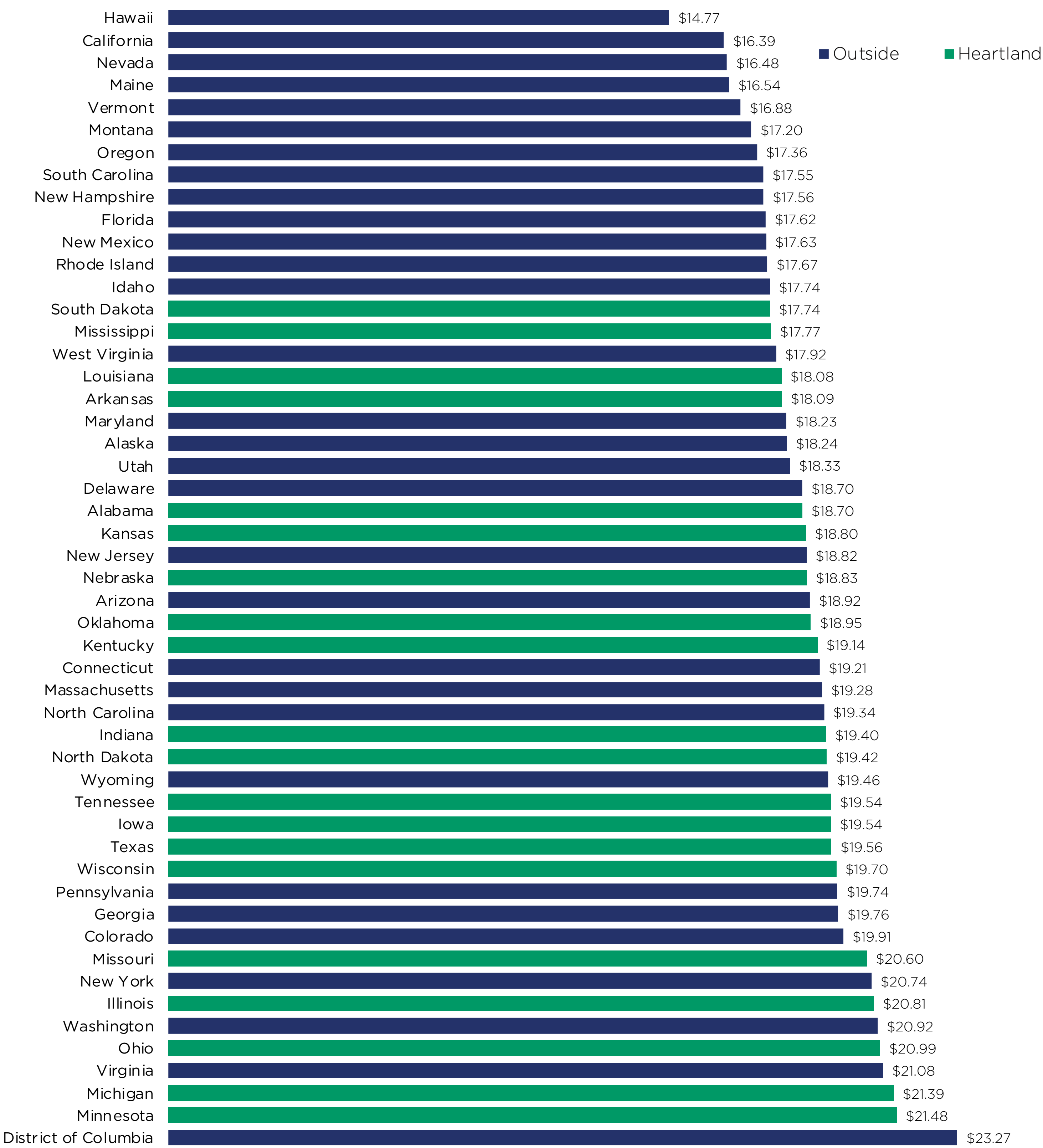
The heartland overall also leads the nation in job openings, according to the EMSI estimates. Twelve of the 20 states with the most openings are in the region, and this isn't due to lower wages. In fact, eight of the top 15 states with the highest wages per capita, adjusted for costs, are all located in the region.

AVERAGE ANNUAL JOB OPENINGS RATE BY REGION AND STATE, 2010-2020



Source: EMSI

MEDIAN WAGE ADJUSTED FOR COST OF LIVING, 2020



Source: EMSI

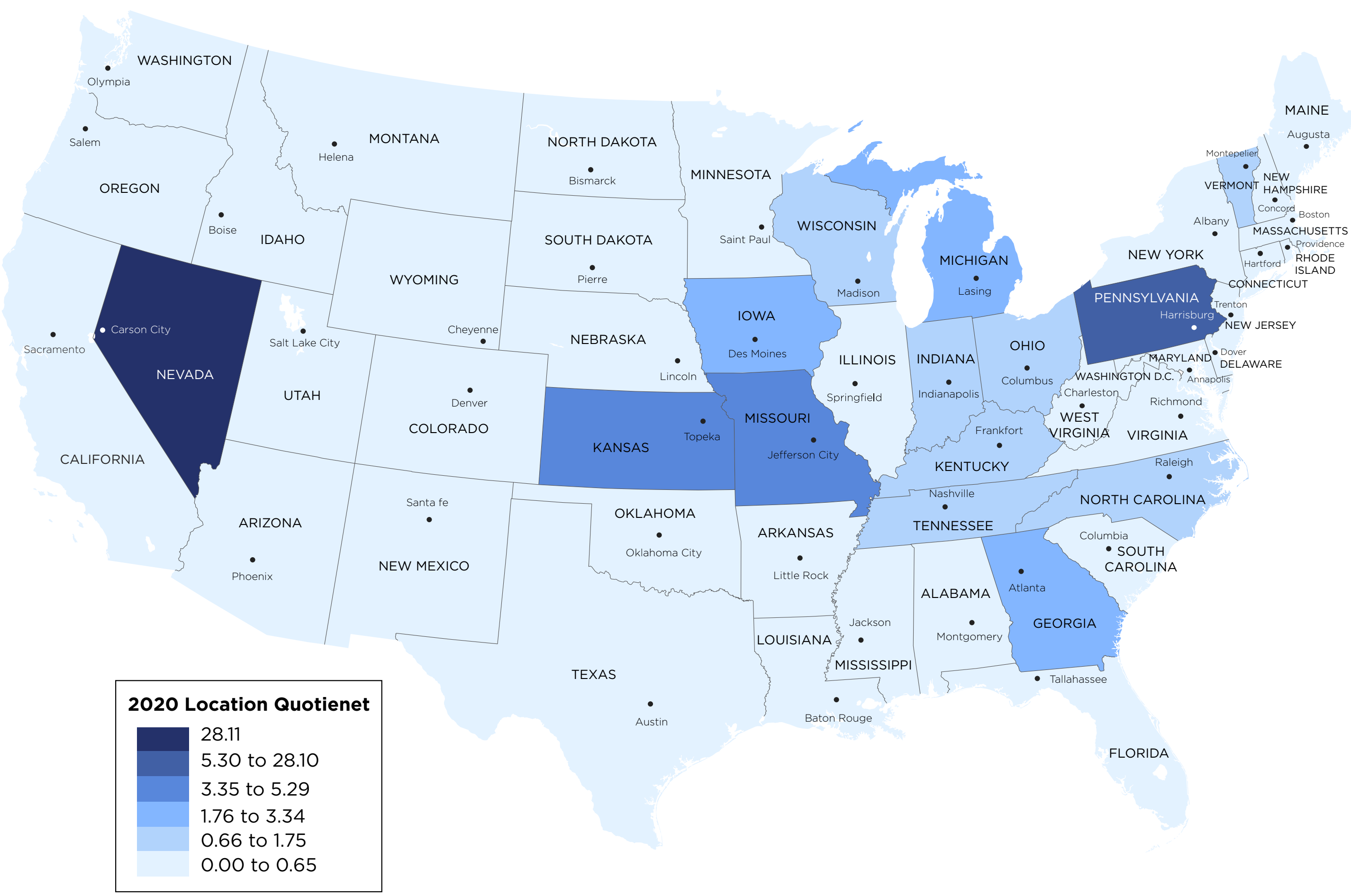
Sadly this recovery does not include, at least so far, the old industrial super-stars like Chicago or Detroit, and these cities continue to be plagued by high unemployment. The new Midwest industrial wave has concentrated instead in places like Columbus, Indianapolis and Des Moines that were never heavy industry centers but enjoyed diversified economies paced by universities, government, services and some tech-related businesses.[88]

The boom in places like Ohio does not fit the old Rust Belt pattern with dependence on one or two industries. This new kind of industrial economy, flexible and affordably built, flourishes in a business-friendly environment where manufacturing is not only permitted, but actively encouraged. This is part of a national resurgence.[89]

It is clear that corporate investment is headed to the heartland. Texas and Ohio are now the leading sites for new plants and offices. Ohio population is almost one-fourth of California's, but it now boasts, according to a recent Hoover Institution study, four times as many new projects. Overall heartland states account for five of the top states attracting new investment; most of the rest are in the Intermountain West or the Southeast coast.[90]

We can see the new configuration taking shape in new industries like electric cars. Take for example the 13 new battery plants either existing or on the drawing board.[91] Virtually all are located either in the Intermountain West (Nevada), the South (Georgia, North Carolina, and Tennessee), the Midwest (Kentucky and Ohio), or Texas. California may have developed much of the electric car tech, but it's places like Tennessee that are wooing multi-billion investment from major U.S. and foreign companies.[92]

BATTERY MANUFACTURING JOB CONCENTRATION BY STATE, 2021

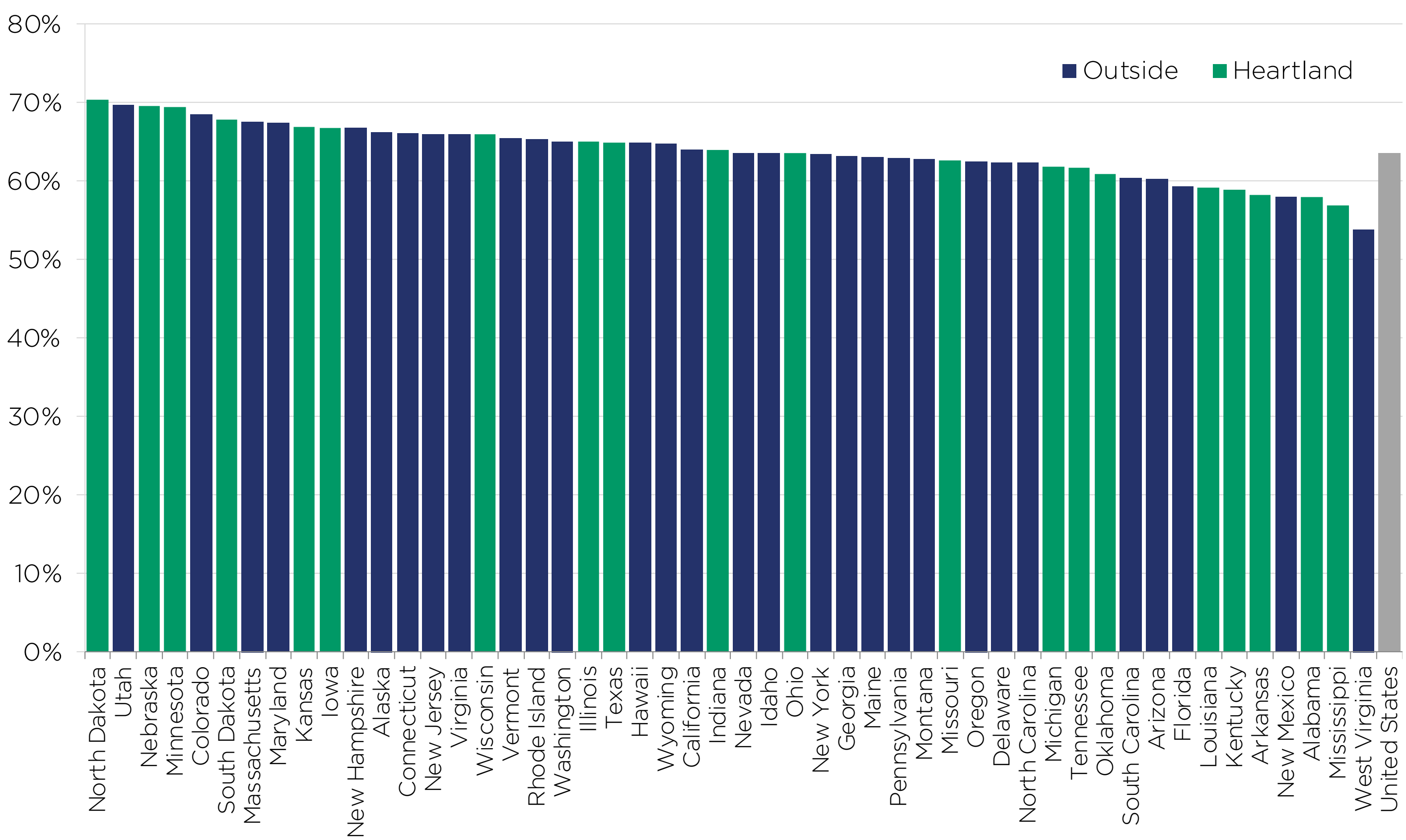


THE GREAT COST ADVANTAGE

The pieces may all be in place, but will the heartland develop the workforce and work ethic to capitalize? Local companies stress that many people in the area have industrial backgrounds in their families, and that a commitment to work can be seen in the area's higher than average rate of labor participation. Six of the top 10 states are in the heartland.

"We are still at the edge of the farming areas and people have strong work ethic," suggests Jay McCloy who runs a plant for Ohio-based Ariel corporation in Mt. Vernon, a half century old maker of natural gas compressors that employs 1,400 persons. "People here think building stuff is better than selling insurance. On a decent salary you can live a good life in central Ohio." America's industrial future, and our future prosperity, may depend on places like Licking County, where Ariel, now run by the founder's daughter, is based. With a population 176,000, just a 30 to 40 minute drive from Columbus, the area has seen its unemployment fall down to near three percent, well below that of the state and the nation, and more than 50% lower than those in places like New York, Los Angeles, Chicago and Boston.[93,94]

PROJECTED AVERAGE ANNUAL JOB OPENINGS FOR PRODUCTION WORKERS, 2021-2031

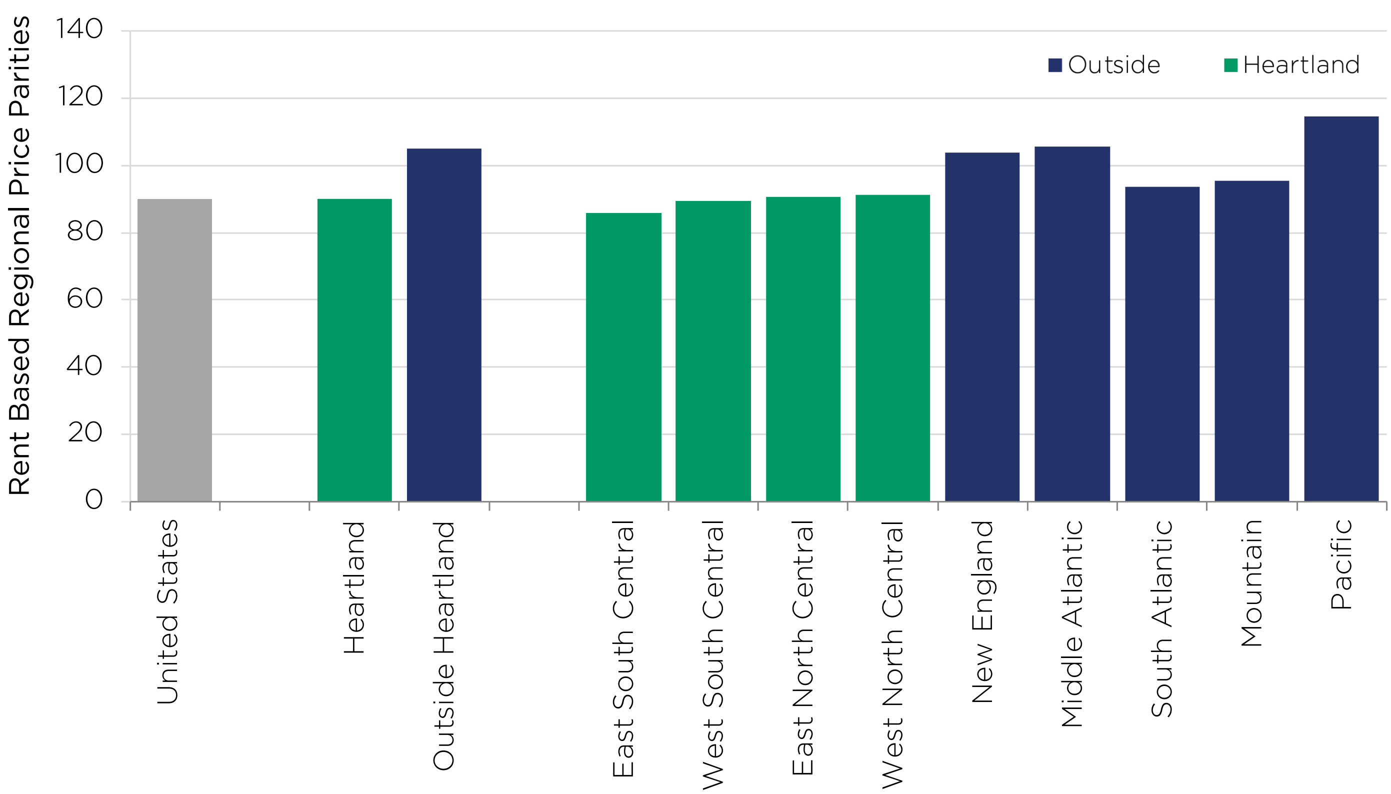


Derived from American Community Survey 2019

The changing economic conditions are increasingly reflected in demographic trends, driven in large part by issues such as cost of living.[95] As those working in blue-collar professions soon recognize, even decent and rising wages are insufficient to meet middle class standards. Engagement in skill dependent jobs, as Julie Trivitt has shown in "Heartland of Opportunity," presents the best chance of achieving a middle-class standard of living.[96] In contrast, places like California, New York and Massachusetts are among the worst for middle-income households, including blue-collar workers, with much higher costs of living (due in large part to high levels of taxes, housing costs and industry-crushing regulations).[97]

Overall heartland states offer generally higher material standards of living, measured at the median household income level. Overall, the highest standards of living among metropolitan areas with more than 500,000 population in 2018 were in the heartland's Midwest Census Region, above the average standards of living in the Northeast Census region (108.4) and Pacific Census Region (104.5). The Pacific Census Region had the lowest standard of living among the four Census Regions. This contrasts with metros like New York, Los Angeles, Honolulu, and San Diego, where household incomes have increased far less than housing costs and ranked in the bottom 25.[98]

BEA COST OF LIVING: 2019 (100=AVERAGE) HEARTLAND & OUTSIDE BY CENSUS DIVISIONS

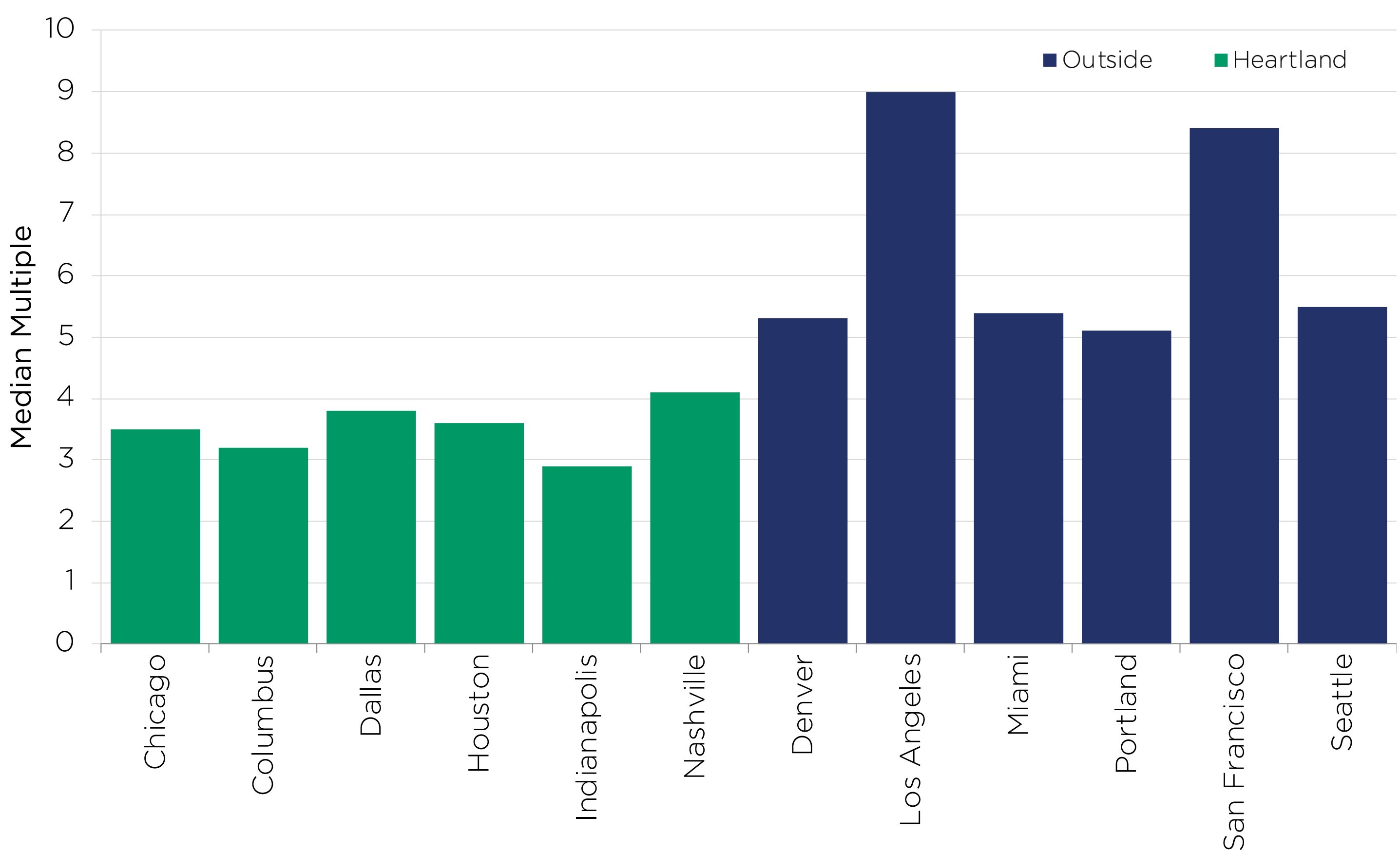


Derived from Bureau of Economic Analysis

The difference in the cost of living between the more expensive areas and the national average is largely composed of higher housing costs; about 88% of the higher costs are in housing. The other 12% reflects higher costs in goods (5%) and in other expenses (7%).[99] These costs include the cost of commuting (principally automotive expenses), which is often characterized as a major driver of the higher costs of living, but do not materially contribute to such differences.

Nothing is more critical to building wealth, particularly to young families, than the ability to buy a house, the traditional way into the middle class.[100] Indeed, Pew indicated in its Economic Mobility Project that: "A home is the most significant way Americans build net worth, especially for lower-income Americans."[101] Housing costs in the heartland are far lower when compared to incomes in the Northeast and West Coast, and increasingly the Intermountain West. Even though prices have been rising nationally, the affordability gap, as measured by median income divided by median house price, has been growing over the past decade between the heartland and the coastal metropolitan areas.

HOUSING AFFORDABILITY 2019 (PRE-PANDEMIC) SELECTED METROS: HEARTLAND & OUTSIDE



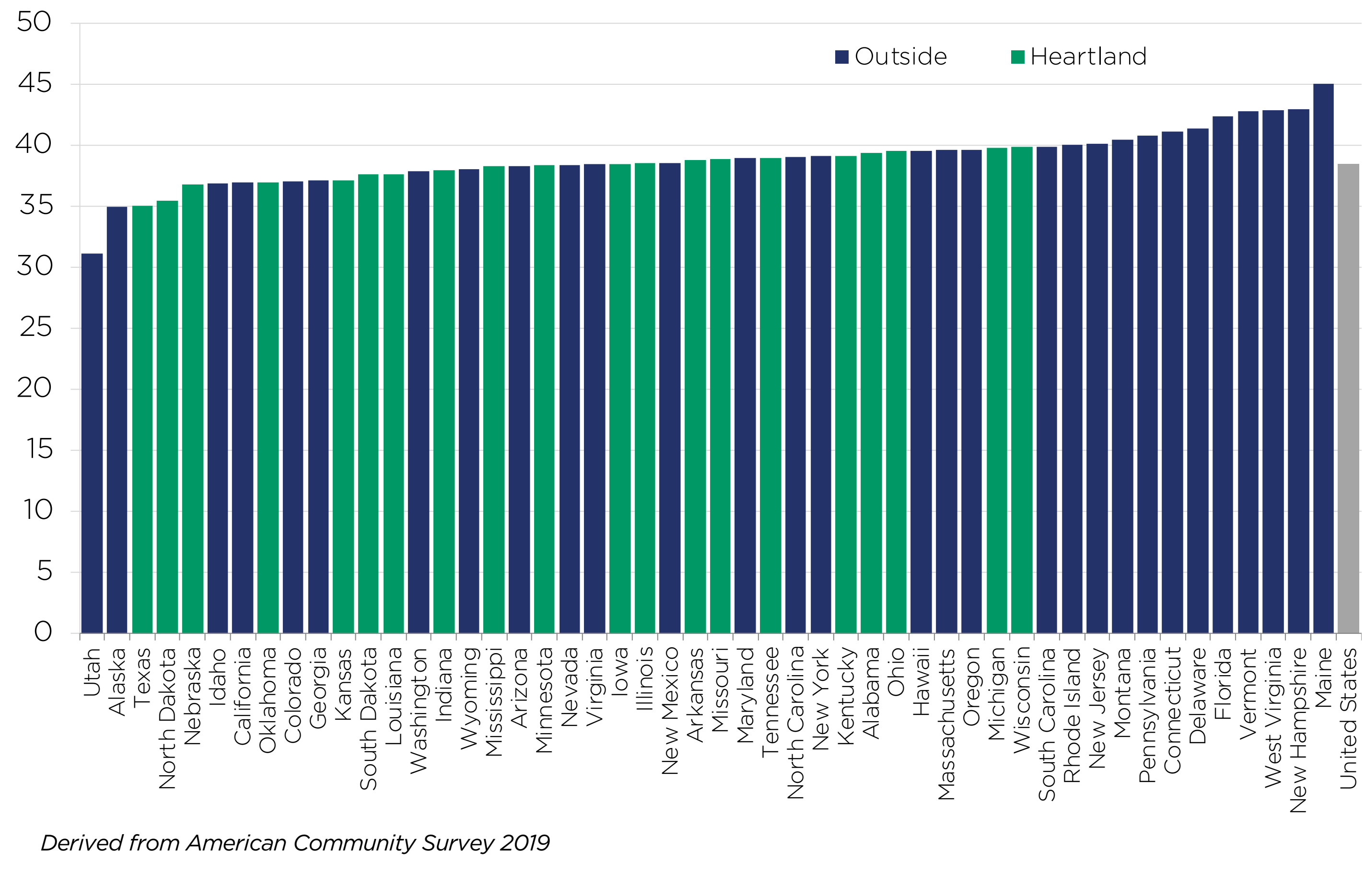
Derived from Demographia

A CRITICAL DEMOGRAPHIC SHIFT

The growing gap in costs, plus greater opportunity, is driving a critical demographic shift. Long dismissed as primarily an aging region that people are leaving, the heartland has gotten relatively younger and now has about the same age profile as the rest of the country. In fact, some of the youngest MSAs are in the region; six of the 10 youngest, big metros are in the region. In terms of growth of people aged 25-39, five of the top 10 metros are in the region, with most of the rest in Florida or the Intermountain West. Four of the states with the youngest median worker age are in the heartland.

The long historical pattern of young people leaving the region has reversed significantly; although most states are getting older, those in the heartland are generally aging slower than those in the Northeast or the West Coast. The heartland has a lower median age of the population than outside (37.9 v. 39.0 years). The youngest Census Division is in the heartland, the West South Central (Texas, Oklahoma, Arkansas, and Louisiana). Three of the five youngest states are in the heartland (ranked third through fifth, Texas, North Dakota, and Nebraska). In contrast, all 12 oldest states are outside the heartland.

MEDIAN AGE OF THE POPULATION BY STATE, 2019

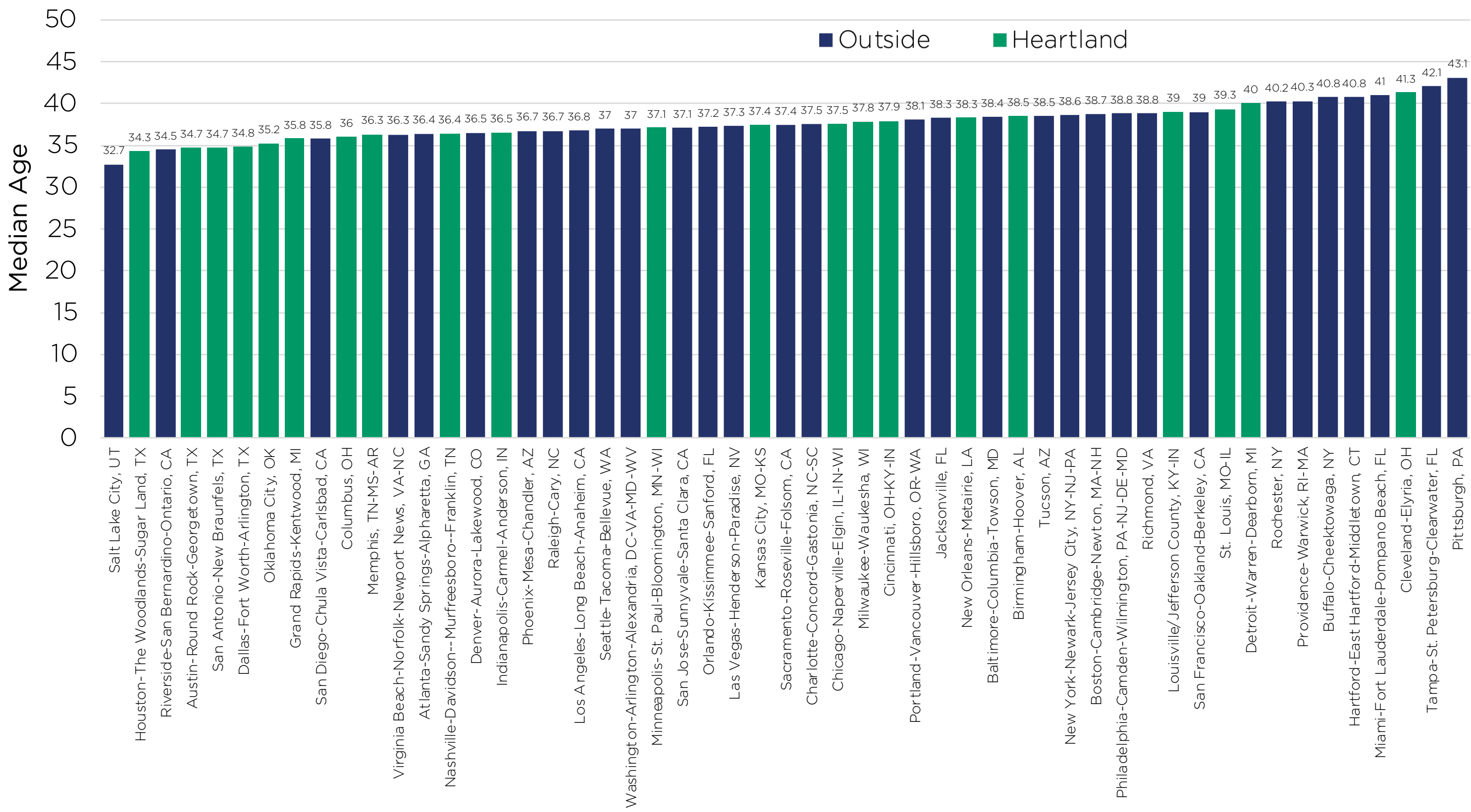


Derived from American Community Survey 2019

With virtually all of the nation aging, seven of the 10 states that have increased their median age the least from 2000 to 2019 are in the heartland (North Dakota, Nebraska, Oklahoma, and Iowa being the top four states), while Kansas, South Dakota and Arkansas rank sixth, seventh and tenth. Surprisingly, the heartland has roughly an average over 65 population, although it also has some of the young metros. Critically, the gap in age between the heartland and the rest of the country shifted over the past two decades, from 0.25 years in 2000 to 1.02 years in 2019.

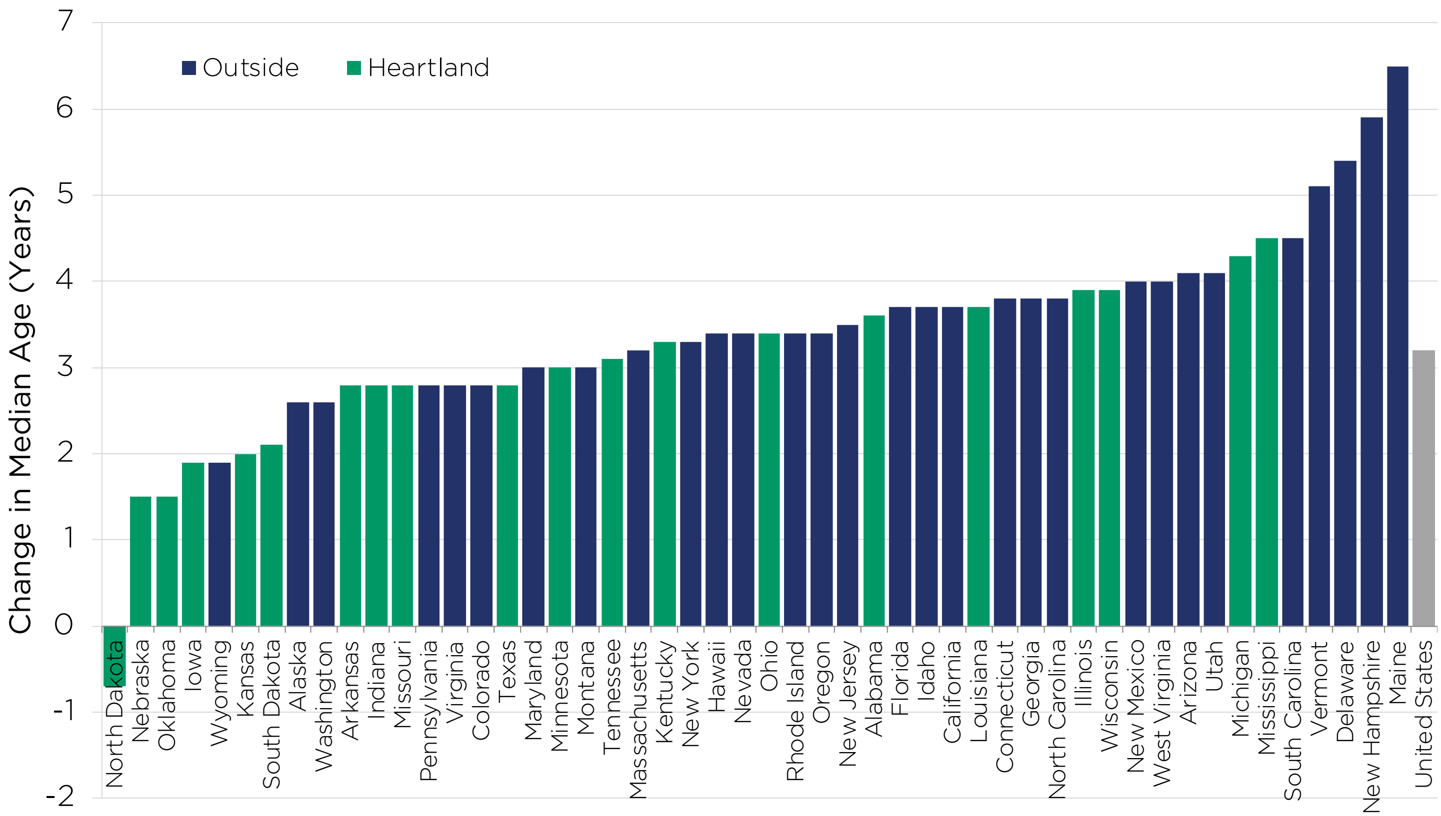
As we found in a recent study for Heartland Forward,[102] we are seeing migration among millennials to selected second or third tier metropolitan areas like Fargo, North Dakota; Des Moines, Iowa; Fayetteville, Arkansas and Grand Rapids, Michigan, while the appeal of the Northeastern and West Coast cities has diminished. Seven of the 10 large youngest metros in the country are located in the heartland. As far as the big metropolitan areas, the heartland is not the past, but the future.

MEDIAN AGE, METROPOLITAN AREAS OF 1 MILLION OR MORE, 2020



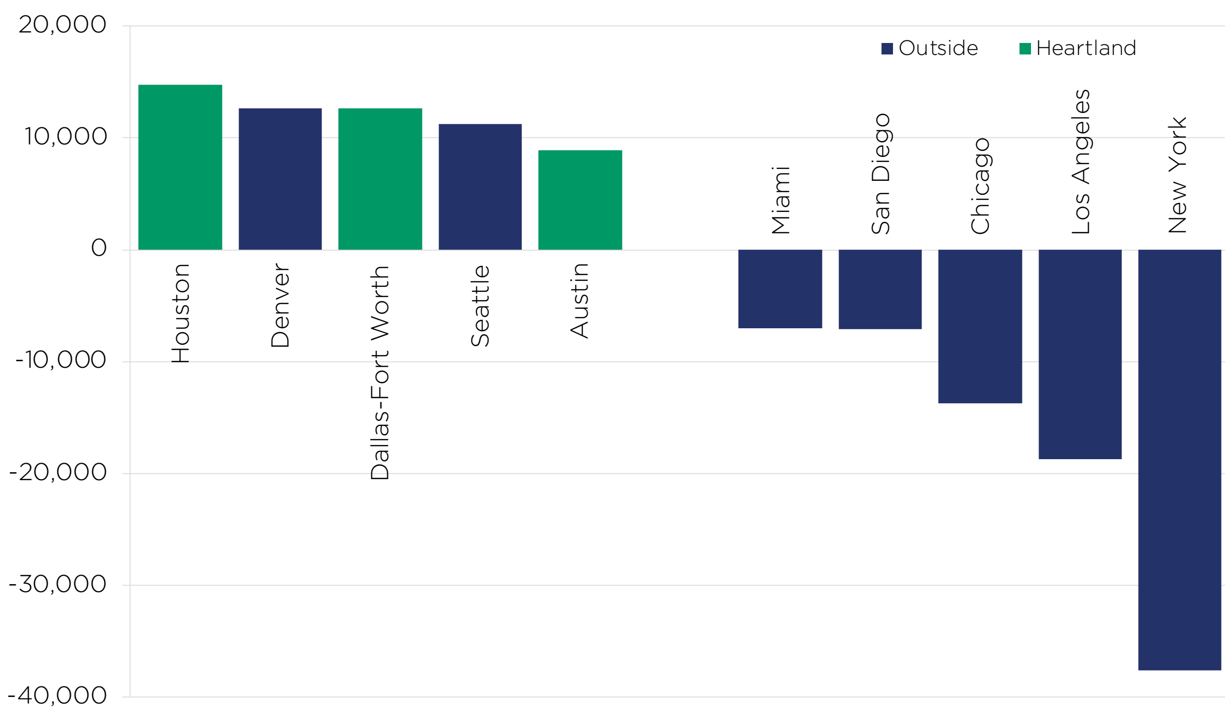
Source: U.S. Census American Community Survey, EMSI Estimates

CHANGE IN MEDIAN AGE OF THE POPULATION, 2000 - 2019



Derived from American Community Survey & 2000 Census

MILLENNIAL NET DOMESTIC MIGRATION HIGHEST & LOWEST MAJOR METROS, 2012-2017

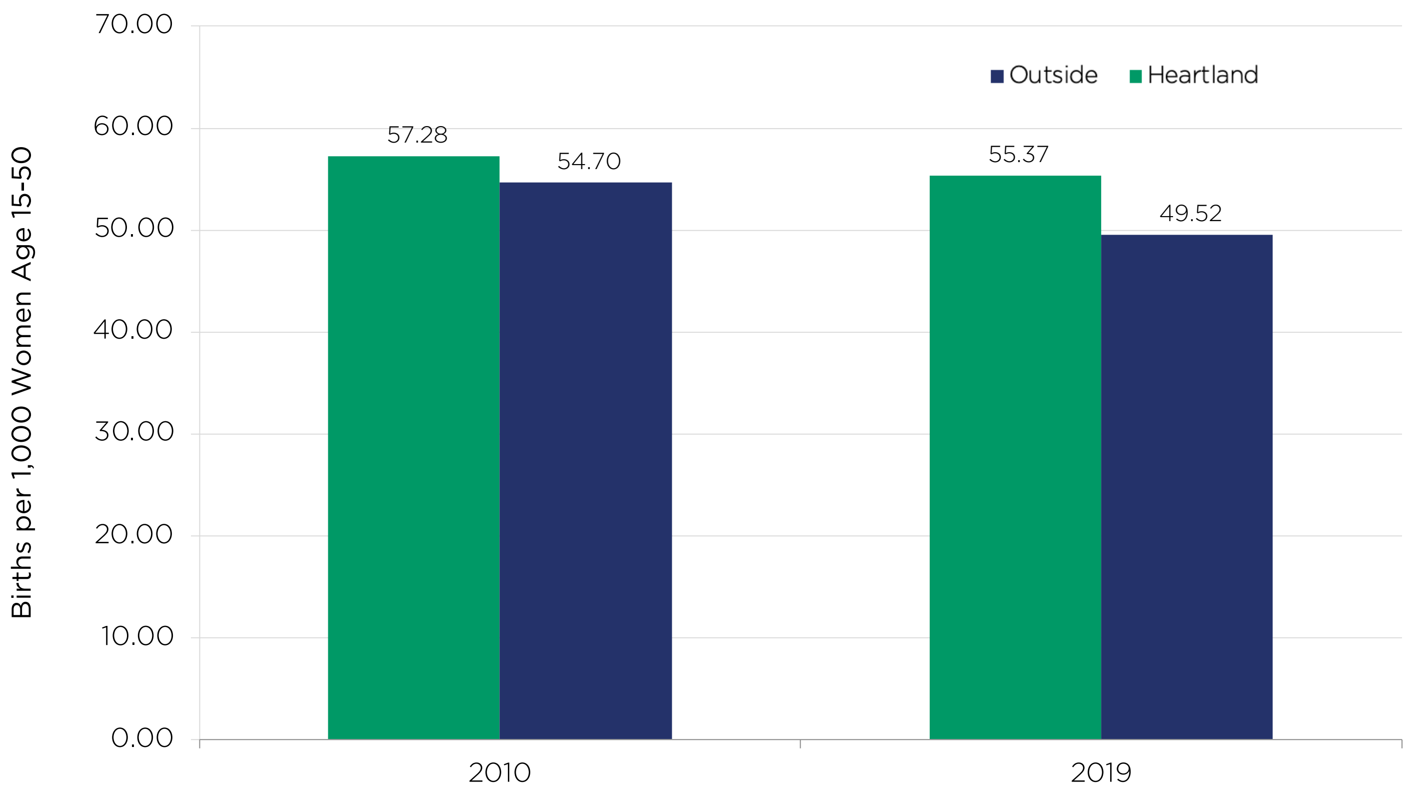


Source: Brookings Institution

These areas are gaining migrants even as some big metros like New York, Los Angeles and Chicago, notes Brookings,[103] actually have lost millennials over the past five years. Even some smaller towns are luring new residents. Research by Timothy Wojan,[104] a leading expert on rural innovation, finds 100 or so rural locations were experiencing a sustained economic renaissance before the pandemic. Early research shows these places have benefited significantly from the pandemic.

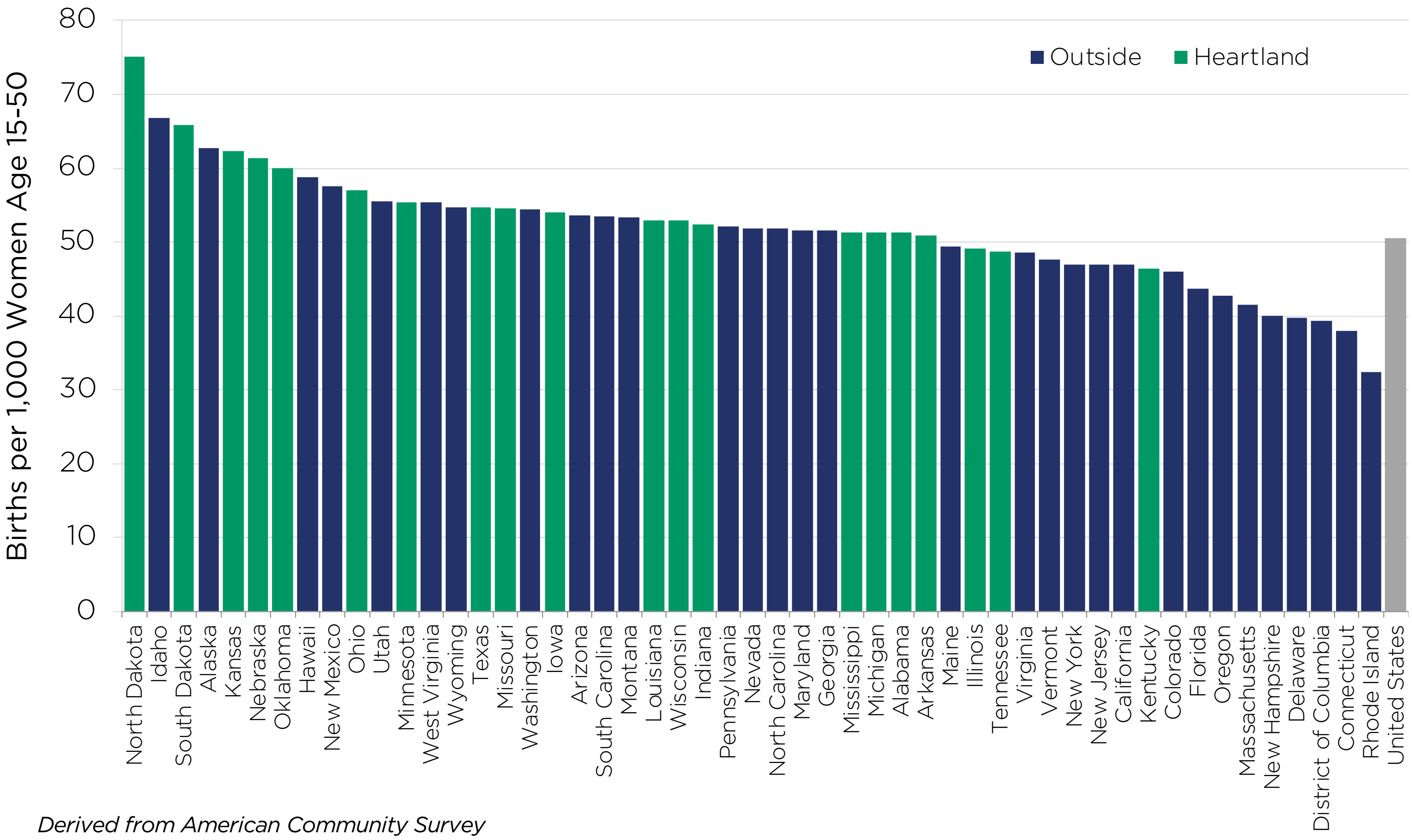
The home for future generations lies in these new patterns. Rather than being places where people are looking back, the heartland is increasingly where new families are being formed. Overall, the birth rate (general fertility rate)[105] has been declining in the United States. However, the decline has been far less in the heartland. Between 2010 and 2019, the birth rate dropped nearly three times as much outside the heartland states as in the heartland (-3.3% compared to -9.5%). Four of the six states with the highest birth rates were in the heartland's West North Central Census Division (North Dakota, South Dakota, Kansas and Nebraska). At the same time, 14 of the 15 states with the lowest general fertility rates are outside the heartland. In addition, some heartland states like Ohio, Indiana and Iowa have higher birth rates than states like California, Massachusetts, or New York.

STATE/DC GENERAL FERTILITY RATE, 2010 & 2019
BIRTHS PER WOMEN AGED 15 TO 50



Derived from American Community Survey

GENERAL FERTILITY RATE BY STATE, 2019
BIRTHS PER WOMEN AGED 15 TO 50



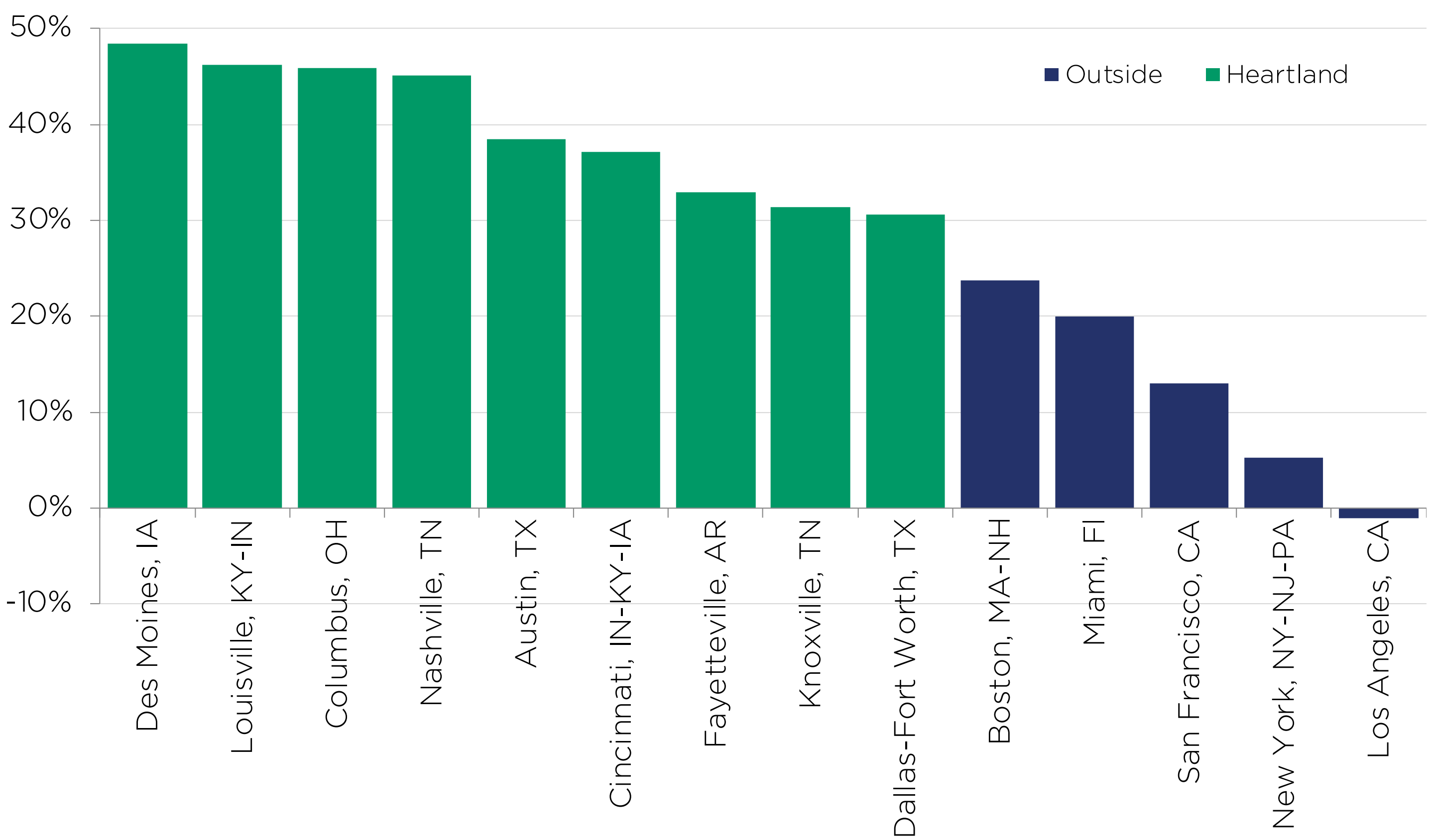
Derived from American Community Survey

IMMIGRATION: A NEW SOURCE OF PEOPLE POWER

One particular demographic opportunity, and challenge, lies in tapping the region's growing foreign-born population. As we demonstrated in an earlier report, the heartland now is getting significant migration from the foreign born, and some of the fastest growing areas for them are now in the heartland, notably places like Dallas-Ft. Worth, Columbus, Indianapolis and Des Moines, all of which are now attracting a higher percentage of foreign migrants than traditional centers like Los Angeles, the Bay Area or New York. Some of the most rapid movement, surprisingly, is also to smaller metros as well.[106]

Increasingly this means reaching out to the largely minority workforce now emigrating in large numbers to the heartland, including the Great Plains.[107] "I have lived here for 20 years and that is what I observe," notes a Kearney, Nebraska resident, a 26-year-old immigrant from Mexico. "We need an office to help Hispanics, they come from many places. We don't need money as help. We need an office with staff that knows what they are doing and can really guide us."

FOREIGN BORN POPULATION GROWTH COMPARED HEARTLAND & OTHER SELECTED METROS, 2010 - 2019



Derived from 2010 Census & American Community Survey 2019

This is now being done in some places that see in the immigrants, or women, new potential recruits. In Nashville, an innovative program trains people in tactile skills, many of them immigrants who have served prison terms or are on probation. "They have resilience and tenacity that I think a lot of us in America don't have. They've overcome; they've come here in a whole host of different ways, including asylum. So, they've been through a lot, when they come here, they're willing to sacrifice a lot," notes Carole Peterson, executive director, Uprise Nashville,[108] which focuses on giving skills to workers so they no longer have live "paycheck to paycheck."[109]

But the key to success in the future, suggests Cindy Johnson, CEO, Grand Island Chamber of Commerce in Nebraska, lies also in training, helping with childcare and acquisition of English. Grand Island has become heavily Hispanic, due largely to its large meat processing industry, while the local farm communities have depopulated. Such broad-minded employers, she suggests, are the ones who are going to win the labor war. They will (provide additional benefits), and people will value that as much as the results of the wage war. And businesses aren't going to be able to keep the wage war going. That'll tap out."[110]

Immigrants, including recent refugees from Afghanistan, have become key targets for manufacturers across the region, in cities such as St. Louis, which have become recent havens. These newcomers, like other recent immigrants, are heading to these labor-short, lower cost cities rather than high-cost, deindustrializing states like California.[111] For local manufacturers in St. Louis, and elsewhere, the newcomers represent a critical asset amidst the challenges of the labor shortage.[112] Refugees from Bhutan and East Africa have become such a critical source of workers in Fargo, North Dakota, that employers routinely call resettlement director Dan Hannaher to inquire about new families moving to the region. One local manufacturer's staff is 70% first- or second-generation foreign-born workers hailing from more than 30 countries.[113]

To meet labor demand for his plant outside Columbus, Ohio, Gary Shaeffer, director of quality at L Brands "Beauty Park,"[114] a complex of production facilities in New Albany, a suburb outside Columbus that produces cosmetics, increasingly fills his 550-person workforce with people bused in from the city's surging immigrant population. The city's foreign-born population grew 48% since 2010,[115] largely Nepali, Somali and Mexican, people who seek an opportunity with an upside. "If you are young and ambitious, you go into manufacturing and get skills," notes Schaeffer.

A NEW DAWN FOR THE HEARTLAND? IF WE MAKE IT HAPPEN

Over the past half century, much of the heartland suffered for its concentration of goods-making and related industries that depended on tactile skills. But now rather than being behind the curve, the heartland, by focusing on skills and keeping costs low, has an enormous opportunity to reprise its legacy as a place for upward mobility.

The key, notes Omaha's David Brown, is developing a culture that attracts and retains employees. "COVID has just sped up the process of companies paying attention to what their culture is like," he suggests. "What do their employees think of them as an employer? Are they doing the things necessary to make it a good place for people to work? And the ones that are paying attention, I think, are getting their people back and are being able to fill their jobs. The ones that aren't paying attention to wages, or improving benefits, or really worrying about culture, I think are still having a tough time. It just got accelerated during COVID."

One key area will be childcare, notes Cleveland Fed Chairman Loretta Mester, a shortage of which is also a key contributor to the labor shortage, keeping as many as four million workers at home.[116] American business has historically been loath to provide such help, but some companies, such as Patagonia, have found good childcare services results in reduced turnover; close to 100% of women who have engaged the program returned to work. In the current environment, such an approach could prove a powerful lure for workers.[117]

Overall employers need to rethink their relationship to labor.

"Workforce is the hub of the economy, and workforce problems are holding back our economic recovery. We need to get comfortable outside of our lane," suggests Janice Urbanik and Lisa Chensvold from the National Fund for Workplace Solutions.

We won't train or credential our way out of the current crisis. We need to embrace challenging, cross-system work and embrace cross-sector collaboration if we're going to fix what's ailing U.S. workers and advance a truly equitable, sustainable and inclusive economic recovery. We gotta be bold."[118,119]

Employers and regions will have to meet these demands, including higher wages, even as automation and other technological improvements are implemented. Rather than see technology as a disadvantage, The Ohio State University's Ned Hill and others see an opportunity for the heartland, and its trained workforce, to continue gaining on Chinese and other competitors from places that have emphasized production more in the past. As economist Oren Cass has argued, losses from automation have been minimal, and far more the product of failed corporate and government policies than anything as inexorable as the notion that all need for work is about to cease.

The problem, Cass notes, lies not with robots and AI but with the "slowdown in output growth" and meager productivity growth.[120] In contrast, the implementation of innovative technologies, like 3-D printing, robotics and other digital improvements, rather than suppressing industry, make a U.S. industrial revival not only possible, but plausible. America, unlike European competitors or China, is blessed with a huge arable land mass, enormous energy and mineral resources, and a large, mobile population, driven in large part by immigration. And we could see, as author Mark Mills suggests, a new wave of disruptive manufacturing companies that use technologies to break the old patterns of dependency on scattered (supply) chains and improve quality as well as better target customers.[121]

These technologies allow American firms to produce better and often cheaper products.[122] 3-D printing, or what is called "additive manufacturing," notes Kimberly Gibson, "opens new possibilities for companies to lower costs, and craft parts that, in many cases, have been sourced in China and other countries." Gibson helped run a pre-D printing firm and is now a key player at America Makes, a manufacturing consortium funded by the Air Force and based in Youngstown, Ohio.[123,124]

Gibson, who helped develop new automation tools to produce masks during the pandemic, embraces the notion of "digitally distributed manufacturing," a process already being developed by such firms as Exact Metal in State College, Pennsylvania,[125] as well as her old firm, IC3d printers in Columbus.[126] These firms speak not just of better quality and lower costs, but also the notion of "democratizing manufacturing" so small, dispersed firms can compete with large firms, and also provide an alternative supplier base to large foreign firms.

"The technology changes the equation of where things can be made," she suggests. "It opens opportunities for all sorts of people — this is a technology that's dying for a workforce that can handle it."

These developments are great for the country but particularly for the heartland, and its workers. Propelled by its industrial heritage, low costs and largely pro-business governments, the heartland's opportunity is here. Of course, Americans would benefit if the country can produce the basic goods, in medical equipment, transportation, and technology, that allow the country both to compete and remain secure. But the biggest opportunity lies for the heartland, if it is willing to take advantage of it.

ENDNOTES

[1] https://www.westernjournal.com/5-states-experiencing-worst-labor-shortage/

[2] https://www.cnbc.com/2020/02/19/its-never-been-this-hard-for-companies-to-find-qualified-workers.html

[3] EMSI, "The Demographic Drought: How the approaching sansdemic will transform the Labor Market for the rest of our lives", 2021

[4] https://www.kornferry.com/insights/this-week-in-leadership/talent-crunch-future-of-work

[5] EMSI, "The Demographic Drought: How the approaching sansdemic will transform the Labor Market for the rest of our lives", 2021

[6] Annual rates, https://fred.stlouisfed.org/series/CIVPART#0; https://news.gallup.com/businessjournal/151856/war-good-jobs.aspx#:~:text=%22The%20coming%20world%20war%20is,world%20that%20leaders%20will%20confront.%22; https://www.statista.com/statistics/193961/seasonally-adjusted-monthly-civilian-labor-force-participation-rate-in-the-usa/

[7] https://www.weforum.org/agenda/2017/09/retiring-baby-boomers-are-going-to-have-a-huge-impact-on-the-economy; EMSI, "The Demographic Drought: How the approaching sansdemic will transform the Labor Market for the rest of our lives", 2021

[8] https://finance.yahoo.com/news/7-ways-men-live-without-working-in-america-092147068.html

[9] https://www.forbes.com/sites/adigaskell/2019/12/06/the-impact-of-unemployment-on-male-wellbeing/?sh=11bc5f38167c

[10] https://www.pewresearch.org/fact-tank/2020/11/09/the-pace-of-boomer-retirements-has-accelerated-in-the-past-year/

[11] EMSI, "The Demographic Drought: How the approaching sansdemic will transform the Labor Market for the rest of our lives", 2021

[12] https://www.wsj.com/articles/the-great-american-labor-shortage-11623191784

[13] https://www.wsj.com/articles/covid-19-pushed-many-americans-to-retire-the-economy-needs-them-back-11635691340?st=ba281c3zj7wtkbe&reflink=article_email_share; https://tradingeconomics.com/united-states/labor-force-participation-rate

[14] https://www.uschamber.com/report/the-america-works-report-quantifying-the-nations-workforce-crisis

[15] EMSI, "The Demographic Drought: How the approaching sansdemic will transform the Labor Market for the rest of our lives", 2021; https://blog.coldwellbankerluxury.com/wp-content/uploads/2019/10/CBGL-Millennial-Report_SEP19_FINAL-4a.1-1-1.pdf

[16] https://www.bloomberg.com/news/features/2021-08-05/why-is-u-s-labor-force-shrinking-retirement-boom-opioid-crisis-child-care; https://www.wsj.com/articles/job-openings-us-growth-01-04-2022-11641256945

[17] https://www.wsj.com/articles/as-world-runs-short-of-workers-a-boost-for-wagesand-inflation-11620824675

[18] https://population.un.org/wpp/Download/Files/1_Indicators%20(Standard)/EXCEL_FILES/1_Population/WPP2019_POP_F01_1_TOTAL_POPULATION_BOTH_SEXES.xlsx

[19] https://www.scmp.com/news/china/science/article/3150699/chinas-population-could-halve-within-next-45-years-new-study

[20] Calculated from data in https://www.wsj.com/articles/chinas-population-barely-grew-in-2021-as-births-dropped-for-a-fifth-year-11642385947

[21] https://www.wsj.com/articles/aging-germany-is-running-out-of-workers-putting-europes-largest-economy-at-risk-11640180607; https://www.wsj.com/articles/germany-economy-lagging-behind-europe-supply-chain-11636383954

[22] https://www.thedailybeast.com/how-lying-flat-took-chinas-overworked-millennials-by-storm

[23] https://www.abc.net.au/triplej/programs/hack/2020-edelman-trust-barometer-shows-growing-sense-of-inequality/11883788; https://hbr.org/2020/08/; https://www.brookings.edu/research/the-pandemic-hurt-low-wage-workers-the-most-and-so-far-the-recovery-has-helped-them-the-least/

[24] https://www.nytimes.com/2021/06/01/opinion/labor-shortage-jobs-biden-covid.html; https://www.theinformation.com/articles/pay-transparency-for-gig-workers-is-possible?utm_campaign=%5Brtsu%5D+Automated+RTS&utm_content=1003949&utm_medium=email&utm_source=cio&utm_term=1000266

[25] https://www.edelman.com/sites/g/files/aatuss191/files/2020-01/2020%20Edelman%20Trust%20Barometer%20Global%20Report.pdf; https://www.edelman.com/trust/2021-trust-barometer

[26] https://www.wsj.com/articles/tight-labor-market-returns-the-upper-hand-to-american-workers-11624210501

[27] https://www.wifr.com/content/news/Bureau-of-Labor-Statistics-projects-the-loss-of-tens-of-thousands-of-middle-class-jobs-by-2024-477101543.html.

[28] https://finance.yahoo.com/news/mc-donalds-automated-drive-thru-is-just-the-latest-sign-of-robots-taking-over-fast-food-170158300.html

[29] https://thefederalist.com/2021/11/01/supply-chain-crisis-accents-how-much-we-need-blue-collar-jobs/

[30] https://www.theverge.com/2021/8/10/22618128/openai-codex-natural-language-into-code-api-beta-access; https://www.city-journal.org/html/mother-all-disruptions-15251.html

[31] https://www.wsj.com/articles/ai2041-review-artificial-intelligence-warning-tales-from-an-algorithmic-tomorrow-11633705078

[32] https://kb.emsidata.com/methodology/automation-index-methodology/

[33] https://venturebeat.com/2021/01/27/magic-leap-founder-rony-abovitz-creates-startup-sun-and-thunder/

[34] https://thehill.com/changing-america/enrichment/education/476391-biden-tells-coal-miners-to-learn-to-code

[35] https://www.wsj.com/articles/in-louisville-hub-of-e-commerce-businesses-duel-for-workers-11640169005

[36] Jose Zozaya, " On Labor Day, demand stays high for skilled workers in Nebraska" KETV 7 Omaha, September 6, 2021 https://www.ketv.com/article/on-labor-day-demand-stays-high-for-skilled-workers-in-nebraska/37493416

[37] John Chapman, "MCC adds a $90 million road to the future" WOWT 6 News, September 22, 2017 https://www.wowt.com/content/news/MCC-adds-a-90-million-road-to-the-future-446846893.html

[38] https://www.wowt.com/2021/11/26/partnership-omaha-comes-perfect-time-medical-field-needing-more-professionals/

[39] https://www.economicmodeling.com/skills-required/?utm_campaign=Skills%20Required%3A%20HE%20ebook&utm_medium=HE%20Email&_hsmi=157401998&_hsenc=p2ANqtz--J-jJvgkw1oleau7FNrOaS2sMFf2fuS11AVhBiZ6f1hcXr_vl8MaF_v-el5GXINX9S6acsUT4qrRYxNlAW_vazC3vIUw&utm_content=Skills%20Required%20&utm_source=email

[40] https://www.globest.com/2021/08/12/cres-ongoing-problem-a-labor-shortage/; https://www.yahoo.com/news/nursing-shortages-post-pandemic-one-150252524.html

[41] Matthew D. Baird and Shelly Culbertson, "Job Training Is More Effective When Educators, Government, and Industry Work Together", The RAND Blog, July 6, 2021 https://www.rand.org/blog/2021/07/job-training-is-more-effective-when-educators-government.html

[42] https://www.wsj.com/articles/the-great-american-labor-shortage-11623191784

[43] https://www.newyorkfed.org/research/college-labor-market/college-labor-market_unemployment.html

[44] https://collegefinance.com/plan/trade-school-vs-college-degree-salaries-who-makes-more

[45] https://www.uscannenbergmedia.com/2021/07/02/we-should-advocate-for-trade-schools-just-as-much-as-college-especially-after-a-pandemic/

[46] https://www.ohiomfg.com/wp-content/uploads/OMA_ManufacturingCounts2020.pdf

[47] https://www.kornferry.com/content/dam/kornferry/docs/article-migration/TheNewMathforManufacturers.pdf; https://www.tradesmeninternational.com/construction-management/welder-shortage/#:~:text=According%2520the%2520American%2520Welding%2520Society,under%2520the%2520age%2520of%252035; https://www.cnn.com/2021/05/04/economy/manufacturing-jobs-economy/index.html

[48] https://opportunity.nebraska.gov/wp-content/uploads/2021/02/DYTI-Flyer-2021.pdf; https://www.city-journal.org/html/vocational-ed-reborn-15253.html; https://www.nytimes.com/2012/08/05/business/the-ieconomy-nissans-move-to-us-offers-lessons-for-tech-industry.html

[49] https://www.wsj.com/articles/how-apprenticeship-reimagined-vaults-graduates-into-middle-class-11603099801; https://www.wsj.com/articles/why-ford-picked-tennessee-for-its-new-electric-vehicle-plant-11634302800

[50] https://www.columbiadailyherald.com/story/newhttps://www.tennessean.com/story/news/education/2022/01/17/tennessee-combats-teacher-shortages-free-apprenticeship-programs/6515937001/s/education/2021/10/14/mt-pleasant-high-school-unveils-expanded-welding-program/5913721001/; https://www.chattanoogan.com/2021/11/30/439273/UTC-Launches-CyberSecurity-Workforce.aspx

[51] https://www.businesswire.com/news/home/20210609005235/en/Coursera-Global-Skills-Report-2021-Finds-US-Behind-in-Digital-Skills-Ranked-29th-Globally

[52] https://www.areadevelopment.com/laborEducation/workforce-q4-2021/workforce-development-programs-are-in-overdrive.shtml

[53] https://www.westnewsmagazine.com/business/turning-the-tide-on-the-trades-gap-st-louis-educators-lawmakers-emphasize-need-for-regional/article_6988129c-94c8-11ec-8b4a-ffe4b6c9be94.html; https://www.stltoday.com/business/local/solar-workforce-training-program-in-st-louis-sees-success-prepares-for-second-round/article_7bb4817f-02b2-506c-9c9f-43b1e5ddfc2f.html#tncms-source=signup; https://www.ksdk.com/article/news/local/east-st-louis-non-profit-recruits-trains-employs-students/63-a857e696-6307-4b9f-a2ac-e2f73b88ebac; https://www.bizjournals.com/stlouis/news/2021/10/25/program-launches-crash-course-biotech.html?s=print

[54] https://www.bizjournals.com/stlouis/news/2021/10/25/program-launches-crash-course-biotech.html?s=print

[55] https://cci.stradaeducation.org/pv-release-october-27-2020/?utm_campaign=Higher%20Education%20Nurture&utm_medium=email&_hsmi=87803635&_hsenc=p2ANqtz-9b3rjIGvC44HHdi1pgb-fhKSx-zcbWfSpfjC8iZe_s2U2k-s3mIEtfxtHHYOrSMydPuotLgi4y3Xu2UESCt5miIFZzeA&utm_content=87803635&utm_source=hs_automation

[56] https://www.economicmodeling.com/2020/12/17/increasing-student-engagement-with-skillsmatch/

[57] https://www.insidehighered.com/quicktakes/2020/07/16/student-success-and-enrollment-are-top-priorities-survey

[58] EMSI, "The Demographic Drought: How the approaching sansdemic will transform the Labor Market for the rest of our lives", 2021

[59] https://theindependent.com/news/local/central-community-college-offers-area-high-school-students-welding-shot/article_79868dd6-2db7-11ec-9ceb-6fff1d315544.html

[60] https://www.ohiomfg.com/wp-content/uploads/OMA_ManufacturingCounts2020.pdf

[61] Byrl R. Shoemaker and Darrel L. Parks, "A History of Vocational and Career Education in Ohio, 1828-2000", (Lincoln, NE: iUniverse, 2000)

[62] http://www.ohioacte.org/

[63] https://www.burning-glass.com/research-project/underemployment/#:~:text=Overall%2C%2043%25%20of%20college%20graduates,than%20twofold%20difference%20in%20risk.

[64] https://nces.ed.gov/surveys/ctes/figures/fig_2016107-2.asp

[65] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8441910/#:~:text=Early%20in%20the%20COVID%E2%80%9019,removing%20supplies%20from%20world%20markets; https://www.nytimes.com/2020/03/11/business/economy/coronavirus-china-trump-drugs.html; https://americanaffairsjournal.org/2020/11/reshoring-production-and-restoring-american-prosperity-a-practical-policy-agenda/; https://www.wsj.com/articles/fords-2021-to-do-list-is-topped-by-fixing-quality-problems-11612450536

[66] https://www.wsj.com/articles/indebted-chinese-chip-conglomerate-secures-state-backed-investor-11639161349

[67] https://www.yahoo.com/now/taiwan-semiconductor-ramp-us-chip-104135100.html

[68] https://download.intel.com/newsroom/2022/manufacturing/Gelsinger-White-House-Comments.pdf

[69] https://www.flyovercoalition.org/single-post/why-intel-s-silicon-heartland-won-t-be-wisconn-valley; https://www.newgeography.com/content/007324-metro-columbus-lands-massive-intel-plants

[70] https://www.wsj.com/articles/intel-earnings-first-quarter-2021-11619043954

[71] Kotkin, J., Lind, M. and Shideler, D. 2021, February. "Reshoring America: Can the Heartland Lead the Way?" https://heartlandforward.org/case-study/336

[72] https://www.theguardian.com/business/2021/oct/02/how-the-supply-chain-crisis-is-affecting-six-big-economies; https://www.wsj.com/articles/shipping-and-logistics-costs-are-expected-to-keep-rising-in-2022-11639918804

[73] https://www.bls.gov/opub/btn/volume-9/forty-years-of-falling-manufacturing-employment.htm

[74] http://www.cleveland.com/business/index.ssf/2010/08/manufacturing_jobs_in_clevelan.html

[75] https://www.cleveland.com/opinion/2015/08/cheap_energy_is_reviving_manuf.html

[76] https://mosimtec.com/opinion-ceos-rethink-global-production-playbook/

[77] https://fred.stlouisfed.org/series/OHMFGN

[78] https://www.nist.gov/blogs/manufacturing-innovation-blog/where-manufacturing-growing-and-where-it-not

[79] https://www.scdigest.com/ontarget/20-09-08_Top_States_Manufacturing_2020.php?cid=17111

[80] https://www.forbes.com/sites/chuckdevore/2019/07/10/in-trumps-first-30-months-manufacturing-up-by-314000-jobs-over-obama-what-states-are-hot/?sh=2eb614002677

[81] https://www.nist.gov/blogs/manufacturing-innovation-blog/where-manufacturing-growing-and-where-it-not

[82] https://www.wsj.com/articles/where-is-america-diversifying-the-fastest-small-midwestern-towns-11628860161

[83] https://fred.stlouisfed.org/series/SMU36935613000000001SA

[84] https://www.thirteen.org/uncertainindustry-2007/uncategorized/nyc-manufacturing-in-decline/#:~:text=In%201950%2C%20the%20city%20boasted,art%20galleries%20to%20clothing%20stores.

[85] https://app.powerbi.com/view?r=eyJrIjoiYjAxYmU5MDUtZ-mJmZi00NTJkLWI1ODEtMzU4NWY0ZjlhNDE0IiwidCI6ImY2O-GI2ZDZjLWIyMjItNGQwYS1hZjc0LTVlNGEwMGFkMzVkZ-CIsImMiOjN9&pageName=ReportSection7b892fa25070855e7910

[86] https://www.wsj.com/articles/midwest-labor-markets-shake-off-covid-19-downturn-11613817001

[87] https://www.bls.gov/web/metro/laulrgma.htm

[88] https://www.wsj.com/articles/midwest-labor-markets-shake-off-covid-19-downturn-11613817001; https://www.wsj.com/articles/midwest-labor-markets-shake-off-covid-19-downturn-11613817001

[89] https://www.nist.gov/blogs/manufacturing-innovation-blog/where-manufacturing-growing-and-where-it-not

[90] https://www.hoover.org/sites/default/files/research/docs/21117-ohanian-vranich.pdf

[91] https://electrek.co/2021/12/27/13-battery-gigafactories-coming-us-2025-ushering-new-era/

[92] https://www.wsj.com/articles/why-ford-picked-tennessee-for-its-new-electric-vehicle-plant-11634302800

[93] https://fred.stlouisfed.org/series/OHLICK0URN

[94] https://www.bls.gov/web/metro/laummtrk.htm

[95] A number of other Midwestern metros have generally competitive standards of living, which could improve their attraction of residents, business investment and job creation (Figure).

[96] https://heartlandforward.org/case-study/heartland-of-opportunity/

[97] https://www.nytimes.com/2019/05/02/business/economy/good-jobs-no-college-degrees.html

[98] Based on the URI Standard of Living Index for 2018. This index estimates the material standard of living for households who move in the report year, to different housing either from outside or within the 107 metropolitan areas with more than 500,000 residents. The material standard of living index is the cost-of-living adjusted median household income of metropolitan areas in relation to the national median household income. https://urbanreforminstitute.org/wp-content/uploads/2020/05/URI-2020-Standard-of-Living-Index.pdf.

[99] https://urbanreforminstitute.org/wp-content/uploads/2020/05/URI-2020-Standard-of-Living-Index.pdf

[100] https://www.urban.org/sites/default/files/publication/96221/homeownership_and_the_american_dream_0.pdf,

[101] https://mortgage300.com/blog/08/the-path-to-financial-freedom-how-homeownership-builds-wealth/#:~:text=Homeowners%20have%20a%20greater%20net,of%205%25)%20for%20renters

[102] https://heartlandforward.org/millennials-find-new-hope-in-the-heartland

[103] https://www.brookings.edu/research/how-migration-of-millennials-and-seniors-has-shifted-since-the-great-recession/

[104] https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0192962

[105] Annual births per 1,000 women aged 15 to 50.

[106] https://www.wsj.com/articles/where-is-america-diversifying-the-fastest-small-midwestern-towns-11628860161

[107] https://heartlandforward.org/case-study/the-emergence-of-the-global-heartland/

[108] https://uprisenashville.org/; https://www.localmemphis.com/article/money/business/new-tennessee-college-of-applied-technology-will-provide-training-for-workers-for-new-ford-facility/522-87d66970-13f2-460e-8369-30258e504096

[109] https://uprisenashville.org/

[110] https://www.census.gov/quickfacts/grandislandcitynebraska

[111] https://www.theatlantic.com/ideas/archive/2021/09/afghan-refugees-california-high-housing-prices/620016/

[112] https://www.ksdk.com/article/news/local/outreach/project-5/st-louis-organization-employs-empowers-immigrant-refugee-women/63-08f77ebe-3578-441a-b929-998da28ce2c4

[113] https://www.inforum.com/business/a-dream-to-be-here-former-refugees-fill-gaps-for-fargo-employers-during-labor-shortage

[114] https://newalbanycompany.com/business/new-albany-business-park/

[115] Derived from American Community Survey, 2008-2012 (average year 2010) & 2015-2019 (average year 2017), latest available data.

[116] https://www.marketwatch.com/story/high-cost-and-scarcity-of-daycare-is-contributing-to-labor-shortage-says-cleveland-fed-president-mester-11632504814; Nadine El-Bawb, "Employers offer stipends for babysitting and tutoring to sweeten child-care benefits and win over workers" CNBC, July 2019, 2021 https://www.cnbc.com/2021/07/09/employers-sweeten-child-care-benefits-to-win-over-workers-.html

[117] Rose Marcario, "Patagonia's CEO Explains How To Make On-Site Child Care Pay For Itself", Fast Company, August 15, 2016 https://www.fastcompany.com/3062792/patagonias-ceo-explains-how-to-make-onsite-child-care-pay-for-itself

[118] https://nationalfund.org/we-cant-train-our-way-out-of-this-crisis/

[119] https://nationalfund.org/help-workers-succeed/?gclid=Cj0KCQjw-4SLBhCVARIsACrhWLWpCN9cjHJGOPO3b4Sj9W_g9U1NbAnXSy3FozqThOCf6qq5yVF0GtQaAlMgEALw_wcB

[120] https://www.city-journal.org/html/technology-destroying-labor-market-15829.html#:~:text=No%E2%80%94policies%20that%20hurt%20our,not%20automation%2C%20are%20eliminating%20jobs.&text=The%20New%20York%20Times%20calls,than%20trade%20on%20manufacturing%20jobs.

[121] Mark Mills, The Cloud Revolution, (New York: Encounter, 2021), p.195

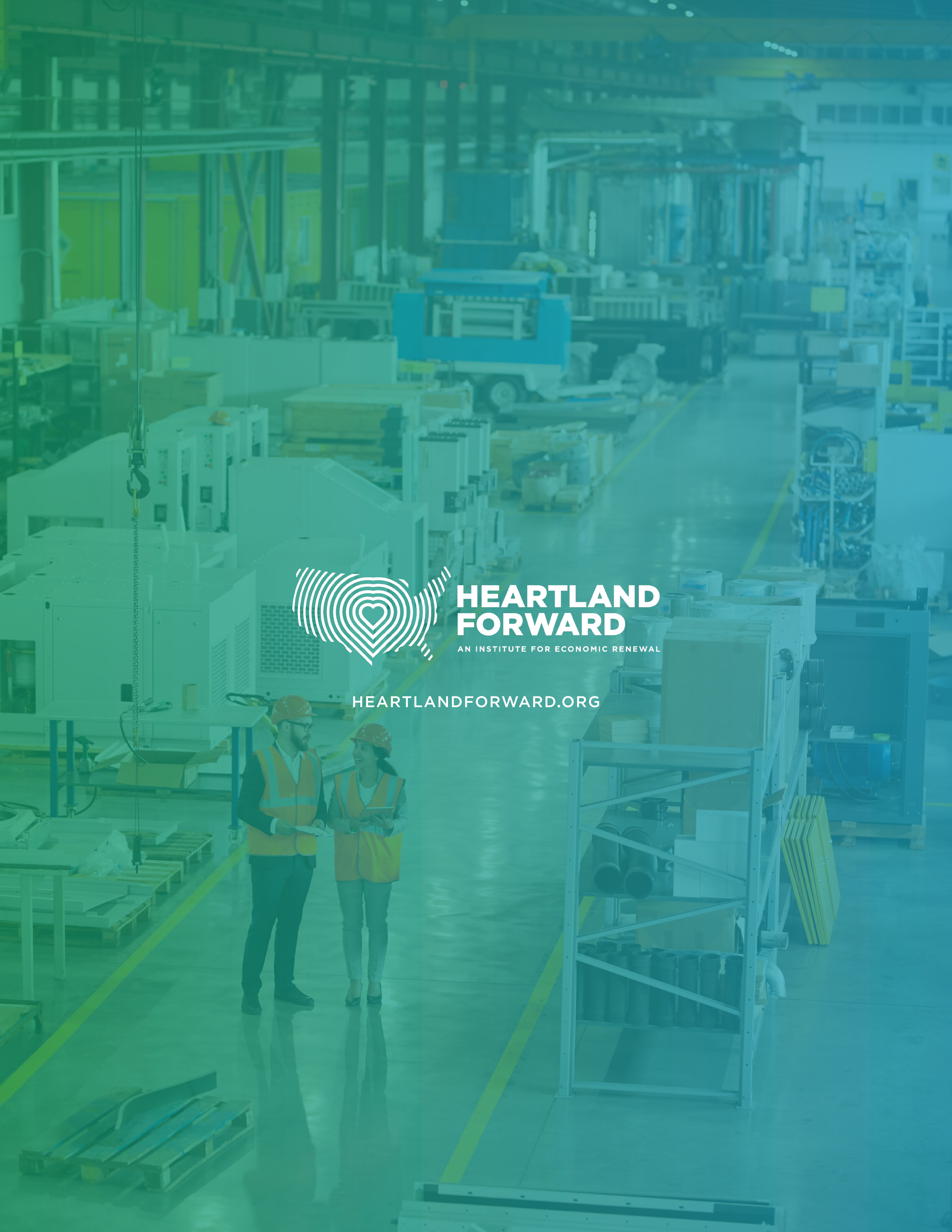
[122] https://economicgrowth.umich.edu/wp-content/uploads/2021/09/MForesight-Report_Clickable_Final.pdf

[123] https://www.americamakes.us/about/

[124] https://www.ic3dprinters.com/

[125] https://xactmetal.com/

[126] https://www.ic3dprinters.com/



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