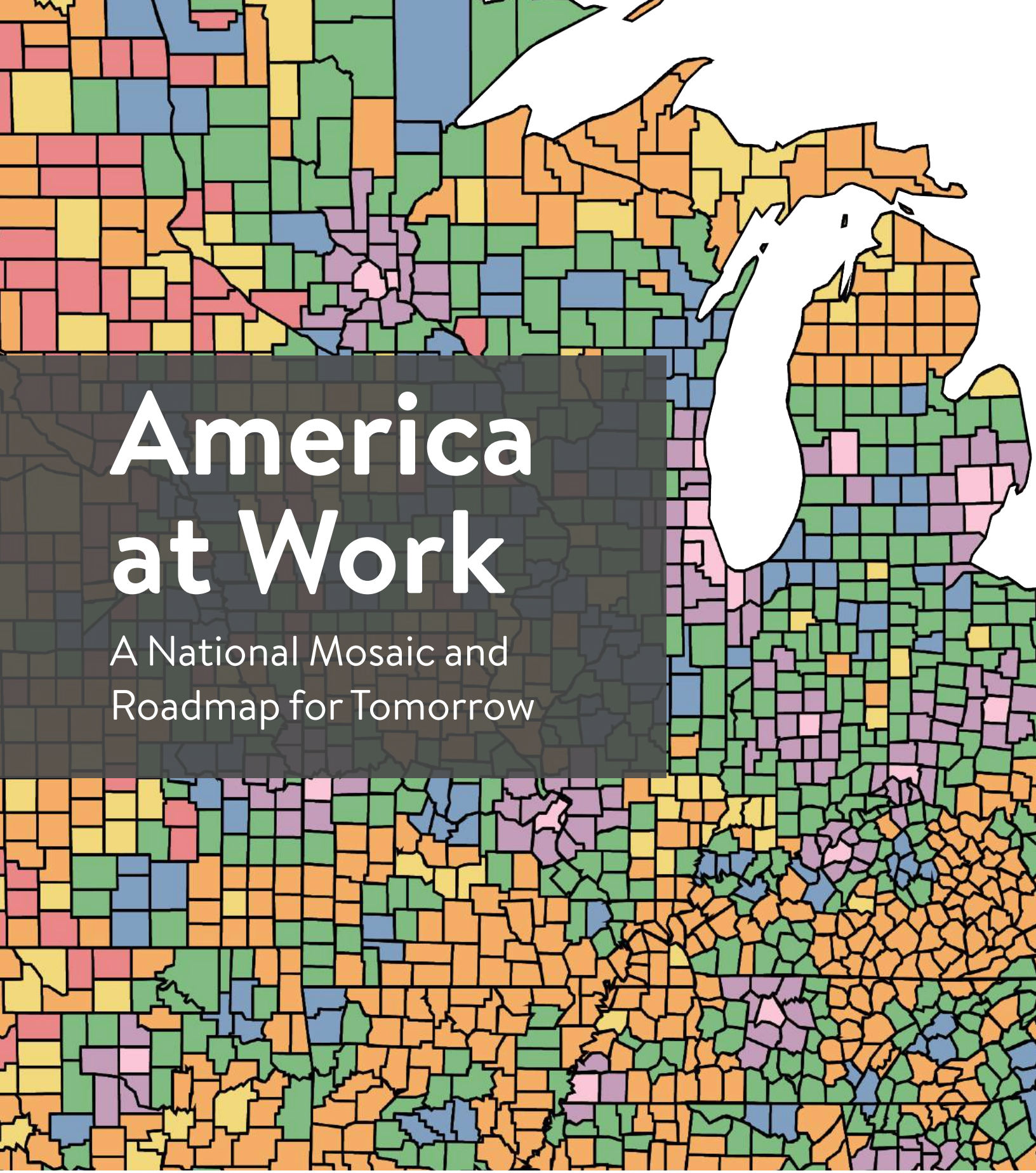


America at Work

A National Mosaic and Roadmap for Tomorrow

Walmart

Change is the only constant

The history of work in America certainly proves the point. The Industrial Revolution sent people streaming from the countryside into cities. The rise of mass production brought work indoors and onto the assembly line. As events constantly reshape work, society makes adaptive changes, from compulsory high school education to the GI Bill to the establishment of land grant universities.

Now automation promises to radically reshape the next generation of work in America. Current technologies alone could automate 45 percent of the time spent on activities that people are paid to do today, especially routine, repeatable activities. Some see automation as a threat—the source of widespread job displacement. Others see it as an opportunity—the source of higher-skilled, higher-paid jobs as technology takes over tedious and repetitive tasks. All agree that automation has arrived and is quickly changing the American workplace.

Across America, we face the need to make decisions about how to respond to this economic transition. Of course, change is never easy, and the diversity of America means that efforts to intervene cannot take a one-size-fits-all approach. Rather, interventions must be tailored to communities' particular characteristics.

America at Work: A National Mosaic and Roadmap for Tomorrow examines resiliency, or the capacity to respond to change—in this case, automation. This report results from the first effort to understand the more than 3,000 counties in the United States. Our goal is to help communities plan for their individual situations and develop responses that will position them to survive and thrive in a changing economy. Effective responses will require an integrated approach and cooperation across a range of stakeholders.

This research is anchored in Walmart's efforts to address the needs of our business, including preparing our workforce for the future.[1] We are also committed to helping strengthen the systems on which our success depends: a sustainable workforce, strong local talent development, and thriving communities with a solid customer base.

Our role in communities uniquely positions us to conduct this research. Not only do we employ over one million people in the United States, but 90 percent of Americans live within ten miles of a Walmart store.

1 Doug McMillon, "Preparing for the Future of Work," LinkedIn, December 6, 2018, https://www.linkedin.com/pulse/preparing-future-work-doug-mcmillon/.

At Walmart, we see a future where our people and the human touch will serve as our differentiator. We are investing billions of dollars in training, education, and higher wages to equip and ready our associates for the changing world of work while harnessing technology to empower them. These investments in our people are critical, because they are occurring in tandem with growing customer demand for convenience and a seamless shopping experience. Technology is already fostering opportunities to create higher-skilled jobs for our associates. We are seeing this already with our Online Grocery services, which have created 35,000 new personal shopper roles – positions that did not exist at Walmart just three years ago.

We partnered with McKinsey & Company to develop the fact base for this effort. We used methodologies and data from the McKinsey Global Institute, McKinsey's extensive research into workforce transitions and work in the public sector, Walmart's knowledge of human capital development, and experience from Walmart Giving's Retail Opportunity Program. We have produced perspectives on responses to automation trends that can help policy makers, employers, educational institutions, community leaders, and others plan for the future.

While we have not found all the answers, we hope that *America at Work: A National Mosaic and Roadmap for Tomorrow* inspires dialogue and action in the thousands of communities we call home.

Key insights from the research

The future of work is not a dichotomy of urban versus rural or the coasts versus Middle America.

It is time to stop overlooking huge swaths of the country and instead understand their complexities. America's more than 3,000 counties create a rich mosaic of eight community archetypes scattered across the country. The average state includes five of the eight archetypes. Each archetype has distinctive strengths and challenges that will determine its resiliency and shape its response to automation.

Almost 190 million people (about 60 percent of the US population) live outside the metropolitan areas that have the greatest capacity to respond to automation.

These suburban, semi-rural, and rural communities need help developing community-specific responses to automation.

Automation means that jobs will be done differently, not that jobs will disappear.

Existing technology could fully automate only 5 percent of occupations today, but 60 percent of occupations could see at least 30 percent of their activities automated, indicating the potential for dramatic change[2]. Automation potential is consistently significant across counties, indicating that automation will fundamentally shift how organizations are structured and how people work.

We see six principal responses to automation.

All of these responses—creating new jobs, retraining and upskilling, boosting mobility in the labor market, building and maintaining infrastructure, modernizing the social safety net, and strengthening education—can benefit all eight community archetypes. However, the benefits achieved and the right prioritization of responses depend on the particular strengths and obstacles to success associated with each archetype.

Responding effectively to automation will require community-level collaboration by multiple stakeholder groups.

Federal, state, and local governments; businesses; community leaders and residents; philanthropic organizations; and educational institutions must share ideas and develop and implement tactical plans. Today, this collaboration is happening the least in the communities that need it the most.

2 James Manyika, Michael Chui, Mehdi Miremadi, Jacques Bughin, Katy George, Paul Willmott, and Martin Dewhurst, A Future that works: Automation, Employment, and Productivity, McKinsey Global Institute, January 2017, https://www.mckinsey.com/~/media/mckinsey/featured%20insights/Digital%20Disruption/Harnessing%20automation%20for%20a%20future%20that%20works/MGI-A-future-that-works-Executive-summary.ashx.

Acknowledgements

Throughout this research, we have engaged with many stakeholders, including the American Enterprise Institute, the Aspen Institute, the National Association of Counties, the National Conference of State Legislatures, the National Governors Association, the National League of Cities, the National Skills Coalition, New America, members of the Retail Opportunity Network, and the United States Conference of Mayors. We are grateful for their time and insights, and we look forward to continuing the conversation with them.

Mapping the mosaic of American communities

Many have studied the evolution of automation and its potential impact on the future of work. But most of this research has focused primarily on cities or so-called "rural America," painted with a broad brush to mean everything "non-metro."

This research takes a more granular view, looking beyond the dichotomies of urban versus rural or the coasts versus Middle America to understand the diversity of communities across America, especially the rural, semi-rural, and suburban communities that have received less attention in future-of-work research to date than metropolitan communities have.

To that end, we built a comprehensive database that combines data from public sources, private sources, and the McKinsey Global Institute's Automation Potential database. We defined the county as the unit of measure, because counties typically delineate the boundaries of communities in ways that are more relevant than states or regions for understanding work opportunities.

To build the database, we applied several measures of resiliency (Exhibit 1). We considered five broad categories of data: innovation (e.g., universities and patents), development indicators (e.g., urban-rural continuum and real estate data), socioeconomic factors (e.g., poverty status and workforce participation), economic base (e.g., GDP by industry and productivity), and human capital (e.g., population, demographics, and educational attainment).

We applied the statistical technique of hierarchical clustering to this county-level data in order to quantify similarities and differences across the more than 3,000 counties in the United States. By comparing the counties across criteria in our database, the analysis established eight statistically distinct community archetypes arrayed along an urban–rural continuum (Exhibit 2).

Exhibit 1

Resiliency data categories

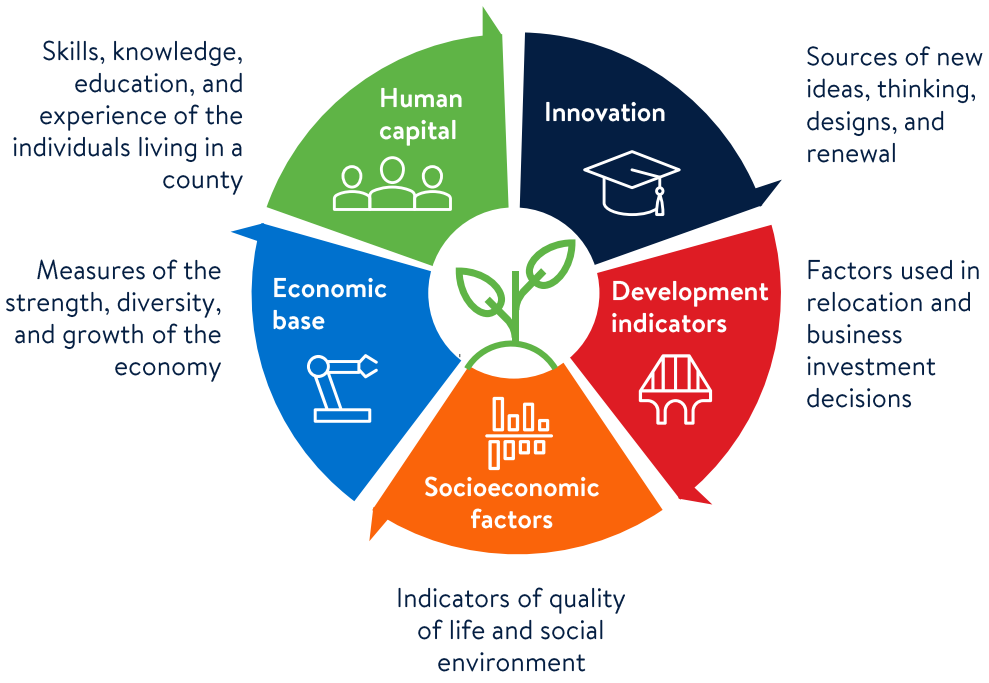
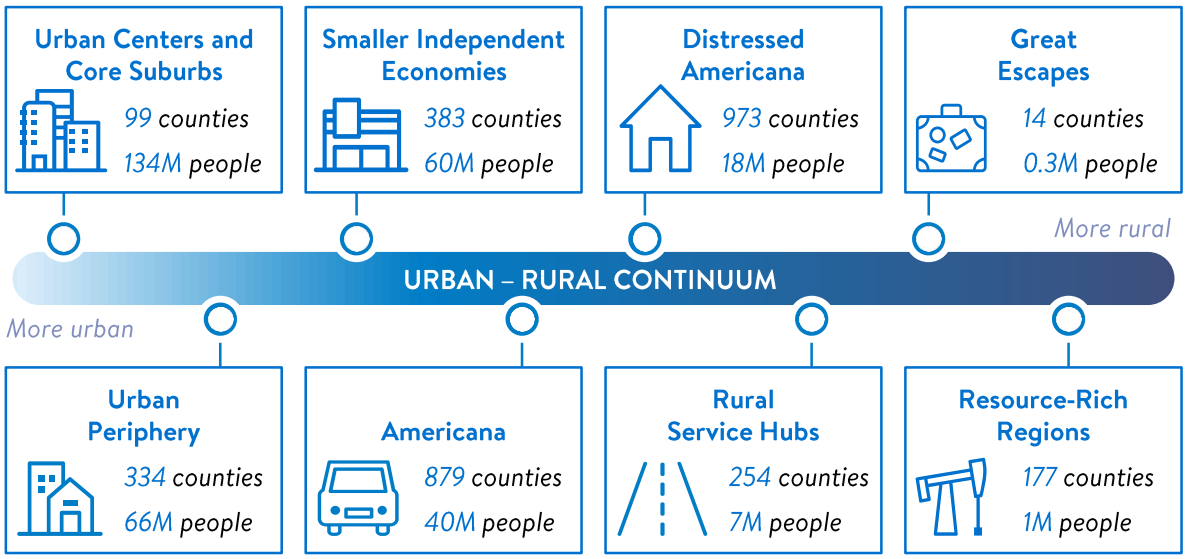


Exhibit 2

The research identified 8 community archetypes along the urban-rural continuum



We bolstered the quantitative research with input from more than 20 stakeholder groups, including policy-maker organizations, policy think tanks, community leaders, nongovernmental organizations (NGOs), and business leaders. They reviewed the segmentation and offered insights into resilience and promising responses for each community archetype. (For additional detail on the segmentation methodology and data, see the appendix.)

Our segmentation reveals significant diversity that creates a striking national mosaic. The analysis establishes that the monolithic "rural America" actually consists of five types of rural and semi-rural archetypes. Every state includes, on average, five of the eight archetypes (Exhibit 3). Texas includes seven, demonstrating just how many distinct communities, with distinct needs, a single state government can have to support.

The segmentation tells us much about the potential impact of automation at the county level. Automation potential, defined as the proportion of time spent on job activities that current technologies can automate, ranges from 32 percent (in Washington, DC) to 62 percent (Jerauld County, South Dakota). Within this range, the scores are remarkably concentrated. Over half of counties fall in the range of 42 to 44 percent, and 90 percent fall between 40 and 48 percent. While current technologies can completely automate only 5 percent of occupations,[3] this concentration shows that automation has significant potential impact, which is consistent across the country.

While overall scores may be similar across counties, the community segments will experience the economic impact of automation differently, particularly with regard to impact on "high-risk" jobs. In Automation and Artificial Intelligence, Brookings defines high-risk jobs as those susceptible to more than 70 percent automation.[4] The most rural segments—Resource-Rich Regions, Rural Service Hubs, Distressed Americana, and Americana—have the highest proportion of high-risk jobs, about 25 percent. By comparison, 21 percent of the jobs in Smaller Independent Economies and the Urban Periphery are high risk, and only 19 percent of jobs

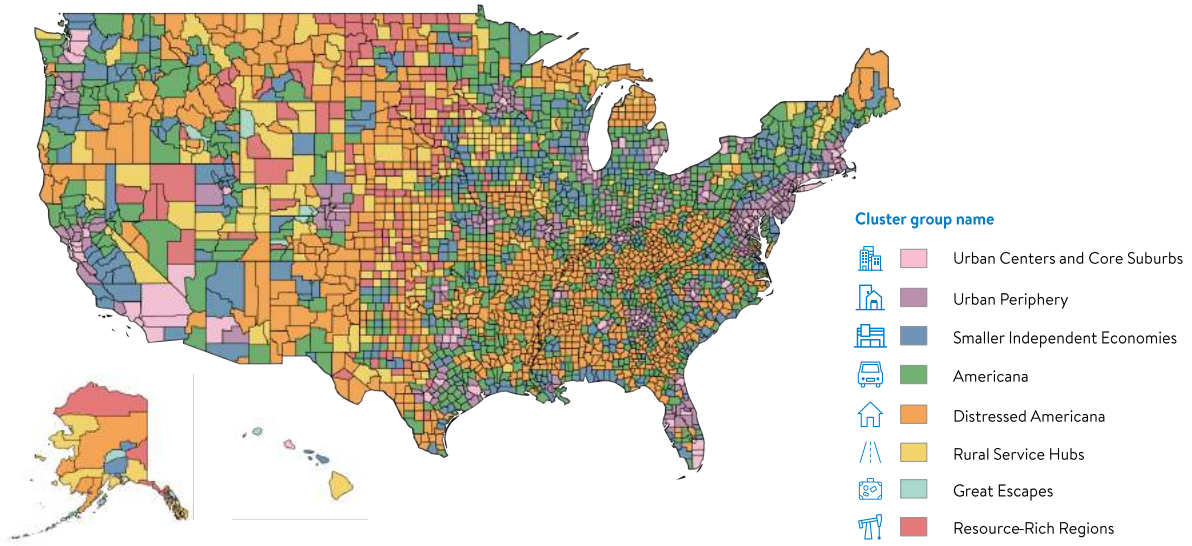
3 Ibid.

4 Mark Muro, Robert Maxim, and Jacob Whitman. *Automation and artificial intelligence: How machines are affecting people and places, Metropolitan Policy Program at Brookings, January 2019,* https://www.brookings.edu/wp-content/uploads/2019/01/2019.01_BrookingsMetro_Automation-AI_Report_Muro-Maxim-Whiton-FINAL-version.pdf.

Exhibit 3

The national mosaic shows incredible diversity of archetype representation across regions

Map of Community Archetypes, color coded by cluster group



in Great Escapes and Urban Centers and Core Suburbs are high risk. While the issue is not the focus of this report, it is also worth highlighting that automation will affect demographic groups differently as well, with Hispanic, Native American, and African-American workers facing higher automation potential than white workers.[5] (Further demographic information can be found in the appendix). We encourage subsequent research to continue to understand how the future of work will impact various demographics.

The heaviest concentration of the US population (more than 134 million people) lives in major metropolitan areas. But taken together, the rural, semi-rural, and suburban segments—Distressed Americana, Americana, Smaller Independent Economies, and the Urban Periphery—house some 184 million people. This underscores the importance of developing a more fine-tuned understanding of US communities.

5 Ibid.

Understanding community prospects

Working from an understanding of the eight community archetypes and their unique characteristics, the next step is to determine the interventions that will be the most effective for each archetype. We see six principal types of responses to automation:

1. Fostering economic development and creating new jobs.

This response involves promoting economic health and the growth of employment opportunities—for instance, attracting capital to low-investment areas through the USDA's Rural Business Investment Program.

2. Retraining and upskilling.

This entails providing workers with the skills necessary to find a new job after being displaced. An example is AT&T's partnership with Georgia Tech to launch Georgia Tech's online program for earning a master of science in computer science.

3. Boosting mobility within the labor market.

This includes efforts to enable physical mobility and workers' ability to communicate and transfer their skills within the labor market, as in the case of digital-technology credentialing through Greater Washington Partnership's Capital CoLAB.

4. Building and maintaining infrastructure.

This response ensures that communities have the physical infrastructure needed to connect with the rest of the country. An example is investment in public transportation.

5. Modernizing the social safety net.

This involves updating social systems to support workers, as appropriate, to coincide with current employment patterns. For instance, portable benefits could cover workers employed in the independent and gig economy.

6. Strengthening education.

These efforts aim to equip primary and secondary educational systems to prepare students for new economic realities, as in the case of Colorado's CareerWise apprenticeship program.

All eight community archetypes can benefit from all six responses, but the relevance of each response depends on community characteristics, such as workforce skills, access to education, diversity of employment opportunities, and proximity of workers to those opportunities.

Some community archetypes are better prepared than others to respond to the challenges of the future of work. Both Urban Centers and Core Suburbs and Great Escapes are well positioned to harness automation for economic benefit, as evidenced by growing populations and GDP. Similarly, Rural Service Hubs and Resource-Rich Regions, largely located in the western United States, have benefited from a resource boom, with GDP per capita and household incomes that outpace other rural and semi-rural communities. In these four community archetypes, the primary challenges revolve around the labor supply—ensuring that the community has a robust, well-trained workforce with skills in the right industries—to meet the labor demand, particularly in job types that are growing. Other research has explored these challenges in depth, so this research will not focus on these archetypes.

The prospects are different for the other four community archetypes: the Urban Periphery, Smaller Independent Economies, Americana, and Distressed Americana. These communities, home to 56 percent of the US population, face not only the labor supply issues that confront all of the community archetypes, but also labor demand issues. The primary challenges of these communities are often economic development, job creation, and the attraction of employers and community residents.

Tailoring automation responses to communities

All eight community archetypes have unique characteristics that will shape their responses to the emerging future of work.

	Community archetype	Core objective	Description
	Urban Centers and Core Suburbs	Promote inclusive growth	Ensure access to opportunities for all members of the community
	Urban Periphery	Enhance connectivity and promote livability	Enhance connections to the urban core while developing distinct strategies to attract residents, businesses, and innovation
	Smaller Independent Economies	Build upon the "Main Street" knowledge economy	Maintain and grow attractiveness as a destination for white-collar employment
	Americana	Leverage a skilled workforce for economic development	Attract new investment and job growth by promoting the skills base of the incumbent workforce
	Distressed Americana	Build foundational skills and attract capital	Build a transferable base of foundational skills and leverage potential strengths (e.g., agriculture, ecotourism) to attract capital
	Rural Service Hubs	Become the tech-enabled service hub of the 21st century	Enable hyperlocal mobility between jobs automated and new jobs gained
	Great Escapes	Create pathways to growing personal services	Create training to help service workers transition from transactional service jobs to growing personal-services roles
	Resource-Rich Regions	Maintain the supply of skilled workers	Ensure a sufficient supply of technical workers to support and enhance the boom while planning for the future

Urban Centers and Core Suburbs

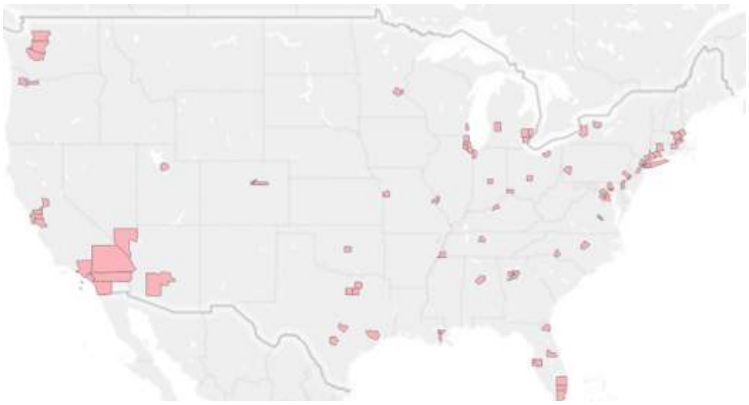
The Urban Centers and Core Suburbs are the major metropolitan areas of the United States, including New York County, New York; Cook County (Chicago), Illinois; and Dallas County, Texas, and their adjacent suburbs that often host corporate headquarters and universities. These communities boast the most assets of any segment, including diverse employment opportunities, access to capital investment, and many educational institutions.

The growing urbanization of the country means that these communities are already hubs for population growth and economic development. They have the assets to tap most of the potential responses to automation.

Many residents (64 percent) of these communities have at least some college education. Most work in a service industry, such as healthcare, retail, or professional services.

While these communities have large populations of educated white-collar workers, Urban Centers are also the most diverse segment; almost half of the population (48 percent) is nonwhite. (For more detailed demographic information, see the appendix.) Urban Centers also house considerable inequality. Many residents have lower incomes, lower educational attainment, and more limited access to the opportunities that define the urban core. These residents often struggle with the cost of living as economic development draws even more people to the urban core. Significant research has been done to put forth interventions for addressing inequities within Urban Centers. Given the mission of the report and the extensive work already done in this area, we will not go into these interventions here.

These communities could respond to automation by expanding business-government partnerships and connecting less-skilled and lower-income residents with opportunities.



Number of counties	99	Total population	134M
Household income	$64K	GDP	$62.8B
Unemployment	4.1%	% of GDP from primary industries[2]	1%
Average population	950K	% of GDP from secondary industries[2]	15%
Population change	0.8%	% of GDP from tertiary industries[2]	23%
% of population with a bachelor's degree or higher	36%	% of GDP from quaternary industries[2]	61%
Miles from major MSA	—	Range of automation potential	33%–45%

1 Variables represent the median of the cluster unless otherwise noted
2 Mean of the cluster
Sources: US Bureau of Economic Analysis, US Census, Moody's Analytics, McKinsey Global Institute

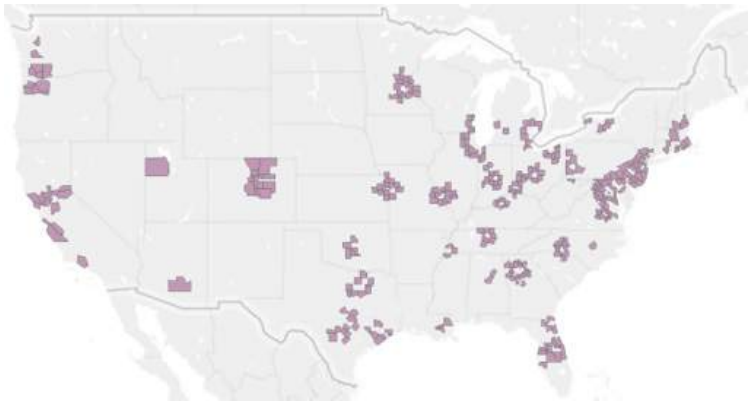
Urban Periphery

The more distant suburbs surrounding Urban Centers and Core Suburbs, often in a ring, constitute the Urban Periphery. These communities, like Denton County, Texas, often house some significant employers, but their economy depends heavily on their connections with the nearby urban core. As a result, almost a quarter of Urban Periphery residents commute to work outside the county.

Located across the country, these communities often resemble the major metropolitan areas they surround, with similar median household incomes and labor force participation rates. But Urban Periphery communities usually have lower GDP per capita and lower educational attainment. Median household income is typically high relative to other segments.

Urban Periphery communities enjoy access to education, employment, and business in the cities they surround. But these communities seldom house large research-focused universities, and industry diversity is often limited, as many businesses are moving from the suburbs to the urban core.

Some of these communities lack well-developed infrastructure connections to their hub cities. Relying on the urban center for help in responding to automation could pose challenges, especially for lower-income residents.



Number of counties	334	Total population	66M
Household income	$65K	GDP	$5B
Unemployment	4%	% of GDP from primary industries[2]	5%
Average population	138K	% of GDP from secondary industries[2]	24%
Population change	0.8%	% of GDP from tertiary industries[2]	25%
% of population with a bachelor's degree or higher	27%	% of GDP from quaternary industries[2]	46%
Miles from major MSA	45	Range of automation potential	36%–54%

1 Variables represent the median of the cluster unless otherwise noted
2 Mean of the cluster
Sources: US Bureau of Economic Analysis, US Census, Moody's Analytics, McKinsey Global Institute

Working together to develop community interventions

The greatest asset of Urban Periphery communities is their proximity to large metropolitan centers. Communities could help residents take maximum advantage of this proximity by investing in infrastructure that connects the community with the hub city. At the same time, this proximity creates the challenge and opportunity of creating a distinct, attractive identity within the context of the metro area, which can be supported by strengthening education and increasing livability.

Build and maintain the infrastructure connecting the community with the metro center. Relevant infrastructure includes roads, bridges, trains, and other public transportation. Maintaining these gives residents access to economic opportunities in the hub city.

The last few years have seen more and more corporate headquarters move from the suburbs into metro centers; examples include GE, Kraft Heinz, and McDonald's. As once-suburban jobs move deeper into the urban core, reliable roads and public transportation systems become vital to ensuring that employees who live in the suburbs can get to work. Public transportation is particularly important for lower-income workers, who may not be able to afford a car for a long commute. Communities could further support these workers by subsidizing their transportation costs.

Attract residents and businesses by investing in the development of a walkable community with live-work-play spaces. As urbanization expands, Americans value the ability to walk comfortably from their homes to offices, restaurants, stores, and places of recreation. Mixed-use, "live, work, play" developments enhance walkability and draw residents eager for easy access to amenities. Mixed-use spaces attract economic activity and residents by placing residential developments, businesses, and recreation in close proximity. Live-work-play areas attract a variety of customers and residents while lowering costs for residents and employers alike.

In 2003, Sugar Land in Fort Bend County, Texas, began developing the community town square, a hub of economic activity that combines retail, commercial, and office spaces. The community continues to seek opportunities to invest in more such spaces.[6]

Promote the development of affordable housing. Addressing the affordability issues that are growing in Urban Periphery communities can make residence in the community attractive to people who work in the metro center. The US Department of Housing and Urban Development defines households spending more than 30 percent of their income on housing as "cost burdened" and estimates that some 12 million households spend over 50 percent of their income on housing.[7] This problem is especially severe in the suburbs, where more Americans live below the poverty line than in the urban core.[8]

6 Kyle K. Shelton, *Building stronger suburbs: Adaptability and resilience best practices from suburban Houston, Urban Land Institute Houston, Rice University, November 2016*, https://kinder.rice.edu/research/building-stronger-suburbs-adaptability-and-resilience-best-practices-suburban-houston.

7 US Department of Housing and Urban Development, "Affordable housing," https://www.hud.gov/program_offices/comm_planning/affordablehousing/.

8 Richard Florida, "The new suburban crisis," CityLab, May 2, 2017, https://www.citylab.com/equity/2017/05/the-new-suburban-crisis/521709/.

Plan and innovate. Urban Periphery communities often do not plan together with other suburban counties independent of the core to address periphery-specific issues. When they do, these communities can leverage their assets—small size, less bureaucracy, availability of physical space—to innovate quickly.

Hamilton County (Fishers), Indiana, is tackling the future of work head-on with innovation. Facing technological disruption of their major industries, county leaders teamed up with local tech leaders, entrepreneurs, and educators to launch an Internet of Things lab.[9] The lab provides working space and innovation resources for entrepreneurs and small companies.[10]

Equip community residents to take advantage of employment opportunities in the hub city and in the Urban Periphery. Relevant efforts would include strong K–12 STEM programs, business partnerships with universities, and youth apprenticeship programs that build the capabilities required for employment in the hub city. Strong STEM education starting early in childhood, particularly in subjects like coding and statistics, can prepare students to meet the growing demand for technology skills and secure the "new economy" jobs that are often located in the urban core.

State and local governments would need to lead response efforts, as they have the resources to make the necessary investments in infrastructure, community development, education, and housing.

9 Scott Fadness, "Why the suburbs are where innovation will happen," Governing, May 31, 2017, http://www.governing.com/gov-institute/voices/col-why-suburbs-where-innovation-will-happen.html.

10 Indiana IoT Lab Fishers, "About IoT," https://indianaiot.com/about/.

SUCCESS STORY: Clackamas County, Oregon knows it's all about access

Oregon's Clackamas County shows that building strong infrastructure can support both connection to the urban core and independent economic-development efforts.

Clackamas County is a top Urban Periphery community, measured by GDP, median household income, and other key metrics. This community benefits from ready access to nearby Portland and to natural resources, including Mount Hood, the only year-round ski resort in the United States. Agriculture, timber, and manufacturing anchor the economy, with manufacturing employing more than 24,000 people and delivering 22 percent of the county's GDP. A growing healthcare industry employs over 27,000 people.

The community can take advantage of proximity to an urban center, thanks to strong infrastructure connections including the MAX Light Rail, funded by a combination of federal and local government investment. Construction of the rail system began in the 1980s, and investments continue to this day. In 2015, the opening of the Orange Line extended light-rail access in Clackamas County and was expected to carry 20 percent more commuters into downtown Portland while improving travel time 29 to 58 percent.[11] The Transit Assistance Program subsidizes access to public transportation, including the bus system and the MAX Light Rail.[12]

In addition to strengthening ties to the core, investment in the light-rail system has anchored redevelopment and economic investment. Development of the Orange Line brought construction of new sidewalks, paths, and bike parking spots. The county is investing in redevelopment around the new rail stations through projects such as the Tacoma Station Area Plan and the North Milwaukie Industrial Area Plan, which seek to enhance the community by developing mixed-use spaces.[13] Connectivity to Portland is attracting new residents and would-be homeowners looking for affordability.[14]

County facts	Clackamas County	Segment median
Median household income	$79K	$65K
Population	412K	138K
Total GDP	$19M	$5M
% of population with a bachelor's degree or higher	34%	27%
Automation potential	43%	43%

Sources: US Bureau of Economic Analysis, US Census, McKinsey Global Institute

11 TriMet. "Portland-Milwaukie Light Rail Project Fact Sheet," February 2014, https://trimet.org/pdfs/pm/Fact-sheets-timelines/PMLR_Fact_Sheet_Feb2014.pdf.

12 Clackamas County, "Commuting," https://www.clackamas.us/wellness/commuting.html#Transit.

13 Guadalupe Triana, "Opportunity in access: Exploring the future of North Milwaukie jobs center," Metro, December 6, 2016, https://www.oregonmetro.gov/news/opportunity-access-exploring-future-north-milwaukie-jobs-center.

14 Craig Beebe, "Down the line: Tracking change in Milwaukie, after MAX," Metro, December 6, 2016, https://www.oregonmetro.gov/news/down-line-tracking-change-milwaukie-after-max.

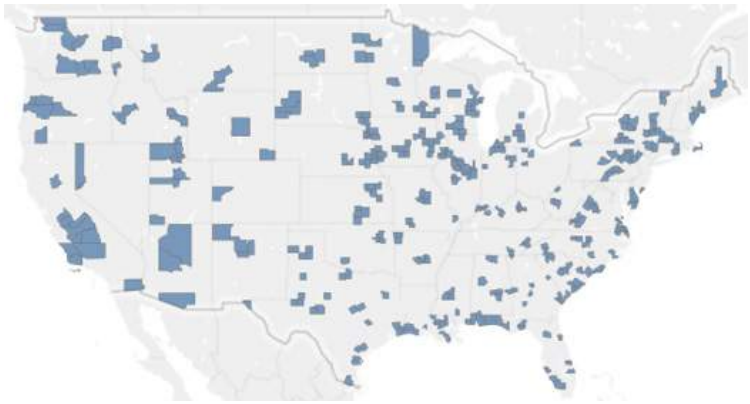
Smaller Independent Economies

Each of the Smaller Independent Economies, which include Cumberland County (Portland), Maine, and Bernalillo County (Albuquerque), New Mexico, stands economically on its own. While not connected economically to major metropolitan areas, these communities boast a large number of white-collar jobs matched only by the Urban Centers.

Smaller Independent Economies house the headquarters of major companies, including Union Pacific and Hershey, that bring with them skilled jobs and high quality of life, supported by a median household income of $57,000. In many states—among them New Mexico, Idaho, and Arkansas—these communities are the main contributors to the state economy and to education, as they often house a college or university.

These smaller cities are located across the country, on average 162 miles away from major metropolitan areas. Their economies operate independently of those metro economies, often centered around an employer or other anchor, such as Walmart in Benton County, Arkansas, or the University of Notre Dame in St. Joseph County, Indiana.

Smaller Independent Economies tend to have household incomes that are higher than those of Americana communities but lower than those of Urban Centers and the Urban Periphery. They rely on educated white-collar workers, as evidenced by higher average educational attainment than in Americana communities and the presence of at least one academic institution. These communities also have a relatively high number of residents employed in manufacturing and lower-skilled service jobs. All of these jobs, including the white-collar roles, may be vulnerable to automation.



Number of counties	383	Total population	60M
Household income	$57K	GDP	$5B
Unemployment	3.9%	% of GDP from primary industries[2]	7%
Average population	116K	% of GDP from secondary industries[2]	22%
Population change	0.5%	% of GDP from tertiary industries[2]	23%
% of population with a bachelor's degree or higher	26%	% of GDP from quaternary industries[2]	48%
Miles from major MSA	162	Range of automation potential	36%–57%

1 Variables represent the median of the cluster unless otherwise noted
2 Mean of the cluster
Sources: US Bureau of Economic Analysis, US Census, Moody's Analytics, McKinsey Global Institute

Working together to develop community interventions

While Smaller Independent Economies are generally too distant to look to a major metro area for help, they often have valuable assets to leverage in response to automation: educational institutions, a strong employer base, high educational attainment, and many skilled white-collar workers. These communities could leverage and bolster their considerable assets to attract white-collar employers and skilled workers.

Attract "new economy" employers and employees. Ways to attract employers and workers include positioning the community as an economic development hub and investing in quality of life, including museums, restaurants, and diversity. This means encouraging businesses to embrace a low-cost alternative to urban corporate headquarters that also appeals to current and prospective employees. Promising strategies include developing attractive living options, building educational partnerships, and offering incentives for relocation that would attract and retain jobs and people from the urban core and make the community a sustainable hub.

Douglas County (Omaha), Nebraska, has invested in assets that make the community more attractive to young professionals. The Greater Omaha Chamber's Young Professionals Council launched its Campaign for a Greater Omaha with a survey that asked young professionals to prioritize values like civic vitality, inclusivity, and arts and culture.[15] Omaha has invested and continues to invest in urban-development projects that address these values, including a "Makerhood District" for creative tenants in the arts and trades and riverfront housing, offices, and entertainment venues.[16]

Other Smaller Independent Economies, including Tulsa County, Oklahoma, are attracting skilled residents by paying cash incentives to remote workers to relocate and live in the community.[17] These incentives can tap various funding sources. Tulsa's program enjoys private funding from the George Kaiser Family Foundation, while a similar statewide incentive program in Vermont is funded by a state law and governed by the Vermont Agency of Commerce and Community Development.[18]

Create training pathways to enhance white-collar skills. Training initiatives should aim to provide the skills needed to fit the economy of the 21st century. Employer partnerships with local educational institutions could develop and deliver corporate-sponsored training in high-demand skills like computer coding and data interpretation.

15 Greater Omaha Chamber, "Campaign for a Greater Omaha survey results released," March 2, 2016, https://www.omahachamber.org/campaign-for-a-greater-omaha-survey-results-released/.

16 Cindy Gonzalez, "Omaha-area development projects in the works," *Omaha World-Herald, May 8, 2018*, https://www.omaha.com/omaha-area-development-projects-in-the-works/collection_e67fce36-0366-5ccb-bfd2-86fe729c3861.html.

17 Tulsa Remote, 2018, https://tulsaremote.com/#hero.

18 April McCullum, "Vermont will pay remote workers $10,000 to move here," *Burlington Free Press, May 31, 2018*, https://www.burlingtonfreepress.com/story/news/local/vermont/2018/05/31/vermont-pay-remote-workers-move-incentive/659553002/.

The number of tech companies located in Boise County, Idaho, has jumped 61 percent over the last ten years, and the county has 6,000 unfilled STEM jobs. In response, national technology training company Coding Dojo recently opened a campus in downtown Boise. In addition to running software development boot camps, Coding Dojo has plans to launch an apprenticeship program in partnership with the Idaho Department of Labor that will place boot camp graduates in one of the county's tech companies to learn while gaining paid work experience.[19]

Promote entrepreneurship. Communities can promote entrepreneurship by easing regulations on launching a business, offering tax breaks, and developing funding sources, incubators, or accelerators. Pulaski County (Little Rock), Arkansas, has several programs, including the Arkansas Venture Center, Innovate Arkansas, and the Arkansas Innovation Hub, that provide entrepreneurs with the resources needed to launch new ventures.[20]

The local government should take the lead on attracting knowledge economy employers and the workforce required to support them. Local governments can also help connect companies and investors with potential collaborators and beneficiaries, including educational institutions and entrepreneurs needing support.

19 Lex Nelson, "Technology training company Cody Dojo to open Boise campus at Trailhead," *Boise Weekly, December 14, 2018,* https://www.boiseweekly.com/boise/technology-training-company-coding-dojo-to-open-boise-campus-at-trailhead/Content?oid=16340458.

20 Arkansas Economic Development Commission, "Small cities reap big rewards for tech startup companies," November 16, 2017, https://www.arkansasedc.com/news-events/arkansas-inc-blog/post/active-blogs/2017/11/16/small-cities-reap-big-rewards-for-tech-startup-companies.

SUCCESS STORY: Washoe County, Nevada gambles on high tech

Washoe County, Nevada, shows how attracting a new type of employer can create jobs and stimulate economic development.

Home to both Reno and the less flamboyant city of Sparks, Washoe County had been a mining center since the 1850s. In 1931, Nevada legalized gambling, and the local economy flourished as a gambling hub until the 2008 recession crippled that economy. The city government cut 500 positions—one-third of its workforce. Housing prices plunged 58 percent, and Reno lost more than 30,000 construction jobs. By 2011, Reno faced the prospect of insolvency.

In a bold move to avert disaster, Reno turned to the tech industry for economic revitalization. Washoe County positioned itself as a lower-cost alternative to Silicon Valley, thanks to its lower housing and labor costs. Many tech companies were convinced, saying an additional reason for their relocation was Reno's relative proximity to Silicon Valley, which is about an hour away by plane.

In 2012, Apple announced plans to invest $400 million in building a data center in neighboring Storey County; in 2014, Tesla announced plans to build a battery manufacturing plant there. Nevada supported these plans with a ten-year tax break of $88 million for Apple and a total tax incentive of $1.3 billion for Tesla.

The tech gamble has paid off handsomely for Washoe County and Reno. Recognized as a US tech hub, the county gained 11 tech companies and 15 corporate headquarters in 2018. The Reno/Sparks economy added 2,000 jobs in 2018, and the average wage jumped 40 percent over 2016. Today, Reno has a strongly entrepreneurial culture, reflected in the presence of more than 25 start-ups. Population and wage growth have boosted housing prices, with the average rent in the county up 25 percent.

County facts	Washoe County	Segment median
Median household income	$60K	$57K
Population	460K	115K
Total GDP	$22M	$4.5M
% of population with a bachelor's degree or higher	29%	26%
Automation potential	43%	44%

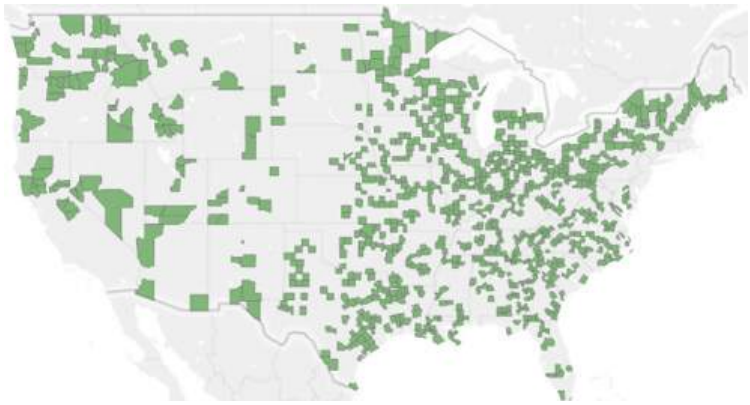
Sources: US Bureau of Economic Analysis, US Census, McKinsey Global Institute

Americana

The Americana communities are the core of what is commonly called "rural America." They are spread across the country, encompassing classic midwestern towns, upstate New York, Georgia, the Northeast Kingdom of Vermont, and northern Oregon. These communities are located, on average, some 130 miles from the nearest major metropolitan area.

These communities have lower GDP per capita and educational attainment than more urban community archetypes, but also possess a few key assets. They are often closer to major cities than other rural communities and often benefit from the presence of a few major employers, such as Kellogg in Calhoun County, Michigan, and Pella Windows and Doors in Marion County (Pella), Iowa. Anchor employers build a skilled workforce, but the industries in Americana communities—typically in agriculture and manufacturing—are shifting, creating substantial risk of automation.

While manufacturing faces challenges, these industries have given Americana communities advantages over their Distressed Americana counterparts: stable population, lower unemployment, and higher household income. Manufacturing, the principal employer of Americana residents, also provides workers with a base of core skills that can open doors to other employment opportunities.



Number of counties	879	Total population	40M
Household income	$48K	GDP	$1.1B
Unemployment	4.5%	% of GDP from primary industries[2]	11%
Average population	33K	% of GDP from secondary industries[2]	27%
Population change	0.0%	% of GDP from tertiary industries[2]	22%
% of population with a bachelor's degree or higher	17%	% of GDP from quaternary industries[2]	41%
Miles from major MSA	132	Range of automation potential	34%–57%

1 Variables represent the median of the cluster unless otherwise noted
2 Mean of the cluster
Sources: US Bureau of Economic Analysis, US Census, Moody's Analytics, McKinsey Global Institute

Working together to develop community interventions

Thanks to the presence of a few core assets and employers, Americana communities often have a skilled incumbent workforce. Americana communities could promote and refresh this skills base to attract new jobs and future-proof the jobs that are already there.

Help anchor employers to locate more of their current and future jobs in the community. Anchoring local employers occurs through investments in assets like education. These employers are one of the strongest assets in Americana communities. They are critical to sustained stability. For example, the Chobani yogurt factory in Chenango County, New York, employs some 1,000 workers and is reportedly considering expanding production in the county.

Leverage the existing skill base to continue economic development efforts and attract new business. Access to skilled workers can be a major factor in business site selection for large employers and entrepreneurs alike. In addition to trying to attract major employers, Americana communities could also encourage and support the next generation of entrepreneurs. New America's ShiftLabs highlights that entrepreneurship training is one way to build individual capacity and support new business creation.[21]

Retrain and upskill employees to handle jobs in expanding fields. This calls for implementing career and technical education programs that link education with jobs, especially in growing industries such as healthcare, as core manufacturing industries increasingly automate.

Employers could develop and deliver programs in partnership with educational institutions, technical schools, and local governments, as Hancock County (Findlay), Ohio, did recently. Marathon Petroleum, headquartered in Hancock County, partnered with Findlay University to fund scholarships and an internship program that boasts an almost perfect job placement rate.

Develop cross-industry skills credentialing that enables employees to communicate and demonstrate their skills and the applicability of those skills to future work. Moving into 21st-century jobs will often require changing industries. The Aspen Institute sees a two-sided communication need: employers must communicate the skills they need, and workers must communicate the skills they have. In partnership with the Walmart Foundation, organizations including Credential Engine, Job Data Exchange, and T3 Network are rewiring the current skill-signaling system toward more transparency and integration, as well as helping to build linkages across the data and tech infrastructure that underpins this new system to enable it to thrive.

21 Shift Commission, *Report of findings*, *New America*, *May 2017*, https://docsend.com/view/4wizcjb.

Implement youth apprenticeship programs in coordination with major employers. The apprenticeship programs can aim to define clear career paths, help students choose the best track for them, and prepare them to secure and succeed in full-time employment. A recent report by the USDA Task Force on Agriculture and Rural Prosperity cited a particular need for such apprenticeship programs in healthcare and skilled trades.

Americana communities could model their programs on Germany's dual-system apprenticeship structure, where students divide their time between attending high school and working for a local employer.[22] Colorado has built its CareerWise apprenticeship program to mirror the similar Swiss apprenticeship model, which sends 70 percent of students to an apprenticeship instead of directly to college.[23]

Local government and employers would need to partner to drive these response efforts and develop credentialing, training programs, apprenticeships, and economic-development initiatives to promote job growth.

22 James Manyika, Susan Lund, Michael Chui, Jacques Bughin, Jonathan Woetzel, Parul Batra, Ryan Ko, and Saurubh Sanghvi, *Jobs lost, jobs gained: Workforce Transitions in a Time of Automation*, *McKinsey Global Institute*, *December 2017, p. 112.*

23 Dwyer Gunn, "The Swiss secret to jump-starting your career," *Atlantic*, *September 7, 2018, https://www.theatlantic.com/business/archive/2018/09/apprenticeships-america/567640/.*

SUCCESS STORY: Peach County, Georgia gets ready for work

Peach County demonstrates how Americana communities can leverage a strong skills base, local university, and workforce development strategies to attract and retain employers.

Peach County has a diverse mix of employers, including the main manufacturing plant of school bus manufacturer Blue Bird. Blue Bird employs 2,400 people, accounting for about 20 percent of the county's employment. Other major employers in the county include Fort Valley State University, the Peach County school district, and Lane South Orchards peach and pecan farm.[24]

The community has a highly skilled workforce, and Peach County wants to build on that skill base to remain a strong destination for future employment. Peach County employs several workforce development programs to achieve that vision.

The community partners with the Georgia Technical College System and the State of Georgia to attract potential new employers through Quick Start, the top-ranked workforce development program in the United States.[25] Quick Start, a state-funded program, is free to qualifying employers who are creating jobs in Georgia. The program helps them define their workforce needs and hire well-matched employees and provides job-specific training to these employees.[26] Quick Start helped Blue Bird expand in 2016.

"You're bringing three different groups together: business, education, and the state. When you have that formula, you're a success."

– Michael McCurdy, Blue Bird, on Quick Start

Peach County also looks to Fort Valley State University for help in attracting employers, and the county is a Georgia Work Ready–certified community. The Work Ready program helps employers profile their open jobs based on the tasks and skills needed and provides an assessment that enables people to earn Work Ready Certificates, which measure and communicate their core skills. The program enables employers to find the right skilled workers for open positions.[27]

County facts	Peach County	Segment median
Median household income	$44K	$48K
Population	27K	33K
Total GDP	$747M	$1.1B
% of population with a bachelor's degree or higher	20%	17%
Automation potential	48%	45%

Sources: US Bureau of Economic Analysis, US Census, McKinsey Global Institute

24 Development Authority of Peach County, Georgia, "Largest employers," https://peachcountydevelopment.com/largest-employers.

25 Development Authority of Peach County, Georgia, "Workforce Development Center," https://peachcountydevelopment.com/business-resources/workforce-development-center.

26 Technical College System of Georgia, "What we do," Georgia Quick Start, 2016, https://www.georgiaquickstart.org/what-we-do.

27 Development Authority of Peach County, Georgia, "Workforce Development Center," https://peachcountydevelopment.com/business-resources/workforce-development-center.

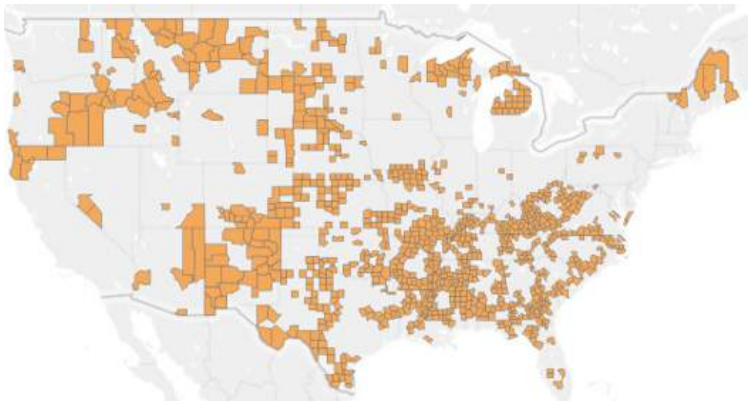
Distressed Americana

The Distressed Americana communities struggle, usually due to forces that began pulling people out of mines and fields generations ago and continue today as manufacturing jobs disappear. The impact of previous economic changes puts these communities at a disadvantage in responding to automation.

Distressed Americana communities are concentrated in the South but are also found in other parts of the country, including the northernmost portions of Maine and Michigan and along the Texas-Mexico border. These communities resemble other definitions of distressed areas, including those of the Appalachian Regional Commission and the Delta Regional Authority, and are often demographically diverse.

Distressed Americana communities face many challenges: poverty, population decline, low educational attainment, low labor force participation (53 percent), very few job opportunities, and often little understanding elsewhere of their situation. These communities are some of the most fragile in the country, and many have been declining for the last 25 years.[28]

Broadband access in these communities is usually limited. This makes it hard for people to take advantage of opportunities to learn and work online.



Number of counties	973	Total population	18M
Household income	$40K	GDP	$0.4B
Unemployment	5.1%	% of GDP from primary industries[2]	17%
Average population	13K	% of GDP from secondary industries[2]	21%
Population change	–0.4%	% of GDP from tertiary industries[2]	21%
% of population with a bachelor's degree or higher	14%	% of GDP from quaternary industries[2]	42%
Miles from major MSA	190	Range of automation potential	33%–57%

1 Variables represent the median of the cluster unless otherwise noted
2 Mean of the cluster
Sources: US Bureau of Economic Analysis, US Census, Moody's Analytics, McKinsey Global Institute

28 Eduardo Porter, "The hard truths of trying to 'save' the rural economy," *New York Times*, *December 14, 2018*, https://www.nytimes.com/interactive/2018/12/14/opinion/rural-america-trump-decline.html.

Working together to develop community interventions

Distressed Americana communities often lack employment opportunities and the skills base required to attract new employers. These communities could support people displaced by automation by attracting capital to fuel economic growth, developing the skills that will equip residents to seek opportunities inside or outside of the community, and improving the social safety net for those who stay while they develop the skills to find a new pathway or exit the community.

Attract capital to stimulate investment and economic renewal. Efforts to attract capital bring attention to areas that businesses might otherwise overlook. This would address the lack of job opportunities, a key barrier in Distressed Americana communities.

Many efforts to attract capital exist today. The Opportunity Zone program that was part of the 2017 changes to the federal tax law aims to draw investments to economically distressed communities by offering tax benefits to investors. There is continued conversation around mechanisms to make Opportunity Zones as impactful as possible. Another example is the EB-5 Immigrant Investor Program, which provides visas to immigrants who invest at least $500,000 in a rural or high-unemployment area.[29] While the EB-5 program is somewhat controversial, it reflects the type of creative approach to attracting capital needed by Distressed Americana communities.

The USDA's Rural Business Investment Program grants licenses to new venture-capital organizations in order to attract capital investment in rural areas.[30] Social-impact capital investors are already looking for opportunities to invest. Advantage Capital, one of the early participants in the USDA Rural Business Investment Program, has invested in Distressed Americana counties including Hart County, Kentucky, where the investment helped a small business, Kentucky Chrome Works, expand its chrome-plated aluminum alloy wheel product line and double the number of employees.[31]

But the small scale of the typical project in Distressed Americana limits interest among many traditional venture funds and large banks. These communities might encourage investment by bundling smaller projects, perhaps through regional collaboration, and focusing on opportunities that tap rural assets, like agriculture, forestry, and ecotourism.

Build foundational skills. Communities can look for ways to build skills that prepare residents for employment and create a foundation for more advanced training across occupations.

In northern Michigan, communities are providing fundamental vocational training in a creative, mobile way. Local employers called the lack of employees possessing skills in computer numerical control (CNC) manufacturing the main barrier to hiring 200 new workers. In response, the Northern Lakes Economic Alliance gathered top local leaders to launch a mobile "Fab Lab" modeled on a similar concept in Wisconsin. The Fab Lab, funded largely by Precision Edge Surgical Company in Chippewa County, Michigan, travels to several counties to give high schools an option for high-tech vocational education. The Fab Lab also contributes to the curriculum at North Central Michigan College.[32]

29 US Citizenship and Immigration Services, "About the EB-5 visa classification," October 5, 2018, https://www.uscis.gov/working-united-states/permanent-workers/employment-based-immigration-fifth-preference-eb-5/about-eb-5-visa-classification.

30 US Department of Agriculture, "Rural Business Investment Program," https://www.rd.usda.gov/programs-services/rural-business-investment-program.

31 Advantage Capital, "Stories of impact," http://www.advantagecap.com/stories/equity/.

32 Andy Hayes. "New mobile CNC training lab makes 'house calls,'" Michigan State University, April 7, 2014, https://www.canr.msu.edu/news/new_mobile_cnc_training_lab_makes_house_calls.

Enable mobility in the labor market. To enable the mobility of labor, communities could, for example, provide unemployment benefits in a lump sum or a mobility grant for those receiving formal state unemployment benefits. This would give people more time to find training or even relocate to take advantage of job opportunities.[33]

Because so many people are disconnected from the workforce, these communities need to find ways to support displaced workers who may not qualify for unemployment insurance. Some organizations, including the Center for American Progress and the Georgetown Center on Poverty and Inequality, have recommended a "job seeker's allowance" that would provide a small weekly stipend to support work search and preparation for a short period of time. More research and cost analysis would be needed to determine the efficacy of such assistance programs.

Credentialing could also facilitate labor market mobility. Cross-industry credentials would enable workers to move between industries by giving them an easy way to communicate their skills. Of the communities where more than 20 percent of the workforce is employed in the healthcare industry, more than half (56 percent) are Distressed Americana communities. Worker credentialing would enable other service industries with a declining need for labor to partner with healthcare institutions to create employment paths into this important and growing industry.

Invest in access to quality education. Many of the nation's lowest-performing schools are in economically distressed communities. Breaking the cycle and creating opportunities for the next generation will require finding educational models that improve K–12 outcomes.

Communities could invest more in existing resources for childhood education, improve access to those resources, make capital available to upgrade educational facilities or build new ones, and introduce digital skills early in computer science classes or online courses à la Microsoft's Imagine Academy. Businesses including Microsoft stand ready to create resources and provide them to communities, which would incorporate them into the curriculum. Guidance counselors and school administrators can also help students find ways to translate their education into a career.

Expand access to broadband. Communities can ensure that broadband is more widely available by providing incentives for businesses to invest, expediting approvals, and promoting new technologies such as white-space internet. With broadband, community members have greater access to opportunities for remote work, distance learning, and telemedicine. These can be vital to remote communities, which often lack local employers, educational institutions, and hospitals. Government leaders, including US Secretary of Agriculture Sonny Perdue and Federal Communications Commission Chairman Ajit Pai, call connectivity a critical need in these areas.[34]

The major problem with broadband access is the prohibitive cost of installing the infrastructure required by traditional broadband technology. TV white-space technology may overcome this problem by providing lower-cost, wireless internet access by using the gaps between television channels to deliver broadband internet. These communities and businesses could also take advantage of the USDA's new ReConnect program, which will provide $600 million in loans and grants to help develop broadband infrastructure in rural America.[35]The local community would need to lead response efforts. Community leaders can play a vital role, perhaps working in partnership with other nearby communities, in aggregating opportunities, attracting investment, and supporting struggling community members.

33 *Toward a new capitalism: A policy agenda to restore the promise of work, Aspen Institute Future of Work Initiative, January 12, 2017, pp. 41–42.*

34 Sonny Perdue, "Perdue: Rural broadband is our duty to farmers," CNN, January 8, 2018, https://www.cnn.com/2018/01/08/opinions/rural-task-force-usda-trump-perdue-opinion/index.html; Bret Swanson, "Rural broadband: It's complicated," American Enterprise Institute, August 22, 2018, http://www.aei.org/publication/rural-broadband-its-complicated/.

35 US Department of Agriculture, "USDA launches new program to create high-speed internet e-connectivity in rural America," news release, December 13, 2018, https://www.usda.gov/media/press-releases/2018/12/13/usda-launches-new-program-create-high-speed-internet-e-connectivity.

SUCCESS STORY: Phillips County, Arkansas goes beyond the three Rs

In Distressed Americana communities, complete turnaround is hard to achieve. But the Knowledge Is Power Program (KIPP) in Phillips County, Arkansas, shows one way to improve quality of life and equip the next generation for the future of work and to access opportunities both inside and outside the community.

Like most Distressed Americana communities, Phillips County struggles with economic hardship. Located on the Mississippi River far from a major metropolitan area, the community has seen its population shrink. Median household income is the 55th lowest among the 973 Distressed Americana communities across the country. Life expectancy is the 15th lowest.

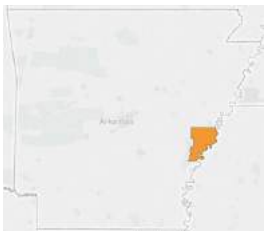
But Phillips County has taken steps to improve its situation that could benefit similar communities. In 2002, the KIPP launched its first school in the county, in Helena–West Helena. The nationwide KIPP network of free, open-enrollment charter schools serves communities in need, including Phillips County.

The county now has three KIPP schools that serve 1,345 students. Most of the students (91 percent) are African-American, and more than 90 percent qualify for free or reduced-price meals.

Despite the challenges faced by the community and its young people, the KIPP's Delta Collegiate High School has achieved enviable success. Most students (91 percent) graduate, and many (79 percent) go to college. In 2012, US News and World Report ranked Delta the number-two high school in Arkansas.

The KIPP invests in the ongoing success of students with a College Persistence team. The staff members on the team continue to support students through college, paying particular attention to students who are the first in their families to go to college. The staff members provide support on academic progress, financial aid, internships, career options, and more.[36] This investment pays off: 47 percent of KIPP Delta students graduate from a four-year college, versus the US average of 36 percent and the low-income average of 12 percent.[37]

In addition to investing in education, Phillips County is also pursuing other interventions, such as building on a rich history of blues music to build tourism, and working with investors like the Walton Family Foundation and Southern Bancorp to drive economic development that helped set the stage for KIPP.



County facts	Phillips County	Segment median
Median household income	$30K	$40K
Population	18K	13K
Total GDP	$540K	$357K
% of population with a bachelor's degree or higher	12%	15%
Automation potential	42%	44%

Sources: US Bureau of Economic Analysis, US Census, McKinsey Global Institute

36 KIPP Delta Public Schools, "KIPP through college," http://kippdelta.org/kipp-through-college-0.

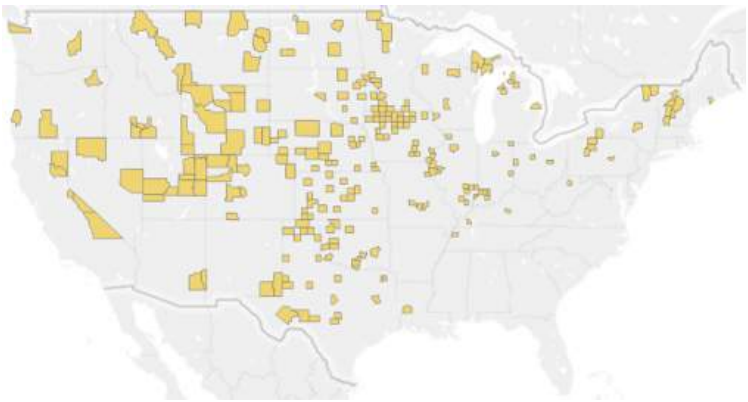
37 Scott Shirey, *KIPP Delta Public Schools annual report 2017–18*, *KIPP Delta Public Schools*, http://www.kippdelta.org/sites/default/files/user-46720/resources/Annual%20Report%202018%20R4_no%20marks.pdf.

Rural Service Hubs

We classify Rural Service Hubs as semirural communities. They are often located off of highways in the western United States and are home to major manufacturing and service industries.

These communities, including Carbon County (Rawlins), Wyoming, act as distribution points and hubs for the surrounding rural communities, places where people come to shop or see a doctor. The residents of Rural Service Hubs are likely to work in industries that their neighboring communities value, such as retail, healthcare, local government, and manufacturing. The economic importance of these communities to their rural neighbors and people passing through on the nearby highways keeps unemployment low (3.7 percent) and median household income relatively high ($64,000). Rural Service Hubs may be affected by the challenges their neighbors face as other rural community archetypes grapple with the future of work.

Maintaining strong infrastructure, implementing skills-based hiring, and expanding training that bridges the gap between at-risk jobs and growing jobs could enable these communities to attract workers and ensure that they continue serving the surrounding communities.



Number of counties	254	Total population	7M
Household income	$53K	GDP	$1B
Unemployment	3.7%	% of GDP from primary industries[2]	16%
Average population	20K	% of GDP from secondary industries[2]	22%
Population change	–0.2%	% of GDP from tertiary industries[2]	23%
% of population with a bachelor's degree or higher	20%	% of GDP from quaternary industries[2]	39%
Miles from major MSA	211	Range of automation potential	38%–57%

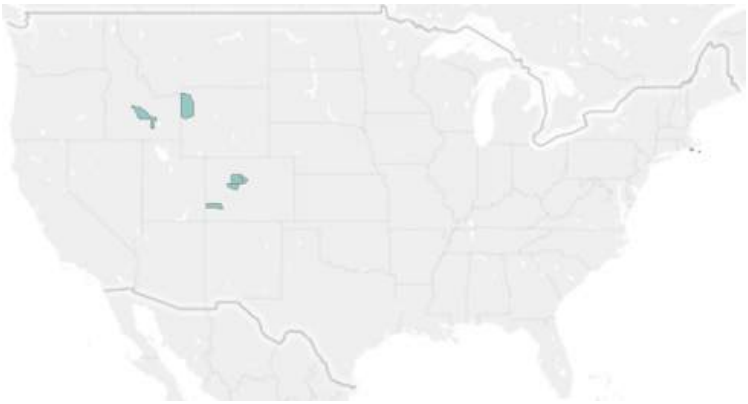
1 Variables represent the median of the cluster unless otherwise noted
2 Mean of the cluster
Sources: US Bureau of Economic Analysis, US Census, Moody's Analytics, McKinsey Global Institute

Great Escapes

While few in number, Great Escapes communities constitute a distinctive segment. These 14 communities are located more than 500 miles away from a major city on average but boast the highest GDP per capita ($76,000), household income ($80,000), and attainment of a bachelor's degree (41 percent) of any community archetype.

Most of these remote communities, including Kauai County, Hawaii; Eagle County (Vail), Colorado; and Nantucket County, Massachusetts, are wealthy enclaves and tourist destinations. The presence of many wealthy residents and the reliance on tourism make them more automation proof than other remote locations, at least for now.

But the Great Escapes segment is also the second most diverse (after Urban Centers). The tourism industry relies heavily on lower-income service workers, who will face threats from automation even as they struggle to cope with the cost of living in wealthy communities. These communities need a model for supporting low-income workers year-round and temporary workers in high season.



Number of counties	14	Total population	0.3M
Household income	$80K	GDP	$1.2B
Unemployment	3.1%	% of GDP from primary industries[2]	5%
Average population	18K	% of GDP from secondary industries[2]	17%
Population change	0.92%	% of GDP from tertiary industries[2]	26%
% of population with a bachelor's degree or higher	41%	% of GDP from quaternary industries[2]	51%
Miles from major MSA	542	Range of automation potential	40%–60%

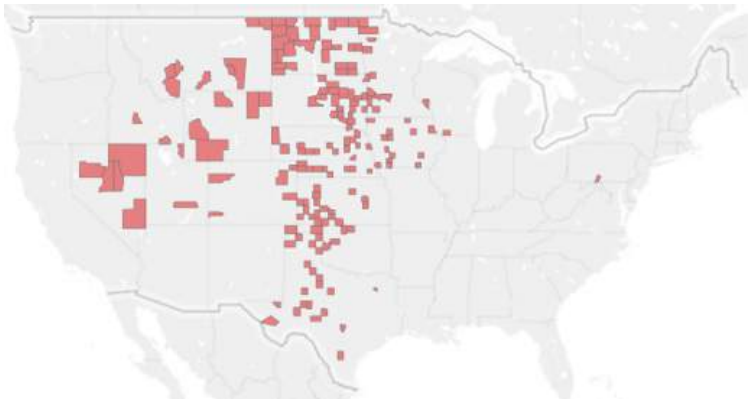
1 Variables represent the median of the cluster unless otherwise noted
2 Mean of the cluster
Sources: US Bureau of Economic Analysis, US Census, Moody's Analytics, McKinsey Global Institute

Resource-Rich Regions

The Resource-Rich Regions occupy the rural end of the continuum. On average 300 miles away from the nearest major metropolitan area, they might be called Boomtown, USA. These communities often experience incredible growth when a resource is discovered, as in the North Dakota counties around the Bakken Formation.

Many of these communities, such as the Nevada gold belt, enjoy considerable stability. They outpace other rural areas in GDP per capita, household income, and educational attainment, thanks to their significant economic reliance on a natural resource associated with oil, mining, or agriculture (accounting for 35 percent of their GDP, on average). But they also face significant risk of a bust, or rapid decline. The residents of these communities are often educated and well-off miners, oil riggers, and farmers.

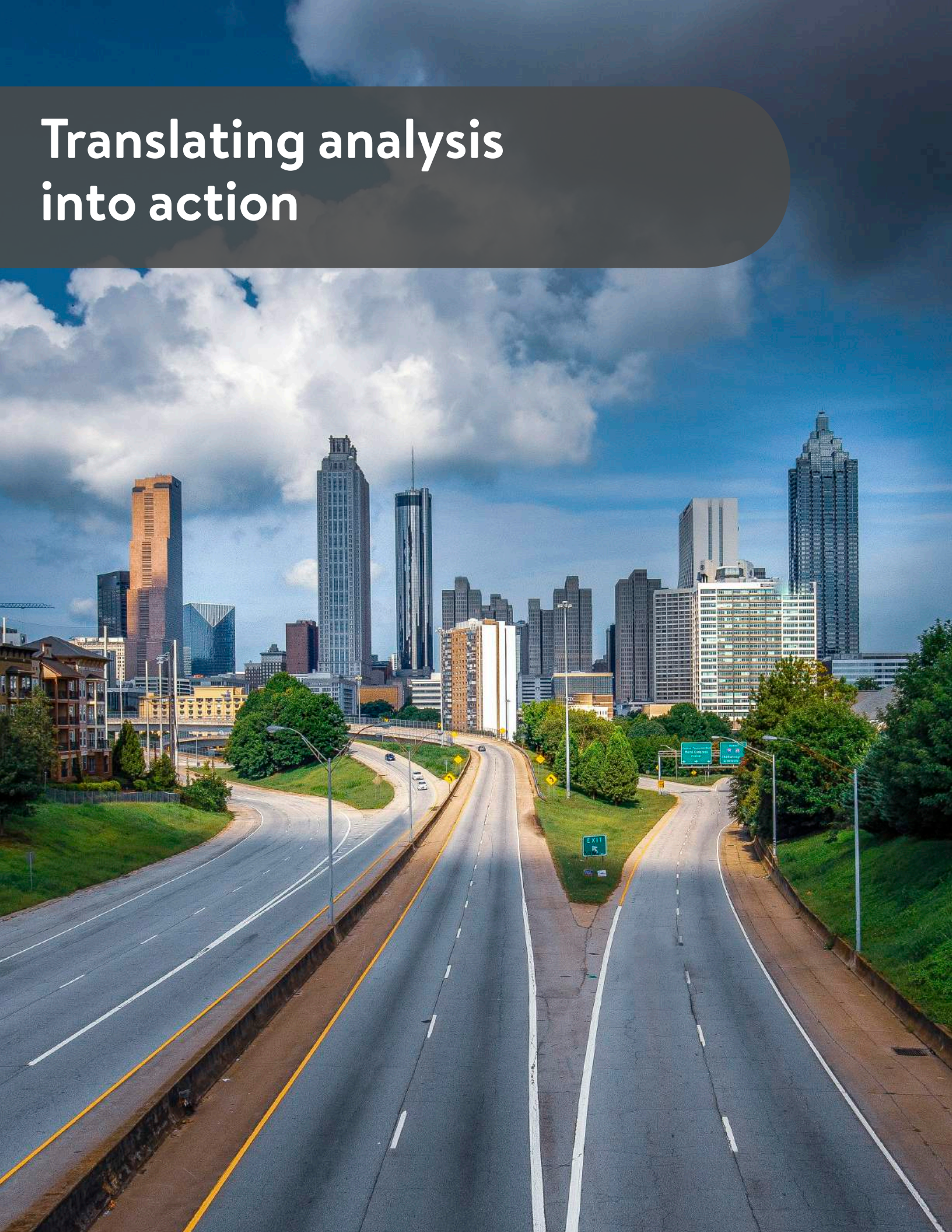
These communities can tap various responses to automation. Thanks to high incomes, high GDP per capita, and a strong economy rooted in natural resources, these communities have assets to leverage in developing apprenticeship programs in key industries, creating cross-industry credentialing to help workers communicate their skills, and investing income from natural resources in education. Enticing suitably skilled workers to relocate to these very rural locations will be top of mind for many of these communities.



Number of counties	177	Total population	1M
Household income	$54K	GDP	$0.2B
Unemployment	3.1%	% of GDP from primary industries[2]	35%
Average population	4K	% of GDP from secondary industries[2]	14%
Population change	–0.3%	% of GDP from tertiary industries[2]	20%
% of population with a bachelor's degree or higher	20%	% of GDP from quaternary industries[2]	31%
Miles from major MSA	300	Range of automation potential	34%–62%

1 Variables represent the median of the cluster unless otherwise noted
2 Mean of the cluster
Sources: US Bureau of Economic Analysis, US Census, Moody's Analytics, McKinsey Global Institute

Translating analysis into action



This report highlights the need for proactive, collective action tailored community by community. Effective action will require deeper exploration of community-level data and practical, detailed planning and organizing efforts that involve a broad range of stakeholders—federal, state, and local governments; businesses; community leaders and residents; philanthropic organizations; and educational institutions.

Each of the eight community archetypes developed in this research will require a different set of interventions to best respond to its unique assets and challenges. One common thread across archetypes is the need to address economic development. Retraining and upskilling dominate many conversations about automation, but skill building has value only if a community has jobs to tap the new skills. In the metropolitan segments, such as Urban Centers and Core Suburbs and the Urban Periphery, the primary focus should be connecting people with existing opportunities to promote inclusive economic growth. In other segments, such as Americana and Smaller Independent Economies, the strategy should first seek to create job opportunities.

This is the beginning, not the end. We do not pretend to have done all the work or found all the answers. We want our research to add to and strengthen a national dialogue about how automation will reshape work and how stakeholders can collaborate to respond to its impact.

We hope that this research creates a new way to look at communities and provides the building blocks necessary for policy makers and leaders in all fields to build their own road maps for the future. We are committed to continuing to facilitate the conversations that will foster the collaborative efforts required to secure a bright economic future for hardworking Americans across the country.

Appendix

Methodology

We conducted a hierarchical clustering analysis with the Ward method to create the eight community archetypes. This statistical technique quantifies differences and similarities across groups—in this case, counties. Clustering establishes whether the total population (more than 3,000 US counties) includes statistically distinct subgroups by measuring how similar or dissimilar they are, based on a set of criteria. Our research pulled these criteria from the comprehensive resiliency database that we compiled on county-level data.

Hierarchical clustering proceeds in steps to define statistically distinct clusters. The model assumes that no county is similar to other counties and that each county is its own distinct cluster. The model then relaxes this assumption to find at least one county similar to another county, resulting in pairs of counties. The model then relaxes the assumption further to find at least one pair of counties similar to another pair. The model continues matching counties based on statistical similarities until all counties are bundled into one cluster, meaning there are no clusters at all, and all counties are the same. The optimal level of clusters is chosen to maximize the level of dissimilarity between clusters, which we define as the community archetypes.

Additional data charts

Review of the eight community archetypes across key variables shows significant differences among the segments (Exhibit 4).

Exhibit 4

Community archetypes vary

1 All numbers on the page are the median of cluster except industry breakdown.
3 Major MSA defined as MSAs with over $100 bil in total GDP in 2017, represents 38 MSAs.
SOURCE: U.S. Census, U.S. Bureau of Economic Analysis, Moody's Analytics

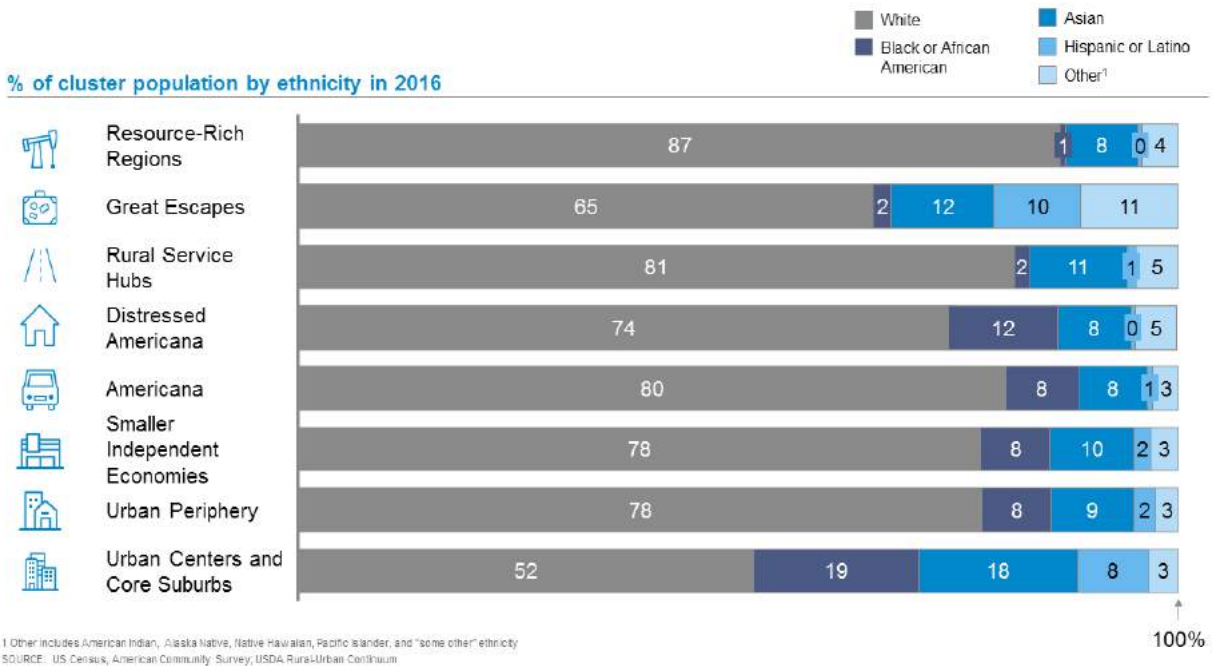
2 Industry breakout is based on World Atlas taxonomy. Primary: industry: farming, oil & gas, mining, forestry, fishing, hunting, trapping; Secondary: construction, manufacturing, utilities; Tertiary: accommodation & food services, administrative support, retail trade, transportation and warehousing, wholesale trade; Quaternary+: arts, education, healthcare, information, government, real estate, finance, management of companies, professional services

Demographics also differ across the community archetypes (Exhibit 5). The Urban Centers and Core Suburbs segment is the most diverse, with the highest proportion of African-Americans and Hispanic-Americans. Great Escapes communities also are diverse, likely reflecting both the diversity of the service workers who support these communities and the location of some of these communities in states that have significant indigenous populations—for example, Hawaii and Alaska.

The racial and ethnic makeups of the two Americana communities look very different. Americana is 80 percent white, and only 8 percent of the population is black. Meanwhile, Distressed Americana has the second-highest proportion of black residents. At 12 percent of the population, Distressed Americana has a 50 percent larger black population than Americana. Resource-Rich Regions, often oil and mining towns, have the greatest proportion of white residents (87 percent).

Exhibit 5

A demographic breakdown of the cluster groups shows variations in population ethnicity



1 Other includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, and "some other" ethnicity
SOURCE: US Census, American Community Survey; USDA Rural-Urban Continuum

While the eight community archetypes create a national mosaic, some regional patterns are clear. Exhibit 6 shows the regional concentration of each segment relative to the national average. Blue indicates a higher-than-average concentration, yellow a lower-than-average concentration, and gray a concentration roughly equivalent to the national average.

Both Resource-Rich Regions and Rural Service Hubs are located primarily in the Midwest and the West. Distressed Americana communities are located primarily in the South, with almost none on the coasts, while urban areas are spread relatively evenly across the country.

Exhibit 6

Clusters are spread across regions, but there are some key groupings

More concentrated than the US
Similar concentration as the US
Less concentrated than the US

Clusters by Region, % of total counties in the cluster

		Midwest		Northeast		South			West	
		East North Central	West North Central	Middle Atlantic	New England	East South Central	South Atlantic	West South Central	Mountain	Pacific
	United States	**14**	**20**	**5**	**2**	**12**	**18**	**15**	**9**	**5**
	Resource-Rich Regions	1	64	1	–	–	–	15	15	3
	Great Escapes	–	–	–	14	–	–	–	43	43
	Rural Service Hubs	15	37	3	3	1	0	13	19	8
	Distressed Americana	8	17	1	1	21	20	19	10	3
	Americana	20	15	6	2	12	20	15	6	4
	Smaller Independent Economies	14	20	9	4	7	20	12	8	8
	Urban Periphery	22	10	11	4	6	25	11	4	7
	Urban Centers and Core Suburbs	13	5	16	8	4	22	9	5	17

SOURCE: U.S. Census

Data sources

The database used to conduct the hierarchical clustering analysis and create the eight community archetypes relied on data from the following sources:

- The Carnegie Classification for Higher Education
- Centers for Disease Control and Prevention (CDC)
- County Health Rankings & Roadmaps
- Emsi
- Institute for Health Metrics and Evaluation
- McKinsey Global Institute Automation Database
- MIT Election Data and Science Lab
- Moody's Analytics
- National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)
- United Way
- US Bureau of Economic Analysis
- US Bureau of Labor Statistics
- US Census
- US Census, American Community Survey
- US Census, County Business Patterns
- USDA Rural-Urban Continuum
- US Department of Justice, FBI
- US Department of the Treasury, Community Development Financial Institutions Fund (CDFI)
- US Patent and Trademark Office