

# THE ECONOMY FORWARD FRAMEWORK:

HOW MIDSIZED CITIES CAN ACHIEVE INCLUSIVE  
GROWTH IN THE KNOWLEDGE ECONOMY

Richard Florida, PhD

Ross DeVol

Cordell Carter

Jennifer Hankins

Nicholas Lalla



# ABOUT

## Tulsa Innovation Labs

Recognizing that the jobs of the future are rooted in a thriving innovation economy, Tulsa Innovation Labs LLC (TIL) was founded to help build a tech hub in Tulsa that leverages the strengths of the Heartland and expands opportunities in tech. Launched in 2020, TIL developed the city's first tech-led economic development strategy, a rigorous and data-driven effort to determine the strongest opportunities for Tulsa's economy. TIL is implementing this strategy and focusing its startup, academic innovation, and talent initiatives on catalyzing five interconnected ecosystems, together called "Tulsa's Tech Niche": virtual health, energy tech, advanced aerial mobility, cyber, and data analytics.

## The Aspen Institute

The Aspen Institute is a global nonprofit organization committed to realizing a free, just, and equitable society. Founded in 1949, the Institute drives change through dialogue, leadership, and action to help solve the most important challenges facing the United States and the world.

## Heartland Forward

As a nonpartisan, nonprofit "think and do" tank, we are turning our analysis into action. We believe this is a differentiator in the work we do. Our five goals to meet this commitment are: IDENTIFY emerging issues for the region's economy and communities; SERVE as a resource for policymakers, business leaders, communities, and other researchers; DEVELOP policy solutions based on our data and economic expertise; HELP change the narrative about the middle of the country by leading convenings, such as the Heartland Summit and other events across the Heartland; and PARTNER and collaborate for greater impact.

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# INTRODUCTION

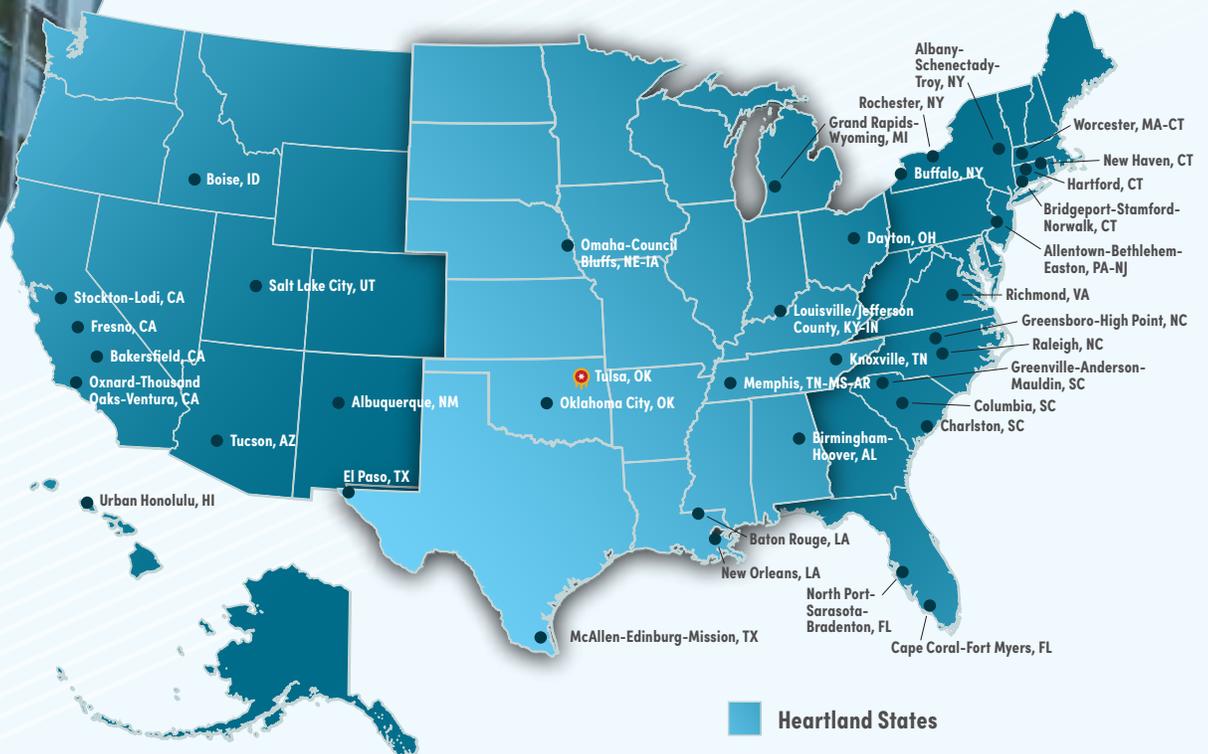
**T**ulsa Innovation Labs (TIL), Heartland Forward, and the Aspen Institute have joined forces to establish the first framework for measuring inclusive economic growth designed specifically for midsized cities in the United States.

In late 2020, TIL, an economic development organization pioneered by **George Kaiser Family Foundation**, embarked on an effort to define and measure the impact their local coalition sought to make on Tulsa's economy.

Traditional metrics, such as jobs created or average wage, often fail to capture the real drivers of growth and can exclude more nuanced analyses that address the inclusion, diversity, and resilience of jobs. The knowledge economy is quickly disrupting legacy industries and labor markets, and growth metrics of the past are losing relevance in our society's increasingly tech-centered paradigm.

TIL struggled to identify an existing framework or set of success metrics that reflected their aspiration for inclusive growth in a city like Tulsa, Oklahoma.

## AMERICA'S MIDSIZED CITIES



The metrics typically used by economic development organizations or chambers of commerce are especially ill-fitted for midsized cities in the American Heartland, which are experiencing more rapid economic change than other areas of the country. For example, the COVID-19 pandemic has accelerated the decentralization of the innovation economy and the rise of remote work. The tremendous cost of living in legacy tech hubs and shifting personal priorities are driving companies and talent away from large coastal markets and into the Heartland.

**TIL recognized that given this once-in-a-generation shift to the knowledge economy, a new tool was badly needed to gauge readiness, track progress, and ensure that growth in the knowledge economy is reducing inequality rather than exacerbating it.**

Realizing that such a tool might be helpful to similar markets across the country and not only for Tulsa, TIL partnered with **Heartland Forward**, a Bentonville, Arkansas-based nonprofit pioneered by the **Walton Family Foundation** and the **Aspen Institute**, a think tank in Washington, DC. Together, they established the **Economy Forward Framework**, which this report presents.

Our original research and analysis focused on 38 midsized cities with metropolitan statistical area (MSA) populations between 750,000 and 1.5 million—which we assess to be the focal point of the shift we are witnessing from coastal tech hubs to emerging cities in the Heartland. It is a shift that we believe will create a more equitable, innovative, and economically diverse America.

To precisely capture what drives growth and expands opportunities in midsized urban economies, this report drills down into large data sets to find the strongest indicators of inclusive growth. In doing so, the report aims to surface actionable insights that cities can employ, offering new metrics, composite growth scores, and a novel fusion of performance indicators that rethink how to define and measure economic development.

**The result is a 21st century framework—where inclusive growth is prioritized—that can guide cities in their efforts to move their knowledge economies forward.**

<sup>1</sup> Powell, Walter W., and Kaisa Snellman. "The Knowledge Economy," Scholars at Harvard. 24 Feb. 2004, [https://scholar.harvard.edu/files/kaisa/files/powell\\_snellman.pdf](https://scholar.harvard.edu/files/kaisa/files/powell_snellman.pdf).

<sup>2</sup> Feldman, Maryann, et al. Investment Definition Model - U.S. Economic Development ... EDA, 28 May 2014, <https://www.eda.gov/files/tools/research-reports/investment-definition-model.pdf>.

<sup>3</sup> Dooley, Meagan, and Homi Kharas. "How Inclusive Is Growth?" Brookings, Brookings, 22 Nov. 2019, <https://www.brookings.edu/blog/future-development/2019/11/22/how-inclusive-is-growth/>.

## KEY TERMS

### KNOWLEDGE ECONOMY

is the "production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance...The key components of a knowledge economy include a greater reliance on intellectual capabilities than on physical inputs or natural resources..."<sup>1</sup> the knowledge economy includes jobs as diverse as data scientists, lawyers, healthcare workers, artists, and software engineers. This report focuses on two specific subtypes of a knowledge economy, tech and innovation economies, which we use interchangeably.

### ECONOMIC DEVELOPMENT

is "concerned with quality improvements [to an economy], the introduction of new goods and services, risk mitigation, and the dynamics of innovation and entrepreneurship...[it]...is about positioning the economy on a higher growth trajectory."<sup>2</sup>

### INCLUSIVE GROWTH

is economic growth that "translates into increased household consumption" whose "gains are broadly distributed" across various demographics of the population.<sup>3</sup> We are interested in growth that provides opportunities for sustained economic mobility, especially for individuals from underserved communities.

This report identifies nine specific metrics, across three categories, that reflect both critical pain points and key indicators of growth for midsized urban economies:

<b>Inclusive Growth Metrics</b>	
<b>INDUSTRY</b>	<b>Share of Jobs in the “Knowledge Economy”</b>
	<b>Young Firm Employment Ratio &amp; Young Firm Knowledge Intensity</b>
	<b>Academic Research and Development Expenditures</b>
<b>ACCESSIBILITY</b>	<b>Labor Force Participation Rate by Race and Sex</b>
	<b>Diversity of Enrollment in STEM Programs</b>
	<b>Share of Minority and Women-Owned Firms in Knowledge-Intensive Industries</b>
<b>VIBRANCY</b>	<b>Public Investment in Quality of Place</b>
	<b>Percentage of Residents with a Bachelor’s Degree or Higher</b>
	<b>Retention of Graduates from Local Educational Institutions</b>

Given the acute challenges facing non-coastal cities and the relative strength of midsized coastal cities, the report focuses its analysis on midsized cities in the Heartland (13 of the 38 cities studied). The framework, then, is applicable to all midsized cities, but is especially relevant to Heartland cities looking to grow innovation economies.

Although some economists are attributing rising social inequality to the tech sector and the risk of automation, we contend that tech and innovation can be marshalled to expand job opportunities and reduce inequality.<sup>4</sup> With a global pandemic and the transition to the knowledge economy converging at this point in history, there is an urgent (and time-bound) opportunity for cities to build inclusive tech ecosystems that prepare citizens for more durable jobs. To build inclusive tech economies, the public and private sectors alike need to invest more in Heartland cities. The Economy Forward Framework we present here identifies the metrics needed to guide intentional economic development strategies and measure progress toward inclusive growth.

<sup>4</sup> *The New York Times* recently highlighted MIT economist Daron Acemoglu’s research on the link between automation and inequality. Lohr, Steve. “Economists Pin More Blame on Tech for Rising Inequality.” *The New York Times*, *The New York Times*, 11 Jan. 2022, <https://www.nytimes.com/2022/01/11/technology/income-inequality-technology.html>.

**Our Thesis:** Midsized cities looking to establish themselves in the knowledge economy should not blindly try to mirror the last generation's tech hubs. Instead, they should chart a new path forward that leverages the Heartland's unique assets and builds up a diverse base of tech talent. The only way for Heartland communities to realistically bridge the talent gap is to think about economic and workforce development more comprehensively and inclusively than older tech hubs ever did. The success of midsized cities will largely be determined by their ability to develop and leverage a broader cross-section of their populations than their coastal predecessors. The Economy Forward Framework arms these striving midsized cities with the metrics they need to measure and achieve inclusive growth.

Our report is organized in three sections:

**Section 1, Essays on National Trends**, provides context for why inclusive growth is both critically important and challenging to achieve. **Richard Florida, PhD** discusses the forces driving American cities to reorient themselves to the knowledge economy; **Ross DeVol** explains the interconnected challenges Heartland cities face; and **Cordell Carter** argues that strong compacts between investors, employers, and educators are key to growing inclusive tech economies.

**Section 2** presents the **Economy Forward Framework**. This section offers two new tools for measuring economic development and describes our methodology for building them: a set of nine **Inclusive Growth Metrics** and a **Ranking of Midsized Cities** based on their inclusive growth trajectory. The section also examines a sample of eight midsized cities in more detail to uncover **insights from the data**.

Finally, in **Section 3**, two economic development practitioners at Tulsa Innovation Labs apply the Economy Forward Framework to the Heartland city in which they live and work. The **Tulsa Case Study** demonstrates how one city is thinking about and striving for inclusive growth. **Jennifer Hankins** provides an overview of Tulsa's economy and TIL's efforts to establish a tech niche for Tulsa and **Nicholas Lalla** analyzes where Tulsa stands today across the metrics and establishes goals for the city over a five-year period.

Together, this report identifies and addresses the key challenges facing midsized American cities amidst a generational transition. It shares a framework to define and measure inclusive economic growth so that cities can create the diverse coalitions and data-driven strategies they need to effectively compete in the 21st century.

**38 MIDSIZED CITIES WERE RANKED AND PLACED INTO ONE OF FOUR TIERS BASED ON THEIR INCLUSIVE GROWTH TRAJECTORY.**

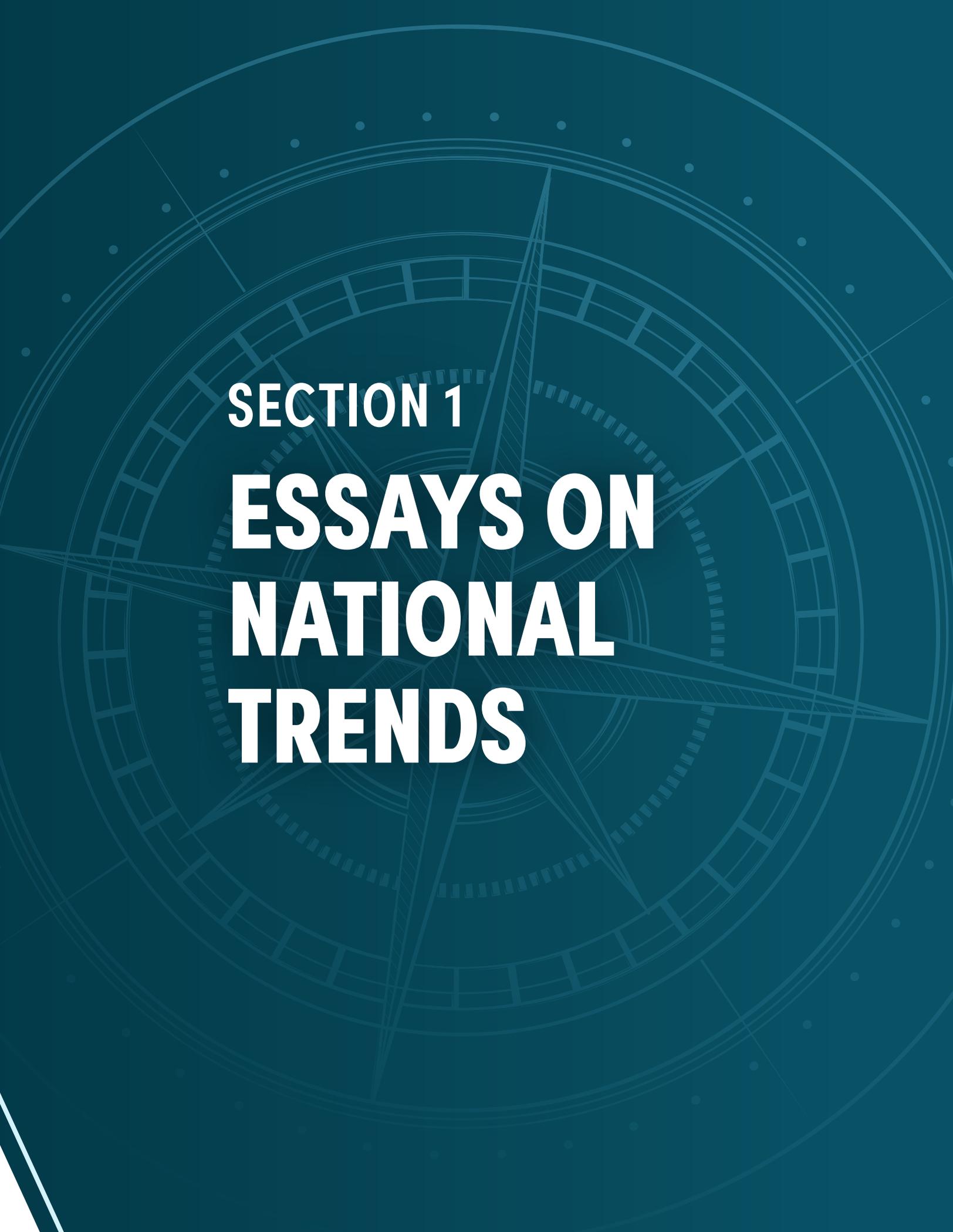
**FORWARD READY**  
Tier 1 Cities

**NEARLY READY**  
Tier 2 Cities

**OPPORTUNITY**  
Tier 3 Cities

**AT-RISK**  
Tier 4 Cities





**SECTION 1**

**ESSAYS ON  
NATIONAL  
TRENDS**



# AMERICA'S GREAT RESET

By Richard Florida, PhD

Richard Florida is a researcher, author, and speaker. He is a University Professor at the University of Toronto's School of Cities and Rotman School of Management, fellow at Heartland Forward, co-founder of CityLab, and founder of the Creative Class Group. He is also the author of "The Rise of the Creative Class," "Flight of the Creative," "Who's Your City?," "The Great Reset," and "The New Urban Crisis."

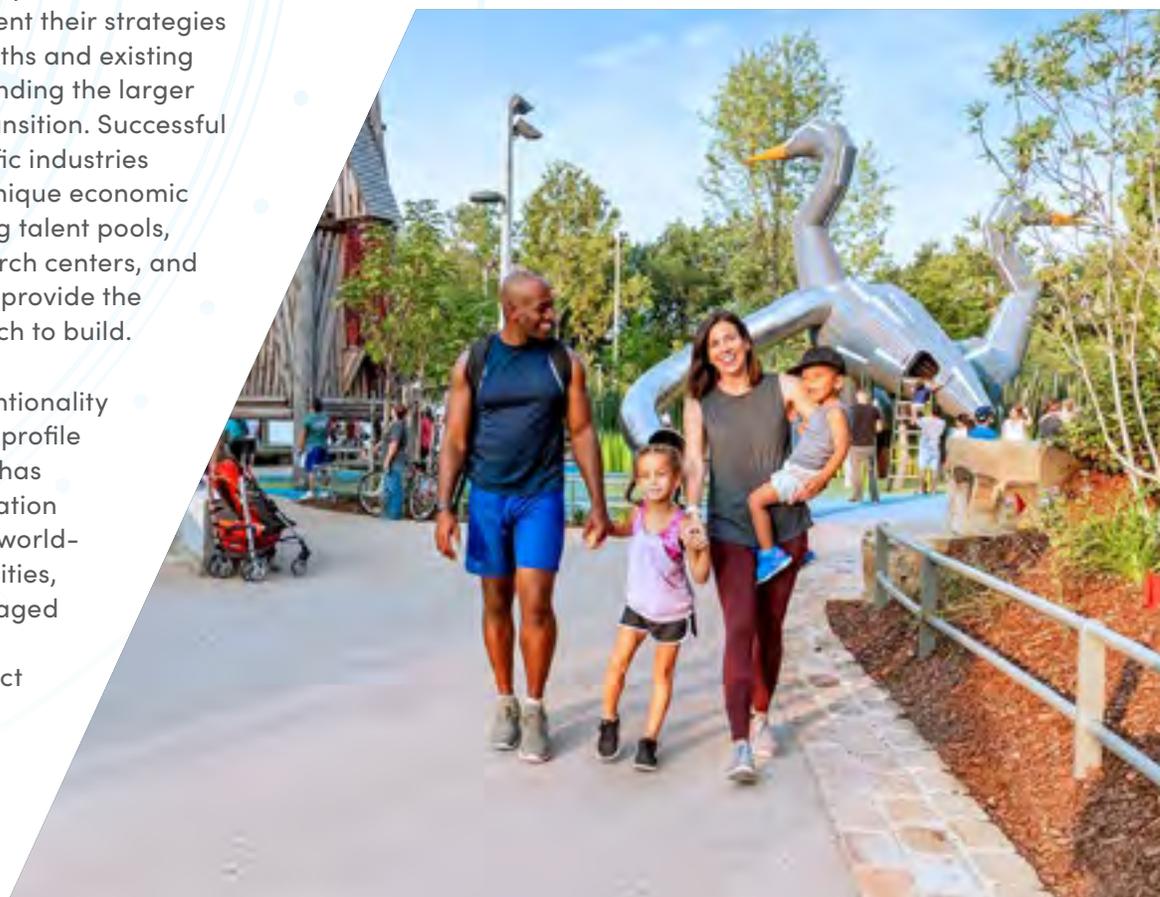
**T**he challenge facing midsized American cities is to square the proverbial circle of the innovation economy—to become a stronger knowledge and innovation economy hub, while avoiding the housing affordability and equity challenges that have plagued existing tech hubs.

Many older industrial cities are in the midst of a dramatic transition from an older energy, resource, and manufacturing economy to a newer knowledge economy driven by innovation and talent. And while certain cities—like Pittsburgh and Detroit—have been reshaped by crises over the past few decades, other cities throughout the Heartland have so far been spared the worst of this transition and instead face a more gradual erosion that, while less traumatic, delays these cities’ response to the coming transition. But while such sweeping economic forces can be postponed, they cannot be forestalled.

Cities like Tulsa must position themselves for the **great reset** in what people want in a place to live and work, brought on or accelerated by the COVID pandemic and related shifts it has set in motion. As more and more people across the country think deeply about how and where they want to live and work, factors such as quality of life, cultural amenities, and affordability will increasingly determine a region’s ability to attract and retain top talent, which in turn influences the strength of its economy.

Beyond quality of life, it is critical that cities create the conditions for good job opportunities and economic mobility within their communities. Just as 20th-century economies developed in response to local conditions such as climate, geography, or proximity to natural resources, today’s cities must orient their strategies around current strengths and existing assets while understanding the larger forces shaping this transition. Successful cities will target specific industries based on a region’s unique economic assets, such as existing talent pools, universities and research centers, and legacy industries that provide the foundations upon which to build.

The power of this intentionality is evident in two high-profile successes: Pittsburgh has built a renewed innovation ecosystem around its world-class research universities, while Austin has leveraged its thriving music and cultural scene to attract innovative companies and young, well-educated, and diverse talent.

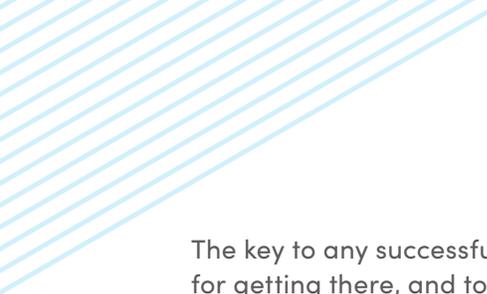


But as residents of any thriving tech hub know, success in the knowledge economy has costs as well as benefits. Today's leading tech hubs suffer from a combination of increasing housing unaffordability and growing inequity, which I dub the **new urban crisis**, a crisis of success which is rapidly spreading to more aspirational cities. Even as its housing affordability creates opportunities for mid-sized Heartland cities to attract talent from more expensive regions, it also means that these cities need to proactively anticipate the rising housing costs and other maladies which come alongside success in the innovation economy.

That requires cities and regions to develop intentional strategies to build out innovation ecosystems and enhance their appeal as places to live, work, and innovate, while keeping housing affordable, ensuring equitable access to opportunity, and staving off the ill effects of the new economy. These interests can sometimes appear at odds with one another, and balancing them through public policy and economic development actions is difficult. That is why we built the **Economy Forward Framework** and its metric set so that cities can chart their progress toward creating a better, more diverse, and equitable knowledge economy.



Terry Black's BBQ - Austin, Texas  
Jonathan Cutrer, flickr.com



The key to any successful strategy is to know where you want to go, to chart out a path for getting there, and to measure your progress toward those goals. The metrics we outline offer a path for urban communities to ensure that their future economies are defined by innovation and entrepreneurship, where talent is retained and attracted from across the nation, where new businesses and industries are launched, and which stokes the full creative and innovative talents of each and every individual.

Cities that embrace this strategic approach will be positioned to thrive in the ongoing economic transition. As past successes make clear, the public, private, academic, and philanthropic sectors all have important roles to play. By learning from these same cities' failures, this next generation can prioritize equity from the start, giving themselves a distinct competitive advantage over incumbent tech hubs.

**The communities that are successful will prove another critical thesis: that opportunities abound in America's Heartland and that coastal tech hubs will have increasing competition from dynamic midsize cities who are intentional in how they position their local economies and how they support and retain talent with cultural amenities and affordable lifestyles.**



# CHALLENGES AND PROMISE IN THE HEARTLAND

By Ross DeVol

Ross DeVol is the president and CEO of Heartland Forward. He was also a Walton Fellow at the Walton Family Foundation and the former chief research officer for the Milken Institute, an economic think tank headquartered in Santa Monica.

**T**he urgency of repositioning local economies for the 21st century is particularly stark in Heartland cities because of increasing risk of automation. Human capital, talent, research and innovation, entrepreneurship, health status, digital access, and quality of place are the new keys to successful regional economies.

**When compared to the entire country, Heartland cities appear on average to be less prepared for this transition than the country as a whole.**

Our research draws a clear link between strong entrepreneurial ecosystems and economic success. First, innovation and research have a crucial part to play in determining the standard of living in urban areas. Nobel prize-winning economists, including Robert Solow, Paul Romer, and others have detailed how innovation, research, and knowledge drive economic growth in advanced societies.<sup>5</sup> Urban areas with research universities that are committed to commercializing and transferring the intellectual property that they create to start-ups or existing firms are endowed with a critical advantage.<sup>6</sup> On these measures, urban areas in the Heartland record their worst performance.

Similarly, cities with a higher share of employment at young firms, and particularly where employees at those young firms have a bachelor's degree or higher, saw notably faster employment growth over the past decade.<sup>7</sup> A troubling finding in our analysis is how the Heartland lags in young firm formation and other measures of entrepreneurial vitality. More must be done to develop entrepreneurial capacity and improve access to early-stage capital.



<sup>5</sup> Romer, P. (1990). *Endogenous Technological Change*. Journal of Political Economy, 98 (5, Part 2), S71-S102.

<sup>6</sup> DeVol, R. (2018, September). "How Do Research Universities Contribute to Regional Economies? Measuring Research University Contributions to Regional Economies" Heartland Forward, pp. 9-11, <https://heartlandforward.org/wp-content/uploads/2021/03/how-do-research-universities-contribute-to-regional-economies-1.pdf>.

<sup>7</sup> Crews, J., DeVol, R., Florida, R., & Shideler, D. (2020, May 6). "Young Firms and Regional Economic Growth." Heartland Forward, from <https://heartlandforward.org/young-firms-andregional-economic-growth>.



**The shortage of innovative research and firms makes it difficult to retain creative and skilled talent, which is the defining ingredient for success in the knowledge economy.** Human capital is the most important intellectual property of an urban economy, as clustering talent in a geography boosts higher value-added regional economic growth and wages of workers.<sup>8</sup> In a study that I led at the Milken Institute, we found that GDP per capita rises by 17.4% and real wages per capita by 17.8% by adding one year of schooling to the average educational attainment of the workforce.<sup>9</sup>

Most Heartland communities, including Tulsa, score poorly on measures of human capital such as educational attainment and worker productivity—typically in the third to fourth quartiles. Communities with a dense concentration of science, technology, engineering, and mathematics (STEM) degrees, including associate, have distinct advantages in promoting economic growth. Unfortunately, many Heartland cities rank substantially below coastal urban areas on this important metric.

**Poor health outcomes further threaten Heartland human capital by reducing lifetime earnings and increasing financial vulnerability from unforeseen medical expenses.**

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<sup>8</sup> Gottlieb, P., & Fogarty, M. (2003). *Educational Attainment and Metropolitan Growth*. *Economic Development Quarterly*, 17(4), 325–336. doi:10.1177/0891242403257274.

<sup>9</sup> DeVol, R., Shen, I., Bedroussian, A., & N. (2013). "A Matter of Degrees: The Effect of Educational Attainment on Regional Economic Prosperity (pp. 1–102, Publication). CA: Milken Institute. <https://milkeninstitute.org/sites/default/files/reports-pdf/Matter-of-Degrees-FR.pdf>.

As COVID-19 demonstrates, because of previous poor access to healthcare, people of color have multiple co-morbidities, subjecting them to higher rates of infection, hospitalization, and death. Urban areas in the Heartland have some of the worst outcomes from COVID-19. Based on our analysis of data from the U.S. Centers for Disease Control from December 27, 2021, average deaths per 100,000 Americans since Jan 21, 2020 (the start of the pandemic) for all non-Heartland states (excluding DC and the U.S. islands other than Hawaii) is 215.93, while the death rate for Heartland states is 264.1. For the U.S. as a whole, it is 245.<sup>10</sup> Poor performance on the social determinants of health is also restraining growth in the Heartland, and to create inclusive growth, the region must invest more in health capital.

**COVID-19 highlighted the bare necessity of digital capital for the creation of human, health, financial, and entrepreneurial capital.** Access to high-speed internet has been—and continues to be—a lifeline for education, commerce, health, workforce, and equity. Heartland cities have some of the lowest access to high-speed internet. We must digitally connect Heartland communities to address building other forms of capital.

Despite the stark and interconnected challenges Heartland cities face, there are enormous opportunities for growth if cities can build and execute intentional and inclusive strategies. These strategies must acknowledge the severity of these challenges, learn from the successes of peer cities, and above all, be tailored to the communities they seek to serve.



<sup>10</sup> "CDC Covid Data Tracker." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, [https://covid.cdc.gov/covid-data-tracker/#cases\\_casesper100k](https://covid.cdc.gov/covid-data-tracker/#cases_casesper100k).



# OPPORTUNITY FOR ALL:

## Rethinking Venture Capital and Tech Talent

By Cordell Carter

Cordell Carter is the executive director of the Aspen Institute's Socrates Program, founder of the Project on Belonging, a partnership between the Aspen Institute and SHRM, and is managing principle of Expectant Advisory, LLC, an equity-focused consultation collaborative. He brings more than 20 years of experience to his pursuit of a society where everyone belongs and has equitable opportunities to thrive.

**A**s cities consider how to strengthen their economies, they must carefully evaluate which communities these future tech economies are designed to serve. These economic transitions are occurring during a charged political climate and have accelerated the need to build more inclusive knowledge economies.

From street protests to black squares on social media channels to the billion-dollar pledge, the last two years in America have been an interesting ride—especially regarding conversations on race, equity, and inclusion. The national dialogue underway informs—and, in many ways bolsters the need for—the Economy Forward Framework this report provides.

In contrast with William Strauss and Neil Howe’s generational change theory, which states that massive, societal change occurs in the United States every 80 to 90 years, our current moment (known to be the “**Moral Reckoning of the 2020’s**”) has exhibited its own theoretical conundrum whereby stakeholders are demanding equity and inclusion in every area of society.<sup>11</sup>

**This reckoning can notably be seen in two ways: the disbursement of society’s risk capital via venture capital (VC) investors and, relatedly, in the growing demand for and cultivation of diverse tech and entrepreneurial talent.**

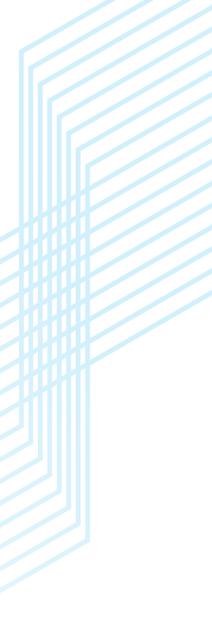
Innovative entrepreneurs and early-stage companies looking to scale rely heavily on VC investments as both providers of capital and market validators. Potential customers and the market at large are keen to follow their targeted investments. However, the last generation of their “chosen ones”

unfortunately do not reflect the vast pockets of talent across America’s 330 million population. Instead, most of those investments have focused on just a handful of regions, with midsized cities in the Heartland often going overlooked.

I have entertained the reflective comments, “*This is private capital, and they can do with it what they want.*” I fully agree. There are, however, a couple of caveats that temper traditional beliefs in private capital:



<sup>11</sup> Howe, N., & Strauss, W. (1992). *Generations: The History of America’s Future, 1584 to 2069*. William Morrow Paperbacks.



**Too Few Winners:** Every enterprise has its primary goal of adding value to its shareholders and stakeholders. However, VC-funded ventures have not fared well. According to a study by Harvard University scholar Shikhar Ghosh, nearly three-quarters of venture-backed firms in the U.S. do not return investors' capital. The problem lies in the filter being used by VCs, not the talent available, as it has been stated "talent is evenly distributed, whereas opportunity is not." Therefore, VCs need to see themselves as opportunity brokers.

**Economic Losses:** Everyone loses when we ignore large portions of the population in need of investment. Research by Opportunity Insights estimates that "if women, minorities, and children from low-income families were to invent at the same rate as white men from high-income (top 20%) families, the rate of innovation in America would quadruple."<sup>12</sup> Similarly, Citi Research estimates that through lack of access to capital and missed opportunities for economic growth, racial discrimination has accounted for nearly \$16 trillion in economic losses since 2000, with an annual cost of \$5 trillion. Please note in comparison that the national gross domestic product (GDP) of the U.S. is \$19.5 trillion.

The most startling discovery from the Citi project is that only African Americans were studied, a subset that accounts for less than 15% of the nation's population and capital markets, suggesting that this analysis accounts for only a portion of total lost growth across all underrepresented populations.

**Even in the post-George Floyd era, venture capital funding too often excludes founders of color.** Although the proportion of VC funding to Black entrepreneurs doubled from 2020 to 2021, this still accounts for only 1.2% of all venture capital deployed. Looking beyond founders, a report from the 2021 Carta Equity Summit found that only 9% of equity-holding employees are Latinx and 7% are Black, despite the U.S. labor force being 17% Latinx and 12% Black. By value, Latinx and Black employees hold only 5% and 4% of employee-owned equity, respectively. This same analysis found that 73% of employee equity went to men and 27% to women, despite the fact that women account for 35% of equity-holding employees and 47% of the U.S. labor force.<sup>13</sup>

**Simply imagine the exorbitant pools of talent being left uncultivated—and the amount of potential economic growth lost—not due to any intentional discrimination, but instead due to a lack of imagination with respect to underserved communities.**

The loss of this economic growth, then, is entirely preventable and creates an opportunity to fundamentally reimagine the systems and practices that have produced this problem.

In recent years, the private sector has begun to recognize this imperative. Considering the global movements surrounding the televised murder of George Floyd, the most outspoken leaders in the push to do something different have been private sector leaders. Consider the scale of J.P. Morgan's \$30 billion Advancing Black Pathways Program, or Google's expressed commitment to funding entrepreneurs of color, or the billions more in pledges

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<sup>12</sup> "Who Becomes and Inventor in America: The Importance of Exposure to Innovation" (Bell et al., 2018).

<sup>13</sup> "Annual Equity Report 2021: Analysis of equity distribution by gender, race, and ethnicity." Carta Equity Summit (2021).

and commitments from Fortune 1,000 firms that have emerged across the country. The savvy leaders that command these complex organizations, as well as the millions of employees that have raised their voices for change, have determined that inclusion is not only good for business but a more sustainable approach to civilized society as well.

The same is true for regional tech economies. While there is much energy around the topic of VC funding, it should be noted that investments are an outcome measure of the relative strength of an economic system's ability to identify, train, and deploy talent—from workers to entrepreneurs—to meet industry demand for labor. At present, our economic system is unable to supply the talent needed by our nation's leading tech companies. Filling this talent gap with the abundance of underprepared talent available in communities across America is the first step towards arresting the structural inequities that plague the nation's tech industry and overall economic growth.

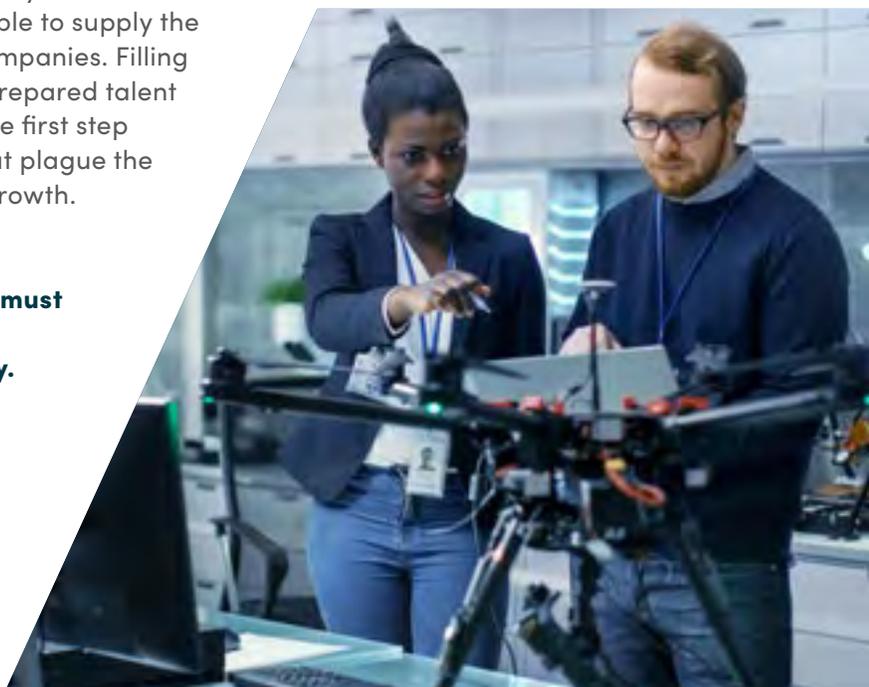
**An aggressive national talent development strategy and the investment capacity which must accompany it is needed to fill the persistent talent gaps that abound in our tech economy.**

At the regional level, this must take the form of comprehensive initiatives that include communities traditionally overlooked by tech companies—communities of color and Heartland cities alike—and address the common reluctance to hire workers with non-traditional educations.

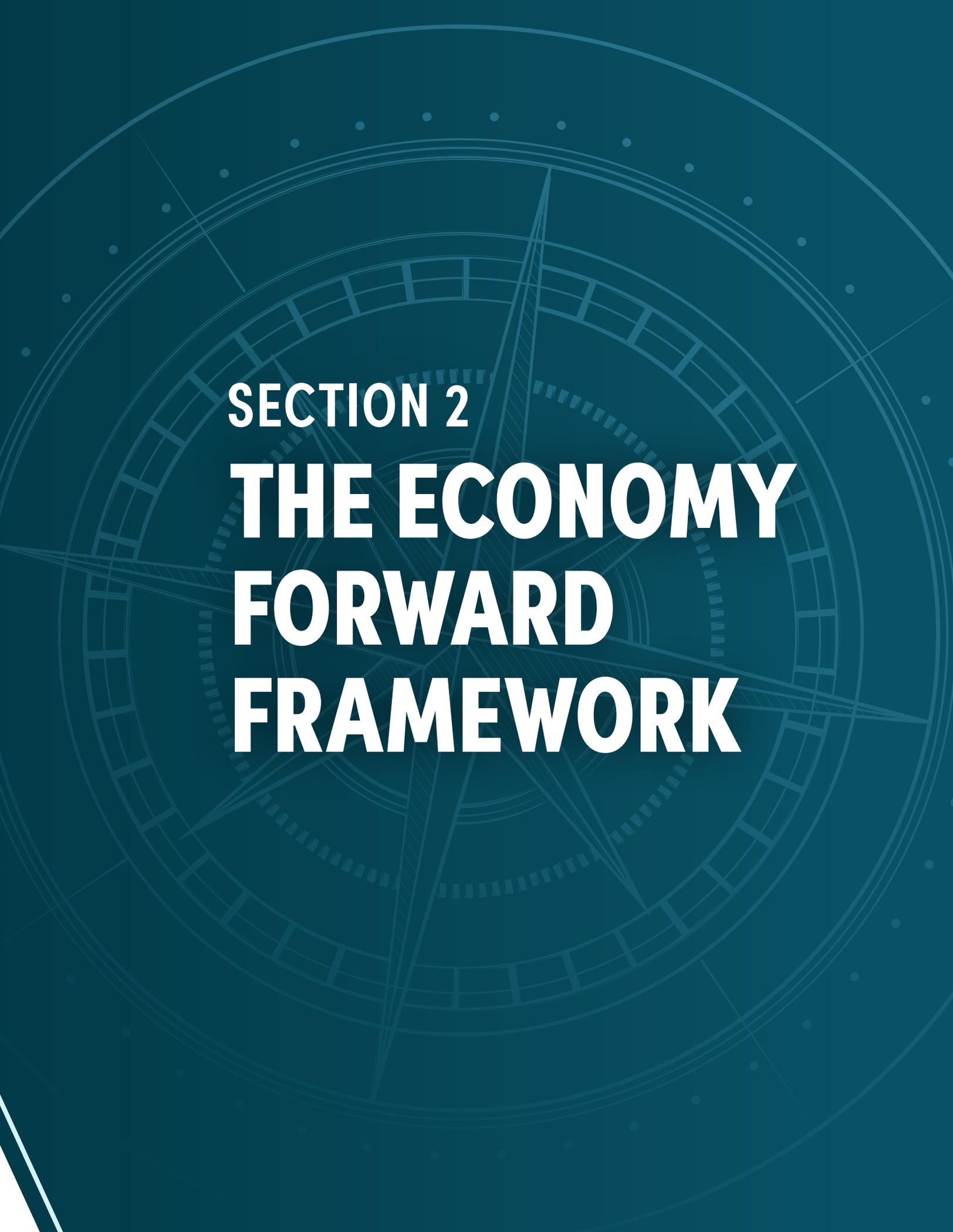
Communities that do this well will be at an advantage, unlocking the human capital and entrepreneurial potential of this segment of their population while building a more just and prosperous economy.

**To identify models of these communities, we must look beyond traditional education systems and focus on the compacts that cities have crafted amongst their stakeholders.**

The components of a strong compact include alignment amongst employers and education systems on the need to create talent; an emerging knowledge economy in need of skilled talent; and a vibrant philanthropic sector willing to invest in solutions to local issues. As private sector investors and employers continue to examine and rethink their own practices, cities that have a strong compact will be best positioned to expand their coalitions, attract investment, and create new opportunities for their entrepreneurs and workers. The regions that successfully deploy these resources to increase resilience, fully empower diverse talent, and invest in a strong and united community are poised to build futures that are more inclusive and therefore more prosperous. **The Economy Forward Framework** that follows can help cities like Tulsa and its mid-sized peers measure their progress toward building innovation economies where opportunities are accessible to all.







**SECTION 2**

**THE ECONOMY  
FORWARD  
FRAMEWORK**

The background features a dark blue color with a subtle grid pattern. In the upper left corner, there are several parallel, light blue lines that curve and then run straight, creating a sense of depth and movement. The overall aesthetic is modern and technical.

# **INCLUSIVE GROWTH METRICS**



**T**he trends and challenges described in Section 1 make clear the need for midsize cities to rethink how they define success and reorient their economic development strategies to better suit the knowledge economy. The Economy Forward Framework is designed to assist these cities in navigating this inevitable transition.

This report is based on quantitative and qualitative research conducted over twelve months in collaboration between Tulsa Innovation Labs, the Aspen Institute, and Heartland Forward. The result is two new economic development tools—together, called the **Economy Forward Framework**—which midsize cities can use to define and measure inclusive growth for their communities:

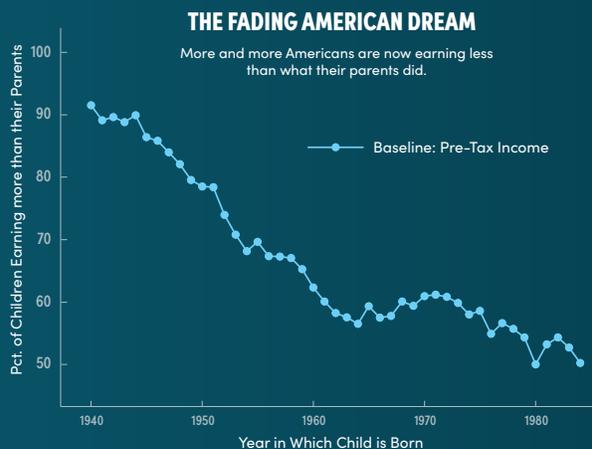
- **Inclusive Growth Metrics** serve as a quick guide to explain the strongest indicators of inclusive growth and why they are important to track.
- **Ranking of Midsize Cities** depicts where 38 midsize American cities rank across a curated set of metrics—specifically a combination of where each city’s economy stands today and their growth over the past ten years.

Section 2 details these economic development tools. It then delves into the rankings, pulling out a sample from across the cohort to offer a comparative analysis of eight cities in more depth.

**The Inclusive Growth Metrics model is a set of nine performance indicators that mid-sized cities can use to track the inclusive growth of their local economies.** Closely monitoring a city's progress across each metric is important for ensuring that a city establishes and sustains a positive and inclusive growth trajectory.

## Methodology

Tulsa Innovation Labs, the Aspen Institute, and Heartland Forward came together to build a framework for measuring inclusive growth within the national context of increasing inequality and the urgent need to expand opportunities for economic mobility.



Research from Opportunity Insights reveals that the American Dream is at risk because of widening inequities. That is why the **Economy Forward Framework** directly incorporates the **inclusion of growth** and the **accessibility of economic opportunities** into how it defines successful economic development.<sup>14</sup>

Harvard University economist **Raj Chetty**, who has pioneered research on inequality, served as a particular inspiration. Through groundbreaking data analysis, Chetty and the nonprofit he co-founded, Opportunity Insights, have given serious credence to the sentiment—increasingly pervasive in the zeitgeist—that the American Dream is fading because of widening inequities.

Building on foundational research from Chetty and **Opportunity Insights**, as well as from the **Brookings Institution** and the **Urban Institute**, our process started by identifying—and simplifying—the key priorities that cities must balance to remain competitive in the knowledge economy.

This led to three themes: **industry, accessibility, and vibrancy**. In short, cities must grow select innovation industries, make opportunities within those industries accessible to all, and in doing so, create a more vibrant community. These themes were used to structure the Framework.

Then, an extensive list of metrics across those themes was developed. Nine metrics rose to the surface for two reasons: **first, the metric is tied to innovation ecosystem investments and can capture the impact of new programs and second, the metric is sensitive enough to show changes over a short timeframe (5 years)**, which can allow cities to learn from and determine which interventions are working.

Three **industry** metrics capture key steps in a city's economic transition. The first metric,

<sup>14</sup> Chetty, Raj, David Grusky, Nathaniel Hendren, Maximilian Hell, Robert Manduca, and Jimmy Narang. 2017. "The Fading American Dream: Trends in Absolute Income Mobility Since 1940." *Science*.

**Share of Jobs in the Knowledge Economy**, measures the percentage of workers employed in creative and knowledge-intensive occupations that are more resilient to economic turmoil.<sup>15</sup> The research team calculated this metric using MSA-level data from the U.S. Census Bureau.<sup>16</sup>

Understanding that this transition happens over time, the team also used the U.S. Census Longitudinal Employer and Household Dynamics dataset to calculate **Young Firm Employment Ratio & Young Firm Knowledge Intensity**—or the percentage of workers employed at firms less than six years old and the percentage of employees at those young firms that have a bachelor’s degree or higher—as a proxy for a city’s entrepreneurial ecosystem and potential near-term knowledge economy growth. Research from Heartland Forward first published in 2020 shows that young firms with well-educated employees are the most likely to grow rapidly and employ a large number of people and that this composite metric is highly correlated with future job growth, as young knowledge-economy firms are the most likely to quickly grow to employ lots of people.<sup>17</sup>

Finally, the researchers examined National Science Foundation Higher Education Research and Development (HERD)<sup>18</sup> data to measure **Academic Research and Development Expenditures** that can attract talent and generate important inventions. A broad body of literature has demonstrated the link between robust research assets and tech-driven economic growth.<sup>19, 20</sup> Although it may take several years for research activity to translate into economic impact, cities with a high concentration of research spending and the associated workforce are positioned to be on the cutting-edge of future innovation.

The **accessibility** metrics followed a similar pattern. The accessibility metrics followed a similar pattern. The Framework includes civilian **Labor Force Participation Rate by Race and Sex** data (from the US Census’s American Community Survey)<sup>21</sup> to ensure that regions are tracking the impact of the economic transition on vulnerable workers. Nationally, labor force participation has been declining over the past two decades, driven largely by displaced industrial workers who have had difficulty transitioning into the new economy. **The future of automation also threatens many service jobs, which are often disproportionately held by women and people of color.** To create an inclusive tech economy, cities must ensure that workers who are vulnerable to displacement are given access to reskilling opportunities and support services.

Recognizing that the benefits of successful tech hubs have too often gone to the wealthiest, whitest, and best-educated segments of the population, two metrics were identified to track the participation of traditionally underrepresented populations. First, by tracking the **Diversity**

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<sup>15</sup> Richard Florida defined “knowledge economy jobs” in *Rise of the Creative Class: Revisited* (2012) as those in the SOC categories: Management occupations (11-0000); Business and financial operations occupations (13-0000); Computer and mathematical occupations (15-0000); Architecture and engineering occupations (17-0000); Life, physical, and social science occupations (19-0000); Legal occupations (23-0000); Educational Instruction and Library occupations (25-0000); Arts, design, entertainment, sports, and media occupations (27-0000); and Health-care practitioners and technical occupations (29-0000).

<sup>16</sup> Based on the US Census’ Quarterly Workforce Indicators dataset, accessed through the Bureau of Labor Statistics’ Local Employment Data Extraction Tool (LED Extract).

<sup>17</sup> Crews, J., DeVol, R., Florida, R., & Shideler, D. (2020, May 6). “Young Firms and Regional Economic Growth.” Heartland Forward, from <https://heartlandforward.org/young-firms-andregional-economic-growth>.

<sup>18</sup> NSF Higher Education Research and Development Survey, 2019 (<https://nces.nsf.gov/pubs/nsf21314>).

<sup>19</sup> Romer, P. (1990). *Endogenous Technological Change*. *Journal of Political Economy*, 98(5, Part 2), S71-S102.

<sup>20</sup> DeVol, R. (2018, September). “How Do Research Universities Contribute to Regional Economies? Measuring Research University Contributions to Regional Economies” Heartland Forward, pp. 9-11, <https://heartlandforward.org/wp-content/uploads/2021/03/how-do-research-universities-contribute-to-regional-economies-1.pdf>.

<sup>21</sup> We used American Community Survey’s 1-Year Estimates for overall LFPR and LFPR by sex, but we used American Community Survey’s 5-Year Estimates for our data on LFPR by race. This is because the 5-Year Estimates data set is designed for use when there are certain tracts of the population that are too small to be captured in the 1-year estimates, which in this case, was the Black population in certain metropolitan areas.

**of Enrollment in STEM Programs** using the U.S. Department of Education’s Integrated Postsecondary Education Data Systems (ED-IPEDS), cities can see the diversity of the future STEM workforce and assess the efficacy of initiatives to diversify the STEM talent pipeline.<sup>22</sup> Furthermore, by analyzing the **Share of Minority and Women-Owned Firms in Knowledge-Intensive Industries** from DatabaseUSA (accessed via EMSI Burning Glass), cities can track the diversity of knowledge-economy entrepreneurship and ensure that this economic transition is not exacerbating wealth inequality.<sup>23</sup>

To capture **vibrancy**, the cross-institutional team chose metrics that measure the commitment to and results of strategies to make cities attractive places to live and work. The team measured **Public Investment in Quality of Place** by examining a municipality’s appropriations for economic development and cultural and recreational amenities over time via that city’s Consolidated Annual Financial Reports. This was paired with two metrics designed to capture the success of cities in attracting and retaining highly-educated workers: **Percentage of Residents with a Bachelor’s Degree or Higher**<sup>24</sup> and the **Retention of Graduates from Local Educational Institutions**.

For midsized Heartland cities, the proportion of college-educated workers can be both a signal of expanding knowledge-economy jobs and a validation of the city’s talent attraction programs and investments in cultural amenities. Graduates of local institutions are most likely to have an accurate sense of the economic opportunities and the quality of life of a certain city—and the rate of retention of these students can thus be a valuable signal of a city’s appeal to well-educated young workers. Appendix describes in detail a new method of measuring this phenomenon using institutional enrollment data and LinkedIn’s Alumni tool.

While the success of economic development initiatives is often measured by the number of jobs created, we argue that the cumulative result of tech ecosystem investments on job numbers is better represented by the Share of Jobs in the Knowledge Economy metric we employ in the Economy Forward Framework. This method better insulates measurements from recessions or other macroeconomic fluctuations, better captures changes in knowledge-intensive industries that are related to but not included in our investment areas, and captures the important transitions happening in regional economies over time, even if the total number of jobs is not changing.

Absent from these metrics is also one on wealth accumulation or economic mobility—two values important to Tulsa Innovation Labs, the Aspen Institute, and Heartland Forward. Ultimately, the team determined that within the initial five-year-timeframe, such a metric would be impractical to impact and confidently track. That said, in toto, if a city hits its targets across the nine metrics, we contend that it can provide sustainable opportunities for their citizens that will help them move up the economic ladder.

By focusing exclusively on midsized cities, this analysis both acknowledges and controls for the challenges and characteristics inherent to cities of this size. For example, by categorizing metrics into three categories—industry, accessibility, and vibrancy—this framework acknowledges that achieving successful and equitable economic development requires navigating competing local interests, entrenched stakeholders, fierce competition from peer cities, and global macroeconomic forces.

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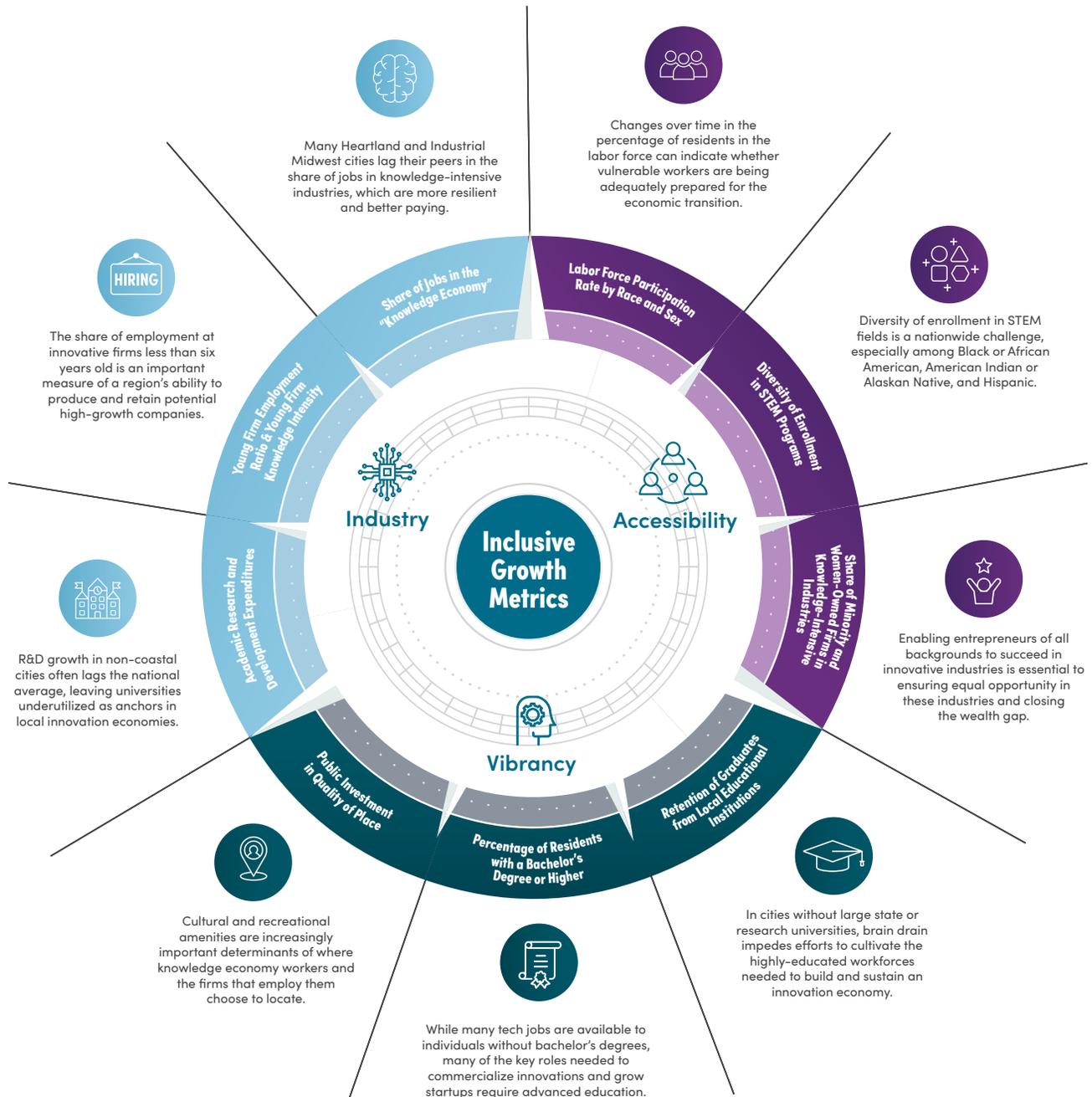
<sup>22</sup> To calculate this metric, we compiled available IPEDS institutional data for diversity of enrollment and categorized programs as “STEM” (Medicine, Dentistry, Physical Sciences, Mathematics, Biological Sciences, and Engineering) or “Non-STEM” (all others). This allowed us to assemble a demographic profile of the population enrolled in STEM degree programs, which we then compared to the population of the state as a whole.

<sup>23</sup> Data was analyzed for three categories and NAICS codes: Information (51), Professional, Scientific and Technical Services (54), and Management (55). Although this data is unverified by its publisher (EMSI Burning Glass), we expect any biases to be consistent across cities and years. Thus, ordinal relationships between cities and within one city over time remain instructive.

<sup>24</sup> US Census Bureau, American Community Survey 1-Year Estimates.

# INCLUSIVE GROWTH METRICS

These nine metrics represent the key drivers of inclusive economic growth. Closely monitoring a city's progress across each of them is important for ensuring a city establishes and sustains a positive (and inclusive) growth trajectory.





# **RANKING OF MIDSIZED CITIES**

**T**he Ranking of Mid-sized Cities is a quantifiable and comparative tool to assess the relative strength of 38 mid-sized cities based on their knowledge economy trajectory. The ranking depicts where each mid-sized American city, with an MSA population between 750,000 and 1.5 million, is today (Position Rank) and its trajectory (Growth Rank), with respect to inclusive economic growth. It is based on a special analysis of the Inclusive Growth Metrics.

## Methodology

It would not be fair to compare Birmingham to Boston, so to ensure that the analysis is intellectually honest, consistent, and generates actionable insights, the team focused on mid-sized cities. The team defined such cities as those metropolitan areas with populations between 750,000 and 1.5 million. This filtering led to a set of 38 metros, about a third of which are located in the Heartland—a broad region of 20 states that encompasses both the midwestern and southern portions of the United States.<sup>25</sup> 13 of the 38 cities are considered in the Heartland.

Using a subset of metrics that allow for the most direct city-to-city comparisons, the team created a ranking of the 38 cities. The metrics utilized for the ranking reflect each theme of the Inclusive Growth Metrics set: **(1) Young Firm Employment Ratio; (2) Young Firm Knowledge Intensity; (3) Share of Jobs in the Knowledge Economy; (4) Labor Force Participation Rate by the Population as a Whole, by Sex (female compared to male), and by Race (Black compared to white)<sup>26</sup>; and (5) Percentage of Residents with a Bachelor's Degree or Higher.** With a holistic set of metrics that cover new business growth, educational preparedness, and accessibility for a range of demographic groups, our analysis aims to capture inclusive growth.

<sup>25</sup> For reference, Ross's definition: According to DeVol's research for the Walton Family Foundation, the Heartland is based on the four U.S. Census Bureau regions and includes the East North Central (Ohio, Michigan, Indiana, Illinois and Wisconsin); West North Central (Missouri, Kansas, Iowa, Minnesota, Nebraska, South Dakota and North Dakota); East South Central (Kentucky, Tennessee, Alabama and Mississippi); and West South Central (Arkansas, Oklahoma and Louisiana). Subsequently, Texas has been included in the Heartland definition.

<sup>26</sup> While "prime age" LFPR is often considered to be 20–54 years of age, this specific age range was not available within our US Census data set. Instead, we sought to create age consistency across our LFPR measures as best we could. Overall LFPR and LFPR by race is for the 16+ age group, while LFPR by sex data was only available for the 20–64 age group.

There are a few metrics that were not conducive to city-to-city comparison. Data for share of non-white-business ownership in knowledge-intensive industries was not robust enough to calculate growth scores over time. Academic R&D and public investment in quality of place were not possible to compare on a city level because of the variable nature of investments, and retention of graduates was not comparable due to the variable amount of local educational institutions.

Two scores were generated based on these metrics, specifically what percentile each city is in relative to the peer set: a **Position Score** that captures how well a city is performing currently, based on performance in the past ten years (i.e., the average performance during 2010–2020), and a **Growth Score** that reflects a city’s future trajectory, based on how much performance shifted between now and ten years ago (i.e., the difference in performance between 2010<sup>27</sup> and 2020).

Together, the two scores are averaged to arrive at an overall **Economy Forward Score**. The higher the score, the higher rank, which corresponds to how well-prepared a city is for the future economy, or how strong the city is moving their knowledge economy **forward**.

By analyzing both relative current positioning (“**stock**” measures) and change over time (“**flow**” measures), this framework acknowledges that urban economic transitions are ongoing and that strategies will require sustained measurement, evaluation, and refinement. These parameters are designed to make the Economy Forward Framework both more accurate and more actionable for midsized American cities.

Based on the overall **Economy Forward Scores**, four segments (rough quartiles) were created to assess where a city is on their journey toward building an inclusive innovation economy:

- **Forward Ready Cities** generally have stable and consistently growing knowledge economies and are moving in the right direction;
- **Nearly Ready Cities** are on positive trajectories with a number of strong indicators, but need maturing;
- **Opportunity Cities** have local assets or strengths to leverage but need sustained investment to grow inclusive and recognized tech economies; and
- **At-Risk Cities** are cities that have experienced contracting economies and face serious equity issues, making them likely to struggle in the new economy.

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<sup>27</sup> Metrics used the most current data available, which was either 2019 or 2020 data. Some metrics, particularly LFPR and percent of residents with a bachelor’s degree or higher, used 2019 data as the 2020 data was not available yet.

# RANKING OF MIDSIZED CITIES

Based on their Inclusive Economic Growth Trajectory

	Metropolitan Area	Position Percentile ("Where it's at")	Growth Percentile ("Where it's going")	Economy Forward Ranking (Overall Trajectory)
<b>FORWARD READY</b> Tier 1 Cities	1 Salt Lake City, UT	89%	97%	100%
	2 Albany-Schenectady-Troy, NY	84%	95%	97%
	3 Hartford-West Hartford-East Hartford, CT	92%	79%	95%
	4 Bridgeport-Stamford-Norwalk, CT	100%	68%	92%
	5 Charleston-North Charleston, SC	71%	95%	89%
	6 Raleigh, NC	97%	61%	87%
	7 Omaha-Council Bluffs, NE-IA	74%	76%	84%
	8 Richmond, VA	82%	66%	82%
	9 North Port-Sarasota-Bradenton, FL	58%	84%	79%
	10 Urban Honolulu, HI	79%	61%	76%
<b>NEARLY READY</b> Tier 2 Cities	11 Dayton, OH	37%	100%	74%
	12 Buffalo-Cheektowaga-Niagara Falls, NY	47%	87%	71%
	Oklahoma City, OK	61%	74%	71%
	14 Birmingham-Hoover, AL	42%	89%	66%
	15 Rochester, NY	66%	63%	63%
	16 Worcester, MA-CT	95%	24%	61%
	17 Greenville-Anderson-Mauldin, SC	37%	74%	58%
	18 Louisville/Jefferson County, KY-IN	26%	82%	55%
	19 Boise, ID	68%	32%	53%
	20 Allentown-Bethlehem-Easton, PA-NJ	45%	50%	50%
Columbia, SC	63%	32%	50%	
Grand Rapids-Wyoming, MI	53%	42%	50%	
<b>OPPORTUNITY</b> Tier 3 Cities	23 New Haven, CT	76%	16%	42%
	New Orleans-Metairie, LA	39%	53%	42%
	25 Oxnard-Thousand Oaks-Ventura, CA	87%	3%	37%
	26 Knoxville, TN	21%	61%	34%
	27 Albuquerque, NM	50%	18%	32%
	Cape Coral-Fort Myers, FL	32%	37%	32%
	Tulsa, OK	24%	45%	32%
30 Tucson, AZ	55%	11%	24%	
<b>AT-RISK</b> Tier 4 Cities	31 Baton Rouge, LA	29%	34%	34%
	32 Greensboro-High Point, NC	5%	47%	47%
	33 El Paso, TX	11%	39%	39%
	34 Memphis, TN-MS-AR	16%	26%	26%
	35 Bakersfield, CA	13%	13%	13%
	Fresno, CA	18%	8%	8%
	37 McAllen-Edinburg-Mission, TX	3%	21%	21%
	38 Stockton-Lodi, CA	8%	5%	5%

The background is a dark blue gradient. In the top-left corner, there are several parallel, light blue lines that curve and then run straight towards the right. The rest of the background is filled with a faint, light blue grid pattern. A white triangular shape is cut out from the bottom-right corner.

# **INSIGHTS ON THE DATA**



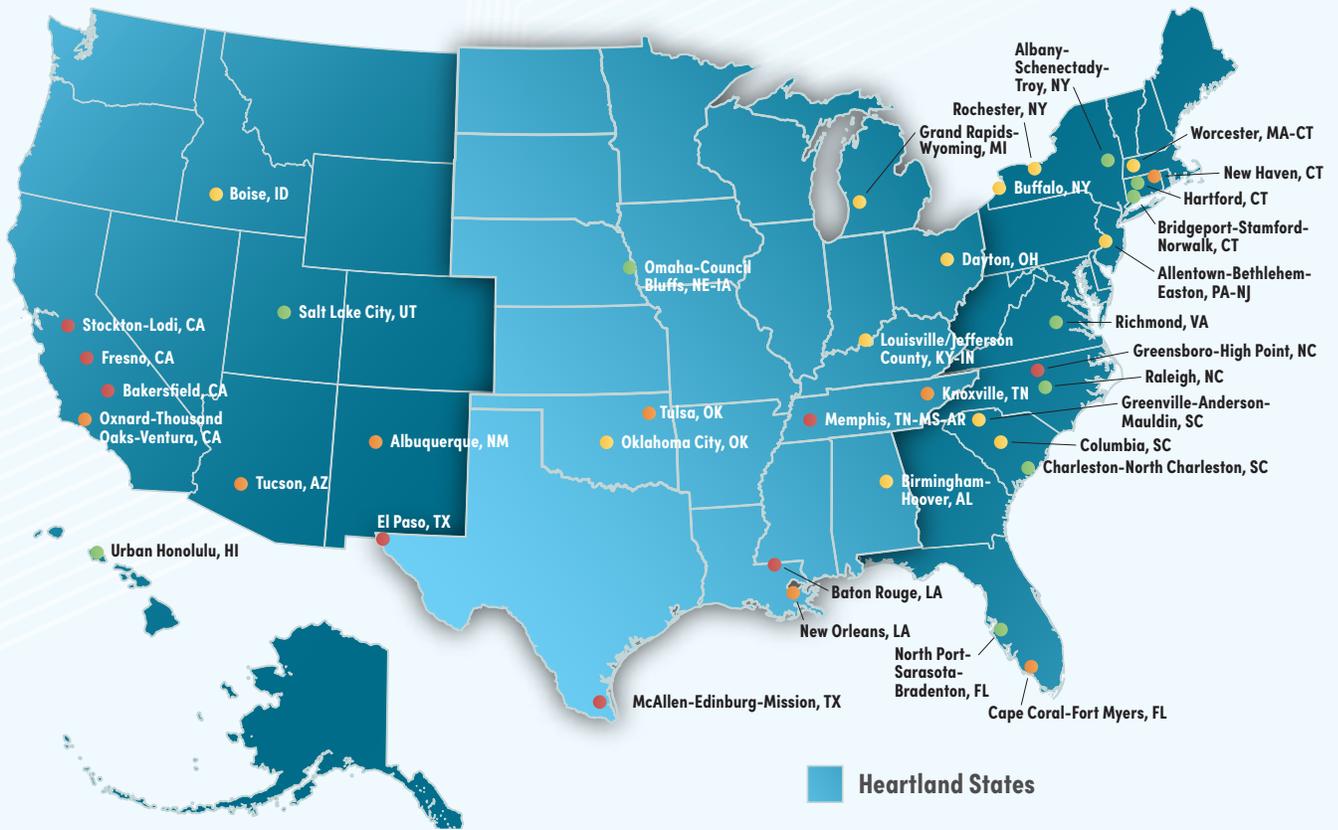
**T**he short cases below present a sample of eight mid-sized cities across the ranking spectrum, engaging the data to tease out interesting findings. These results illustrate the breadth of challenges and opportunities facing Heartland cities, as well as the diversity of the cohort itself.

Despite comprising half of the peer set, cities in coastal states accounted for 70% percent of Forward Ready Cities, the strongest quartile. All three New York State metros on the list are in the Top 12, while California—home to the world’s most prominent tech hub in Silicon Valley—also captures three out of the bottom four spots in our ranking of mid-sized metros, speaking to the unfortunate concentration of opportunities in the San Francisco Bay area.

The short cases highlight some of the interesting results from the data in eight mid-sized cities: Salt Lake City; Omaha; Dayton; Boise; Tulsa; Tucson; El Paso; and Fresno.

While our Economy Forward Rank captures the general sense of where a city is currently positioned and how its growth may fare in the future knowledge economy, every city has unique history, assets, and strengths that it can leverage to succeed. And the data shows that each city has the potential to grow in stronger and more inclusive ways.

## 38 MIDSIZED CITIES



## COMPARISON OF 8 CITIES

	Metropolitan Area	Position Percentile ("Where it's at")	Growth Percentile ("Where it's going")	Economy Forward Ranking (Overall Trajectory)
<b>FORWARD READY</b> Tier 1 Cities	1 Salt Lake City, UT	89%	97%	100%
	7 Omaha-Council Bluffs, NE-IA	74%	76%	84%
<b>NEARLY READY</b> Tier 2 Cities	11 Dayton, OH	37%	100%	74%
	19 Boise, ID	68%	32%	53%
<b>OPPORTUNITY</b> Tier 3 Cities	27 Tulsa, OK	24%	45%	32%
	30 Tucson, AZ	55%	11%	24%
<b>AT-RISK</b> Tier 4 Cities	33 El Paso, TX	11%	39%	16%
	35 Fresno, CA	18%	8%	11%

# FORWARD READY CITIES

## Salt Lake City, UT

Salt Lake City is the paradigm for a **“Forward Ready City;”** it has experienced strong growth with no signs of slowing down. With the strongest growth in knowledge economy jobs **(+6.93%)** more than two percentage points higher than the second strongest and strongest growth in percent of residents with a bachelor’s degree or higher **(+7.49%)** among mid-sized cities, Salt Lake City is powered by a heavily educated workforce. It comes as no surprise that it also has the highest labor force participation rate **(71.21%)** among mid-sized cities, though even Salt Lake City is not perfect, with a large gap between female and male labor force participation rates to address **(-14.6%)**. With a great mix of large companies (e.g., Adobe, eBay, Micron) and small, young firms (empowered by entrepreneurial programs at Brigham Young University and University of Utah), Salt Lake City is a modern success story for non-coastal tech hubs.



## Omaha-Council Bluffs, NE-IA

Once known primarily for its meatpacking plants and positioning as a transportation hub, Omaha-Council Bluffs, has evolved to be an essential business hub and a solid **“Forward Ready City.”** Omaha-Council Bluffs houses four Fortune 500 companies across a wide swath of industries: Berkshire Hathaway (holding company), Kiewit Corporation (construction), Mutual of Omaha (banking), and Union Pacific Corporation (railroads and transportation). Despite the presence of big business, Omaha-Council Bluffs also has set the stage for a small business boom, with the third-highest growth in young firm employment ratio **(-0.01%)**. With a high proportion of bachelor’s degree holders **(34.7%)** and the second-highest overall labor force participation rate **(71.07%)**, it is unsurprising that the city also holds the third-highest growth in share of knowledge economy jobs **(+4.70%)**. Omaha-Council Bluffs is a rare combination of an educated and working populace, a strong business core, and a vibrant young business future.



# NEARLY READY CITIES

## Dayton, OH

As a **"Nearly Ready City,"** Dayton has the knowledgeable workforce and jobs needed to succeed, but younger, more innovative firms would solidify its place in the knowledge economy. Dayton is driven by knowledge-intensive industries such as defense, aerospace, and medicine, leading the city to have the fifth-highest share of knowledge economy jobs (**33.20%**) and eighth-highest growth in percent of residents with a bachelor's degree or higher (**+5.80%**) among mid-sized cities. Yet, this industrial strength is dominated by large corporate and government presence (e.g., Wright Patterson Air Force Base). As a result, its young firm employment ratio ranks the worst out of all the mid-sized cities (**7.94%**). On top of this, Dayton could make better strides towards labor force accessibility, with the eighth slowest growth in female labor force participation rates in relation to males (**-0.7%**).

Dayton is on track to sustaining a knowledge economy, but it could better secure its future if that knowledge base shifts to working in younger firms and improving inclusivity.



## Boise, ID

Boise is a city with a strong, agile, young economy, yet it needs to spur its young firms into the knowledge economy, hence it being a **"Nearly Ready City."** Boise has traditionally been known for having a high young firm employment ratio (**13.49%**), and its population is relatively well educated, with many residents having a bachelor's degree or higher (**30.44%**). Yet, its negative growth in young firm knowledge intensity (**-1.56%**) and share of knowledge economy jobs (**-0.77%**) is in the bottom ten of mid-sized cities. The city has initiatives to spur entrepreneurial growth, such as the Boise Valley Economic Partnership, but the key to Boise's continued success lies neither in improving its already strong entrepreneurial-scene or educated workforce, but rather in connecting these two strengths and translating them into new knowledge-intensive young firms.



# OPPORTUNITY CITIES

## Tulsa, OK

Once known as the “Oil Capital of the World,” Tulsa has struggled to adjust to the 21<sup>st</sup> century, but through impressive recent investment, it has made a significant economic resurgence, making it a prime **“Opportunity City.”** Tulsa performs well on average labor force participation rates (**64.2%**), particularly with the sixth greatest growth in labor force participation rates for Blacks compared to whites (**+6.60%**). However, it has a low percentage of residents with a bachelor’s degree or higher (**26.78%**) and a low young firm knowledge intensity (**21.82%**). Therefore, the core challenge Tulsa faces is not increasing employment participation, but rather upskilling pre-existing talent, attracting educated workers, and fostering resilient knowledge economy industries. To tackle this challenge, Tulsa has the unique asset of the George Kaiser Family Foundation, (GKFF), possibly the largest philanthropy dedicated to improving the lives of people in a specific and concentrated American geographic area. GKFF’s recent efforts (e.g., Tulsa Remote, a talent attraction initiative and TIL) could further accelerate Tulsa’s growth. With recent strong growth in percentage of residents with a bachelor’s degree or higher (**+2.62%**) and share of knowledge economy jobs (**+2.00%**) addressing its weaknesses, Tulsa may already be on the rise.



## Tucson, AZ

Tucson is an **“Opportunity City”** because although it is well positioned with a knowledge economy, it needs to reverse current growth trends to maintain its current positioning. Tucson has a high percentage of the population with a bachelor’s degree (**31.09%**) and with jobs in the knowledge economy (**31.39%**), yet its growth in these two metrics is in the bottom ten of mid-sized cities (**+2.63% and +0.4%, respectively**). To shift course, Tucson has launched multiple early-stage initiatives. Remote Tucson, which emulates Tulsa Remote, attracts knowledgeable workers nationwide, and substantial income tax credits attract businesses in the renewable energy industry, aligned with Arizona’s plan to shift to 100% renewable energy. Tucson is positioned well enough that it can continue to experiment with new programs until it paves the way for its brightest future.



# AT-RISK CITIES

## El Paso, TX

El Paso is an **“At-Risk City”** because while its positioning is among the worst for mid-sized cities, the unprecedented spurt of new business may promise generous growth in the future. It has the worst young firm knowledge intensity (**12.75%**), and the very slow growth in share of knowledge economy jobs (**-0.2%**) and percent of residents with a bachelor’s or higher (**+3.66%**) shows that it is lacking in an educated workforce. Yet, it is the very top city for growth in overall labor force participation rates (**+3.4%**), **fourth best city for improving female labor force participation rates (+3.8% in relation to males)**, and has the eighth highest young firm employment ratio (**13.93%**), indicating there is a massive spurt of new people entering the workforce, employed in young business. No single city in our study has a larger disparity between its status today and its potential for the future. If El Paso can shift towards the knowledge economy, its rapid economic growth may make it a highly competitive city; based on its above average growth in young firm knowledge intensity (**+0.46%**), this may already have begun.



## Fresno, CA

Fresno, CA is an **“At-Risk City”** that will need to either adapt or pivot from its heavy reliance on the agriculture industry to succeed in the future economy. Fresno County is often the number one agricultural producer in the country, but the agriculture industry is not always conducive to growth of share of knowledge economy jobs (**+0.42%**). The populace also has the fourth lowest proportion of residents with a bachelor’s degree or higher (**20.04%**). Yet, there still lies a way ahead. With a high young firm employment ratio (**17.26%**) and surprisingly high growth in young firm knowledge intensity (**+0.51%**), traits that it happens to share with fellow “At-Risk” California city, Bakersfield-Delano, there are hints of a potential startup scene. Whatever seeds Fresno sows for its future, its current growth indicates that success would be shared equitably, with Black labor force participation rates growing significantly (**+3.2% in relation to whites**) as well as female labor force participation rates (**+1.8% in relation to males**).

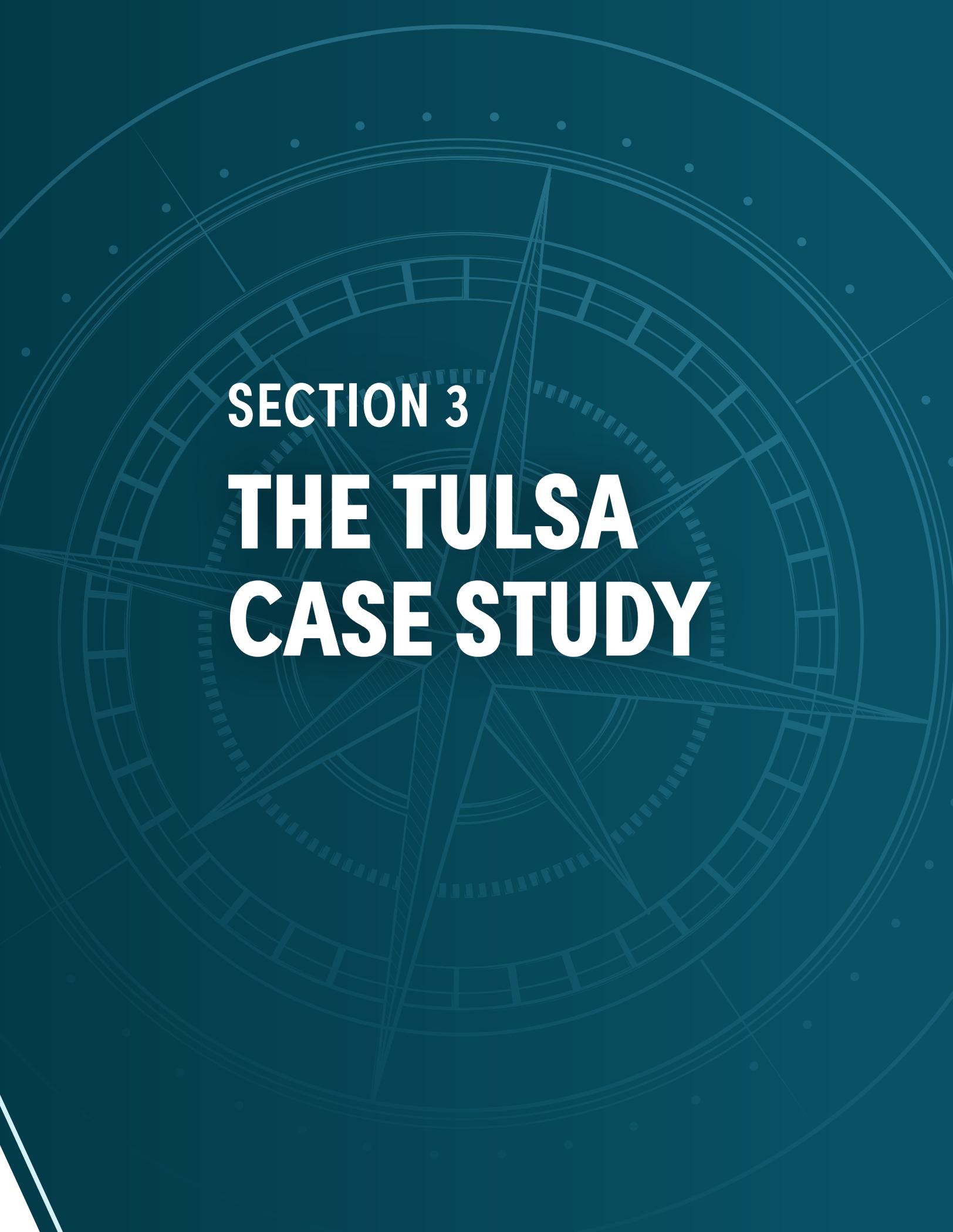




If Austin and San Francisco are cautionary tales, communities like Salt Lake City or Omaha should not rest on their laurels, either. Continued growth is not guaranteed, and cities must be ever vigilant to guard against rising inequality. The “Nearly Ready Cities,” Dayton and Boise, may secure their future if they address targeted issues, while the “Opportunity Cities,” Tulsa and Tucson, sit at a crossroads with the assets needed to elevate themselves. Notably, the “At-Risk Cities” also show promise.

The knowledge economy is the future, but how cities go about adapting to this future can go myriad ways. Tulsa, for example, is taking a bold and intentional approach to improve their metrics and catalyze an inclusive tech ecosystem in northeast Oklahoma. A closer study of that Heartland city will help illustrate how the Economy Forward Framework can assist mid-sized cities understand where their economies are today and how to set goals for the future.





**SECTION 3**

**THE TULSA  
CASE STUDY**



# TULSA'S BLUE SKY OF OPPORTUNITY

By Jennifer Hankins

Jennifer Hankins is the head of partnerships at Tulsa Innovation Labs. A fierce advocate for innovation and entrepreneurship in the Heartland, her career in economic development began in Kansas City, KS and has been focused on cities in the Heartland ever since. She has extensive experience working on regional economic development initiatives and crafting public-private partnerships, including most recently at the Tulsa Regional Chamber and the Greater Oklahoma City Chamber of Commerce.

**T**his report discussed the macro trends affecting mid-sized cities, especially those in the Heartland, and presented the Economy Forward Framework to help guide those cities in developing innovation economies of their own.

**To illustrate how a mid-sized city can utilize the Framework, let us explore Tulsa, Oklahoma as a case study.**

Before diving into the metrics and goals for Tulsa, I will provide a scan of Tulsa's economy; outline the intentional economic development strategy my organization, Tulsa Innovation Labs (TIL), has spearheaded; and provide a sense of the ecosystem-wide work that is required to put a city like Tulsa on a stronger and more sustainable footing.

## An Opportunity City

The 20th century in Tulsa was characterized by both significant prosperity and catastrophic devastation. Following the discovery of massive petroleum reserves in the early 20th century, the city's economy exploded, bringing opportunities and enormous population growth, but this expansive economic boom often came at the expense of Eastern Oklahoma's Native populations.

It was during this time that Tulsa became known as the "Oil Capital of the World" and was home to a thriving business scene, including the Greenwood District—one of the wealthiest Black communities in the United States. Later dubbed Black Wall Street, this district represented hundreds of Black-owned businesses and roughly 10,000 residents.

The summer of 1921 marked the worst single incident of racial violence in American history. Known as the 1921 Tulsa Race Massacre, a white mob decimated this thriving community, killing hundreds, displacing thousands, and bringing to a halt decades of economic progress for its residents.<sup>28</sup> A new and catalytic effort is underway to rebirth the Greenwood District and the once vibrant Black Wall Street into **Black Tech Street**: the new global capital of Black Tech.<sup>29</sup>

## FAST FACTS ABOUT TULSA'S ECONOMY

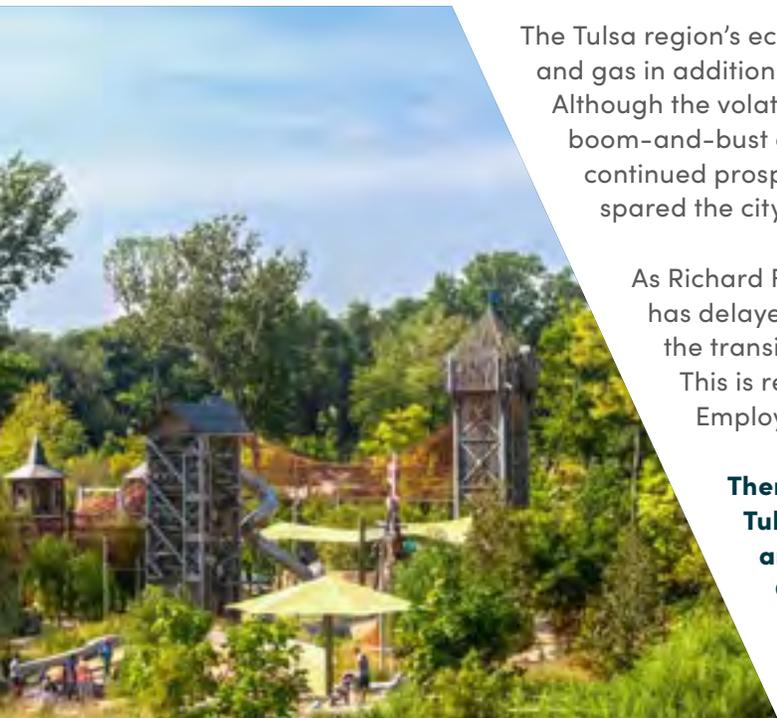
- With 6 Fortune 1,000 company headquarters, Tulsa's metropolitan area has a total GDP of \$58.7 billion, 33.4% of Oklahoma's economy.<sup>30</sup>
- Oil and gas production and machinery manufacturing jobs are 9.5x more concentrated in Tulsa than the rest of the U.S. and make up 11.2% of Tulsa's gross regional product, but only 1.8% of jobs.
- The top three industries by people employed are 1. Health Care (56,534), 2. Retail (55,101), and 3. Manufacturing (53,421).<sup>31</sup>

<sup>28</sup> For a deeper understanding of this seminal event and its enduring impact on Tulsa, see: Johnson, Hannibal. *Black Wall Street 100*. Eakin Press. 2021.

<sup>29</sup> To learn more about the vision for Black Tech Street from a Tulsan leading the effort, see Tyrance Billingsley II's CNN Business op-ed: <https://www.cnn.com/2021/05/21/perspectives/black-wall-street-entrepreneurs-venture-capital/index.html>.

<sup>30</sup> Tulsa Economic Future Report (2019): <https://www.tulsasfuture.com/data-and-research-tools/economic-profile/>.

<sup>31</sup> Tulsa Community Profile (2021): <https://www.tulsasfuture.com/workforce-and-talent/community-profile>.



The Tulsa region's economy remains tied to large employers in oil and gas in addition to the aviation and manufacturing industries. Although the volatility of the energy industry has led to several boom-and-bust cycles throughout the city's history, the continued prosperity of Tulsa's legacy industries has so far spared the city from widespread economic dislocation.

As Richard Florida pointed out earlier in the report, however, this has delayed cities like Tulsa from embracing and advancing the transition to a more resilient and innovative new economy. This is reflected in Tulsa's poor performance in Young Firm Employment Share and Young Firm Knowledge Intensity.

**There are opportunities to chart a new path, though. Tulsa's anchor industries provide the community with an important foundation on which to build and the COVID-19 pandemic has given mid-sized cities like Tulsa a renewed sense of urgency in diversifying their economies to mitigate some of the negative side effects of the transition underway.**

According to research by McKinsey & Company, automation will be most strongly felt in office services, food services, and certain trades. For example, nationally, 46% of food service cooks are projected to be replaced by automation, while 51% of welding, cutting, soldering, and brazing jobs are projected to be replaced by automation.

Unfortunately, Tulsa has an above-average amount of its population working in service industries compared to its peers. Of those Tulsans in service-based jobs, the jobs with the highest displacement potential have skewed demographic concentrations, meaning automation will disproportionately affect Tulsa's communities of color.

Over the last several years, though, Tulsa has seen an increase in STEM bachelor's degree completions at its regional universities. The city's share of college-educated adults (only 31.3% as of 2019) still lags beyond its peers, however.<sup>32</sup> This is often attributed to the "brain-drain" problem that many mid-sized and Heartland cities grapple with, which in Tulsa, is correlated to the booms and busts of its legacy industries.

In recent years, programs like **Tulsa Remote**<sup>33</sup> and significant place-based investments, such as **The Gathering Place**<sup>34</sup> (pictured above), a \$465 million urban park, have helped put Tulsa on the map as a great place to live with its low-cost of living and strong sense of community.

In fact, the city has seen an increase in new in-migration, with the Tulsa region recently achieving the status of a million person MSA. Despite this, overall population growth of Tulsa city proper has been offset by the continual trend of out-migration, often leaving Tulsa with

<sup>32</sup> American Community Survey (2019) data: <https://data.census.gov/cedsci/table?t=Educational%20Attainment&g=310XX00US46140&tid=ACSST1Y2019.S1501>.

<sup>33</sup> For a recent analysis on Tulsa Remote's impact, which estimated an initial \$62 million in local economic impact, see this study: <https://eig.org/tulsa-remote>.

<sup>34</sup> *Time* magazine named The Gathering Place one of the World's Greatest Places for 2019: <https://time.com/collection/worlds-greatest-places-2019/5654149/the-gathering-place-tulsa-oklahoma/>.

a neutral change in population growth in key demographics. Specifically, Tulsa is getting disproportionately older as young people leave the region; Tulsa MSA's total population has increased by 3% from 2015–2020, yet its population aged 20–24 shrank 4%, while its population aged 70–74 grew by 25%.<sup>35</sup>

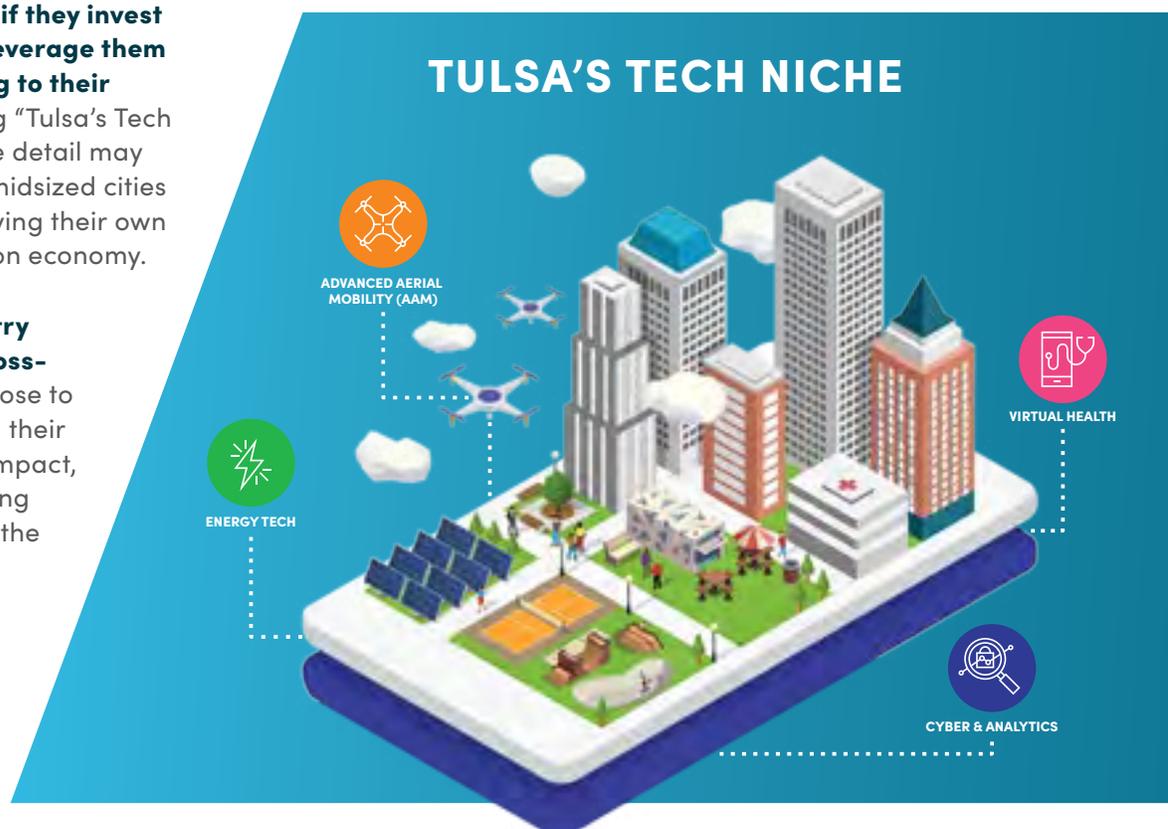
## Tulsa's Tech Niche

To combat these troubling trends, George Kaiser Family Foundation (GKFF) pioneered Tulsa Innovation Labs, a new tech-led economic development organization (EDO). GKFF is a \$4 billion philanthropy dedicated to fighting intergenerational poverty in Tulsa. Recognizing that Tulsa's best bet for combating the economic challenges of the past is to look ahead and build the economy of the future, GKFF has tasked TIL with positioning Tulsa's economy towards the future by focusing on economic development strategies that are dynamic, inclusive, and authentic to the Tulsa region.

Toward those ends, TIL established the city's first tech-led economic development strategy, called "**Tulsa's Tech Niche**" (pictured below).<sup>36</sup> With analytical support from McKinsey & Company, TIL identified the top five opportunities for growth in Tulsa—the city's "right to win" given existing regional assets.

**Every Heartland city can play a role in the tech economy if they invest in local assets and leverage them strategically, playing to their strengths.** Explaining "Tulsa's Tech Niche" in a little more detail may illustrate how other midsized cities can go about identifying their own place in the innovation economy.

In Tulsa, **three industry verticals** and **two cross-cutting horizontals** rose to the surface based on their potential economic impact, the feasibility of seizing the opportunity, and the inclusiveness of jobs the industry stood to offer (specifically, a proxy: the share of projected jobs attainable with an associate degree).



<sup>35</sup> EMSI Q4 2021 data set, population from 2015–2020.

<sup>36</sup> For TIL's full "Tulsa's Tech Niche" strategy, see: [https://global-uploads.webflow.com/6033ee2d51442a0cd577b6ee/6033ee2d51442a646a77b7ab\\_Tulsa%27s%20Tech%20Niche\\_vF.pdf](https://global-uploads.webflow.com/6033ee2d51442a0cd577b6ee/6033ee2d51442a646a77b7ab_Tulsa%27s%20Tech%20Niche_vF.pdf).

The three industries are **virtual health, energy tech, and advanced aerial mobility**:

- **Virtual health** has typically included patient-doctor consultations over telephone, video, or chatbots, but recent advancements are improving the accessibility and sophistication of technologies, creating new benefits across the provider, payor, and patient spectrum. These solutions are valuable to underserved and rural communities, such as those surrounding Tulsa, and are critical options during public health emergencies, such as the COVID-19 pandemic. The University of Oklahoma-Tulsa and Oklahoma State University-Tulsa both have research centers dedicated to virtual health, making this a key opportunity for Tulsa's emerging tech ecosystem.
- Digital technologies are being adopted across every part of the energy value chain and with Tulsa's oil and gas legacy, **energy tech** is an essential opportunity area for the city and its large employers to stay competitive. As renewable and energy efficiency initiatives grow, they create an imperative for energy companies to enhance their operations through automation, analytics, and operational technology. These solutions are pivotal for retaining Tulsa's oil and gas workforce and creating accessible jobs that are protected from automation.
- The market for drones—and the broader **advanced aerial mobility (AAM)** industry—is projected to see strong growth. By 2024, around half of the drones market will be commercial and consumer applications, and Tulsa is already seeing adoption in the energy and agriculture industries. Moreover, Oklahoma State University has a nationally recognized aerospace engineering and unmanned aerial research program, the Osage Nation is developing a drone port, and Tulsa is home to many large energy companies and has deep expertise already in the aerospace industry. Together, this recipe makes Tulsa well-suited for testing and researching innovative drone applications and infrastructure.

And the two horizontals that enable the growth of Tulsa's entire innovation economy are **cyber and data analytics**:

- Tulsa's base of energy companies, with critical infrastructure to protect, as well as the city's growing virtual health and AAM ecosystems, would benefit from new **cyber** talent and applied research. The University of Tulsa—nationally, a top 25 cyber program—has enormous potential as cybersecurity is experiencing near exponential growth. Although there are many mature cyber companies, there is still innovation and growth occurring in specialized areas, providing Tulsa an opportunity to claim a piece of the industry and prepare its local workforce for additional growth.
- **Data analytics** is a rapidly-growing sector across every tech domain. Building capabilities in advanced analytics (e.g. artificial intelligence, machine learning) can be a catalyst to improve Tulsa's positioning in both its existing and emerging industries. Upskilling talent in Tulsa to jobs in data analytics and science would help transition workers to the new economy while supporting the city's broader tech ecosystem.

The TIL team is actively building out a first wave of programmatic investments across each of the focus areas with robust DEI goals—launching interventions to support the growth of startups, spur academic innovation; and train local talent. This strategy has brought much needed focus to Tulsa's efforts, with multiple organizations aligning around these opportunities.

## The Innovation Flywheel

TIL argues that only through a fully functioning **Innovation Flywheel** (pictured below), can cities like Tulsa avoid (or at least mitigate) the new urban crisis that Richard Florida notes cities like Austin and San Francisco are experiencing.<sup>37</sup>

Tulsa has had a number of successful endeavors to address disparate pieces of the Innovation Flywheel before, but it has never had a coordinated and large-scale effort like the one TIL’s founding partner, GKFF, is currently embarking upon.

Backing a suite of economic and workforce development-related projects, including TIL, GKFF has recently led a comprehensive effort to grow and diversify Tulsa’s economy, with TIL taking the lead on developing a strategy to kick-start the Innovation Flywheel and establish a tech niche for Tulsa through new initiatives (see below for full list of TIL’s local coalition).

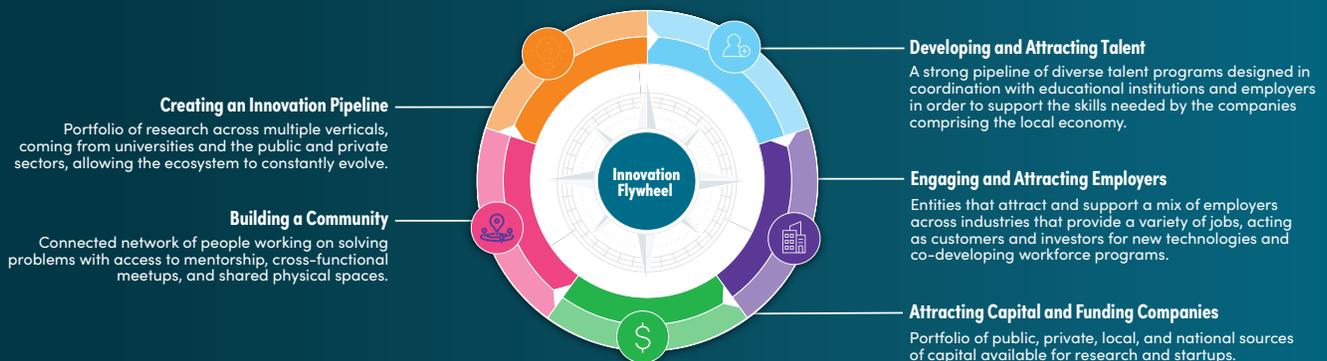
The **“flywheel effect”** traces back to a book by business advisor Jim Collins, called *Good to Great*. Collins’s business strategy implementation process shows there is “no single defining action, no grand program, no one killer innovation, no solitary lucky break, no miracle moment” that transforms a company or social sector enterprise from good to great in one fell swoop.<sup>38</sup>

The Innovation Flywheel concept takes this “flywheel effect” and applies it to innovation, demonstrating how initial interventions can catalyze a system-wide culture of innovation.<sup>39</sup>

For a city like Tulsa to chart a new, more forward-leaning path, it needs to establish a tech niche for itself and create a multi-pronged effort to do so that activates all facets of the Innovation Flywheel in a coordinated way. Tulsa’s flywheel is just beginning to activate, but it needs hard goals, based on shared metrics, to ensure local organizations move in the same direction.

## INNOVATION FLYWHEEL

SUCCESSFUL ECOSYSTEMS REQUIRE COORDINATED ACTIVITIES ACROSS THE FLYWHEEL



## TIL’S LOCAL COALITION



AtentoCapital



GEORGE KAISER  
FAMILY FOUNDATION  
A partnership organization of Tulsa Community Foundation



tulsa  
remote

TIL is part of a dynamic coalition working together to activate all facets of Tulsa’s innovation flywheel.

<sup>37</sup> Austin’s increased cost of living has been written about extensively, such as: Sandoval, E. (2021, November 27). How Austin Became One of the Least Affordable Cities in America. Retrieved from *New York Times*: <https://www.nytimes.com/2021/11/27/us/austin-texas-unaffordable-city.html>.

<sup>38</sup> Collins, Jim. “The Flywheel Effect.” Jim Collins - Concepts - The Flywheel Effect, <https://www.jimcollins.com/concepts/the-flywheel.html>.

<sup>39</sup> Gildehaus, Charles, et al. “Powering the Innovation Flywheel in the Digital Era.” BCG Global, BCG Global, 12 Nov. 2021, <https://www.bcg.com/publications/2021/driving-business-impact-with-the-innovation-flywheel-approach>.



# DEFINING SUCCESS IN TULSA

By Nicholas Lalla

Nicholas Lalla is an executive strategist and team leader, nationally recognized for building new ventures that catalyze inclusive growth and innovation. He is the co-founder and managing director of Tulsa Innovation Labs. Previously, he launched Cyber NYC at the New York City Economic Development Corporation and was a strategy consultant at Deloitte.

**W**hen we launched Tulsa Innovation Labs in January 2020, we wanted to make Tulsa the inclusive tech hub it aspired to be. But as a startup, TIL was moving so quickly that measuring success beyond initiative KPIs was deprioritized. At the time, it felt as though we were building the plane as we were flying it, and we only had a general sense of the impact we wanted to make in Tulsa. Since then, the flurry of local activity and investment has increased at a breathtaking pace. Yet three years into our mission, there remains a vague understanding of what success means for the city-wide effort TIL is leading.

**Through the Economy Forward Framework, we attempt to answer a fundamental question: how do we know if Tulsa’s innovation economy is growing and growing in ways that expand opportunities for all Tulsans?**

Answering this question will ensure that our coalition moves forward together and that we can make the best collective impact for Tulsa that we can. The whole should be greater than the sum of its parts, so the Economy Forward Framework employs metrics that go a step beyond a single organization’s impact to reflect the collaborative spirit that must animate cities’ economic development work.

As Ross DeVol explains in his essay, there are serious challenges facing Heartland cities, and Tulsa is no exception. The analysis below provides some sobering statistics about where Tulsa’s economy is today and the poor growth it has experienced over the past decade. Cities need to be clear-eyed about the challenges they face, though, and set appropriate expectations for the progress they can make and what it will take to get there. In fact, knowing the pain points can help cities create targeted and meaningful interventions, so cities should not be discouraged by disappointing statistics. Analyzing the data is the first step toward setting and achieving a city’s inclusive growth goals.

**Let us apply the Economy Forward Framework’s nine metrics to Tulsa to show how other midsized cities can utilize our tool and what they can do to make progress. The metrics and goals that follow represent Tulsa’s stake in the ground. They will serve as our compass as TIL works with a diverse coalition to chart a new future for the city.**



## Tulsa Today and in 5 Years

The goals TIL set for Tulsa are based on the historic performance of peer cities, Tulsa’s recent trajectory, and the investments the city is making to build a robust and inclusive tech ecosystem. For each metric, the team analyzed where Tulsa is today compared to 38 peer cities with MSA populations between 750,000 and 1.5 million and established goals for where Tulsa needs to be in five years to demonstrate a more positive and inclusive growth trajectory.

The analysis that follows goes into more detail for each metric, but here is a quick look at where Tulsa is today and the five-year goals for each metric:

	Metric	Tulsa Today	5-Year Goals
INDUSTRY	Share of Jobs in the “Knowledge Economy”	Knowledge Economy jobs make up a smaller share of total jobs in Tulsa (28.9%) than in its peer set (31.1%)	Tulsa increases the share of KE Jobs to 30% of all jobs in the Tulsa MSA by 2026
	Young Firm Employment Ratio & Young Firm Knowledge Intensity	Tulsa’s YFER is 0.9% lower and its YFKI is 1.8% lower than the average of its peers	Tulsa cuts these gaps in half to 0.45% and 0.9% by 2026
	Academic Research and Development Expenditures	The Tulsa MSA has approximately 25% of Oklahoma’s population but only 8% of the state’s academic R&D expenditures	10% of R&D expenditures in Oklahoma are located in Tulsa by 2026
ACCESSIBILITY	Labor Force Participation Rate by Race and Sex	Tulsa’s LFPR has generally been above the aggregate and median LFPRs of peer cities since 2010 (In 2019, 1.1% above aggregate and 0.4% above median)	Tulsa’s LFPR should remain 1% above aggregate LFPR of peer cities, and retain consistency across racial groups
	Diversity of Enrollment in STEM Programs	STEM degree programs enroll far fewer Black (-51%), Native (-33%), and Hispanic or Latino (-31%) students than expected based on the state’s population	TIL-backed educational programs will strive for enrollment that is at least 8% Black, 7% Native, and 10% Hispanic or Latino, matching the MSA’s demographics
	Share of Minority and Women-Owned Firms in Knowledge-Intensive Industries	Although Tulsa performs well in comparison to cities with similar white/non-white population breakdowns, only 0.93% of firms in key industries are owned by people of color	Tulsa will double the its share of minority-owned firms in these industries to 1.8% over the next five years
VIBRANCY	Public Investment in Quality of Place	City appropriations for Social and Economic Development and Culture and Recreation grew by 33% between 2011 and 2020, faster than the growth in overall city spending (24%)	By 2026 Tulsa’s annual spending growth in Public Investment in quality of place should be 5% higher than annual spending growth in overall city budget.
	Percentage of Residents with a Bachelor’s Degree or Higher	The share of Tulsans with a bachelor’s degree or higher is 3.8% lower than the aggregate of peer cities	Tulsa’s growth in this metric by 2026 should outpace peer cities, narrowing the gap to 2.5%
	Retention of Graduates From Local Educational Institutions	Controlling for students’ home cities, OKC is 1.7x more likely to retain a recent graduate of OU and 2.7x more likely to retain a recent graduate of OSU	Tulsa closes this gap by 10% by 2026



## Industry

**Share of Jobs in the “Knowledge Economy”<sup>40</sup>:** Knowledge economy jobs tend to be higher-paying and more resilient to automation and a growing concentration of them indicates a thriving, forward-moving ecosystem. Tulsa historically has had less jobs in the knowledge economy, especially with underprivileged racial groups disproportionately holding service and manual labor jobs. Growth in knowledge economy industries can only improve economic mobility for all Tulsans.

### KEY

In the following graphs for each metric, pink dashed lines, hatching, or arrows are used to show Tulsa’s goal in relation to its current performance



### KNOWLEDGE ECONOMY JOBS AS PERCENT OF TOTAL JOBS, 2020

Tulsa lags behind its peers in its share of knowledge economy jobs.



Source: US Bureau of Labor Statistics, Occupational Employment and Wage Statistics (2020)



#### TULSA’S GOAL:

Tulsa increases the share of KE Jobs to 30% of all jobs in the Tulsa MSA by 2026

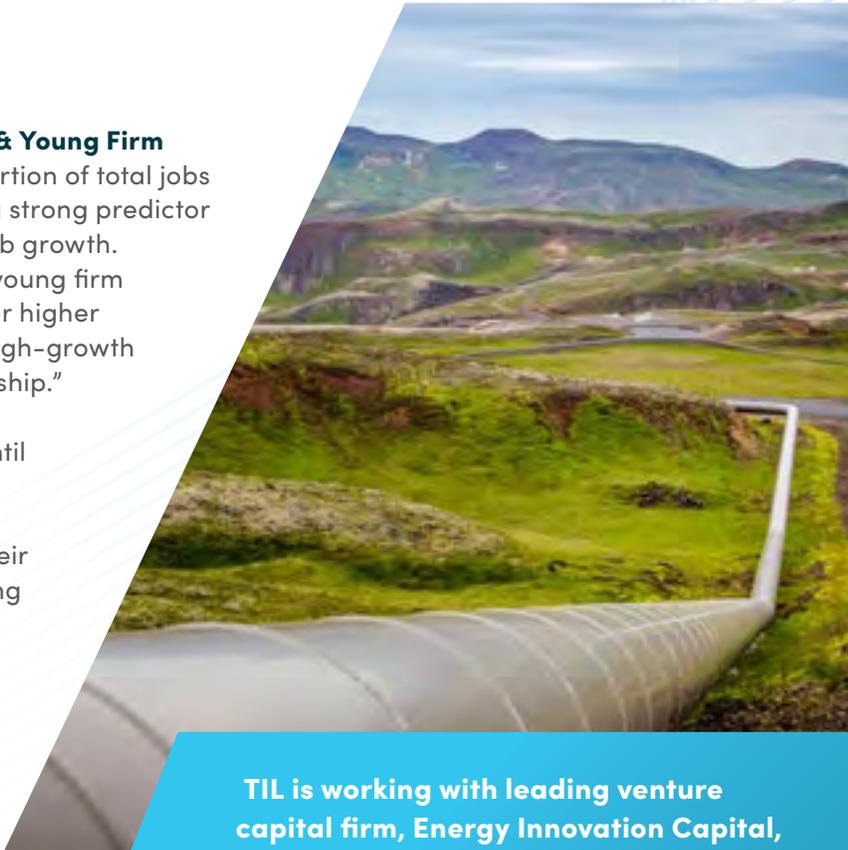
<sup>40</sup> We define knowledge economy jobs as those in the SOC categories: Management occupations (11-0000); Business and financial operations occupations (13-0000); Computer and mathematical occupations (15-0000); Architecture and engineering occupations (17-0000); Life, physical, and social science occupations (19-0000); Legal occupations (23-0000); Educational Instruction and Library occupations (25-0000); Arts, design, entertainment, sports, and media occupations (27-0000); and Health-care practitioners and technical occupations (29-0000).

**Young Firm Employment Ratio (YFER) & Young Firm Knowledge Intensity (YFKI):** The proportion of total jobs at firms less than 6 years old (YFER) is a strong predictor of economic dynamism and potential job growth. This is supplemented with the share of young firm employment with a bachelor’s degree or higher (YFKI) to delineate between potential high-growth startups and “main street entrepreneurship.”

Like many Heartland cities, Tulsa has until recently lacked the tech ecosystem and access to venture capital that cultivates high-tech young companies. Despite their growing ubiquity, one way to grow young firms is through dedicated incubator and accelerator-style programs in sync with the local economic development strategy. TIL recently launched an initiative called **BloomOK** in partnership with the **Oklahoma Life Sciences Fund** that supports early-stage virtual health companies, many originating from local universities. And notably, TIL partnered with

**Energy Innovation Capital**, the nation’s leading venture capital firm specializing in energy tech, and several local corporates to support the growth of energy tech startups in Tulsa.

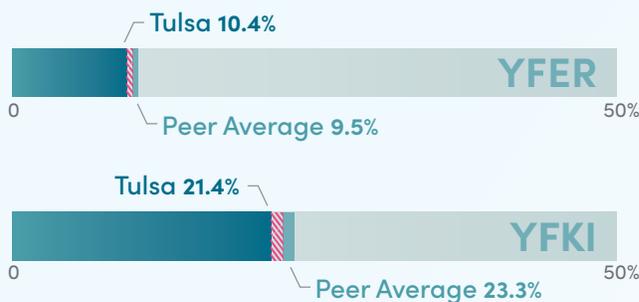
Through TIL and other ecosystem investments, such as 36 Degrees North, an entrepreneurial support organization and Atento Capital, an early-stage venture capital firm, the Tulsa ecosystem is beginning to create the conditions for young firms to launch and thrive.



**TIL is working with leading venture capital firm, Energy Innovation Capital, and major energy companies to launch an initiative that attracts high-impact energy technology startups to Tulsa**

## YOUNG FIRM EMPLOYMENT RATIO (YFER) & YOUNG FIRM KNOWLEDGE INTENSITY (YFKI)

Tulsa’s average YFER is 0.9% lower and its YFKI is 1.8% lower than the average of its peers.



Source: Data provided directly by Heartland Forward (current 2019 data may not be online yet).



### TULSA'S GOAL:

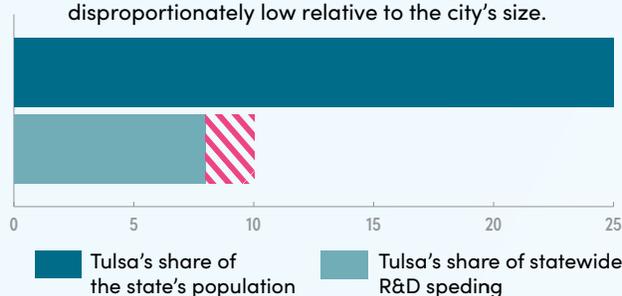
Tulsa cuts these gaps in half to 0.45% and 0.9% by 2026

**Academic Research and Development Expenditures:** Increasing the public, private, and academic investment in research in the Tulsa region is a critical catalyst for innovative research that spawns new companies.<sup>41</sup>

Academic R&D growth in Oklahoma over the past 10 years has kept pace with the national average. However, neither of the flagship campuses of the state’s two major public universities are in the Tulsa MSA. Although the Tulsa MSA accounts for over 25% of Oklahoma’s population, less than 8% of academic R&D investments in Oklahoma are in the region.

### TULSA'S ACADEMIC R&D SPENDING

In the Tulsa MSA, R&D spending is disproportionately low relative to the city’s size.



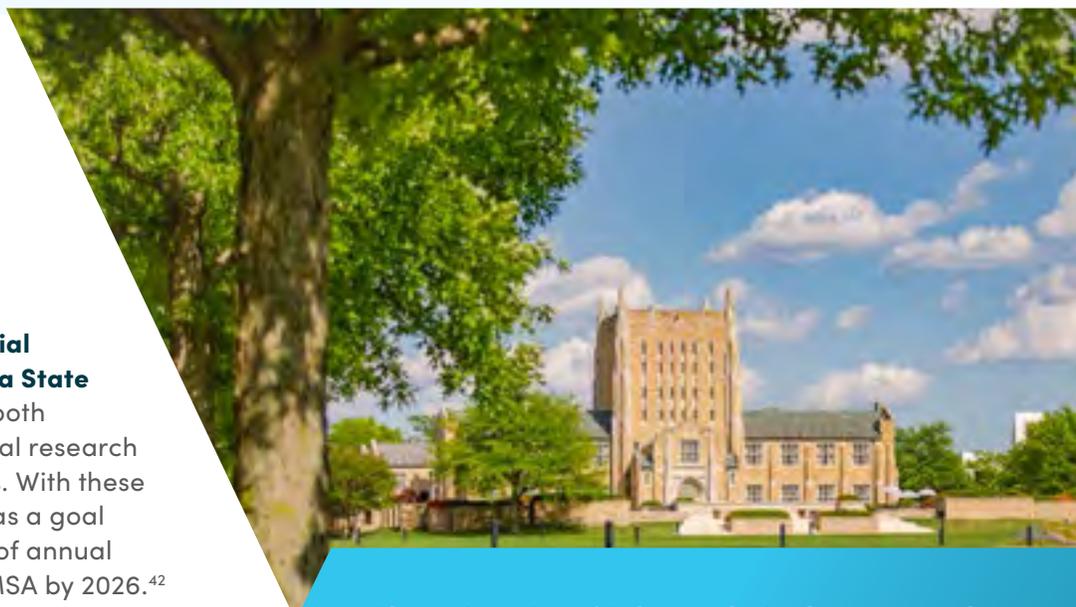
Source: National Science Foundation (NSF) Higher Education Research and Development Survey (HERD)



### TULSA'S GOAL:

10% of R&D expenditures in Oklahoma are located in Tulsa by 2026

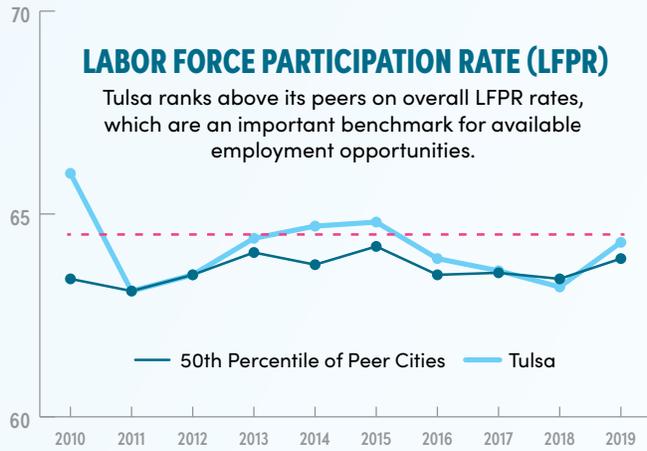
Recognizing that innovative R&D is an essential component of a thriving tech ecosystem, TIL is building up the **Cyber Innovation Institute at the University of Tulsa** (pictured right) and the **Advanced Aerial Mobility Center at Oklahoma State University-Tulsa** to expand both foundational and translational research capacity at these universities. With these and other investments, TIL has a goal for the city of attracting 10% of annual statewide R&D to the Tulsa MSA by 2026.<sup>42</sup>



**The University of Tulsa ranks in the top 25 cyber programs in the U.S. — U.S. News & World Report**

<sup>41</sup> Andes (2017) finds that research universities located downtown have outsized commercial outcomes (inventions, startups produced, licensing deals, and revenues) relative to their rural or sub-urban peer institutions.

<sup>42</sup> For more information on the power of academic R&D and what cities can do to stimulate innovation and growth, see Bradley, J. and Katz, B, *The Metropolitan Revolution*, Brookings Institution Press (Washington, DC), 2013: pages 17–40.



Source: American Community Survey (2010-2019)



### TULSA'S GOAL:

Tulsa's LFPR should remain 1% above aggregate LFPR of peer cities, and retain consistency across racial groups

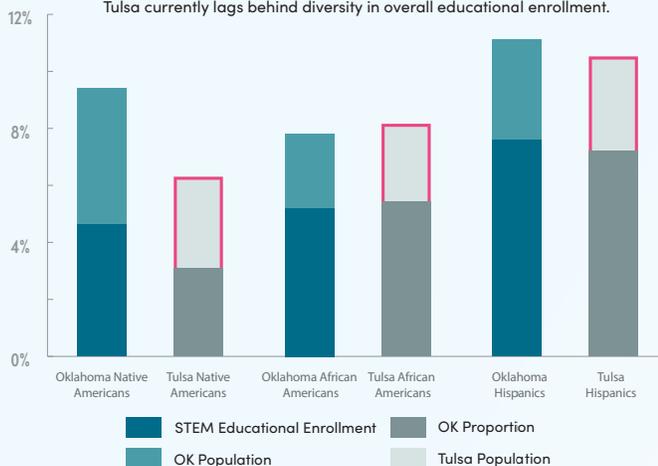
## Accessibility

**Labor Force Participation Rate by Race and Sex:** Traditional resource and manufacturing economies like Tulsa's are vulnerable to offshoring and automation. The labor force participation rate is an important measure of workers' ability to navigate this transition and avoid prolonged economic dislocation. For most of the last decade, Tulsa's overall LFPR has been above that of peer cities. Measuring this indicator's progression during and after the pandemic will provide important insights into economic recovery, while monitoring this metric across demographic groups will provide insight into the winners and losers created by this economic transition and ensure that it is not exacerbating existing inequities.

**Diversity of Enrollment in STEM Degree Programs<sup>43</sup>:** This measure includes bootcamps, apprenticeships, and certain college programs and is meant to capture the diversity of Tulsa's future workforce across key industries; with dedicated efforts, it should show measurable improvement at the five-year mark.

### DIVERSITY OF ENROLLMENT IN STEM DEGREE PROGRAMS

Tulsa currently lags behind diversity in overall educational enrollment.



Source: United States Department of Education, National Center for Education Statistics – Integrated Postsecondary Education Data System

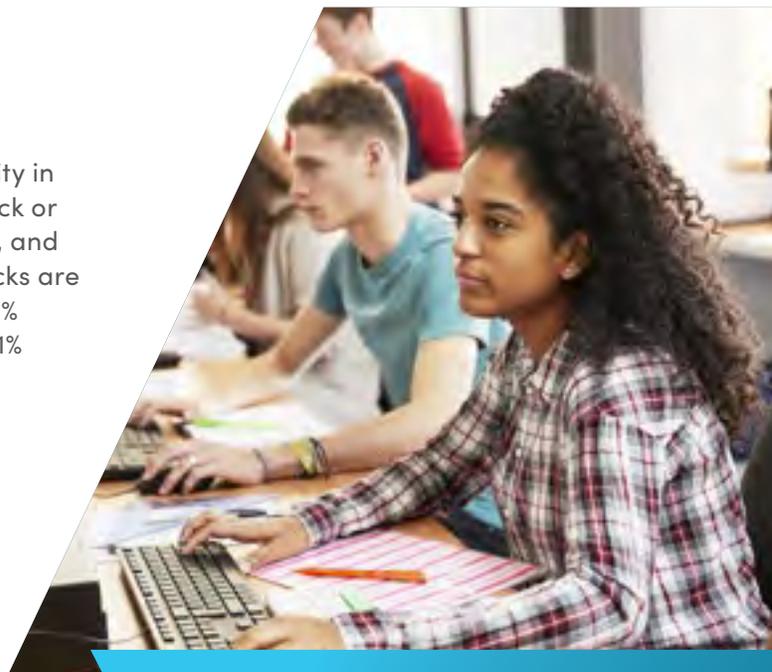


### TULSA'S GOAL:

Tulsa area STEM programs will strive for enrollment that is at least 8% Black, 7% Native, and 10% Hispanic or Latino, matching the MSA's demographics

<sup>43</sup> To calculate this metric, we compiled available IPEDS institutional data for diversity of enrollment and categorized programs as "STEM" or "Non-STEM." This data included Langston University, Northeastern State University, OSU Center for Health Sciences, OSU - IT, OSU - Stillwater, OSU - OKC, Rogers State University, Tulsa Community College, OU - Health Sciences Center, OU - Norman, and University of Tulsa.

Diversity of enrollment in STEM programs lags diversity in overall educational enrollment, especially among Black or African American, American Indian or Alaskan Native, and Hispanic Oklahomans. According to our analysis, Blacks are 7.8% of Oklahoma’s population, but represent only 5.2% of the state’s STEM degree students; Hispanics are 11.1% of the population yet are only 7.6% of STEM students, and Native Americans are 9.4% of the population and only 4.6% of STEM degree students. This is a challenge for communities across the country, and likely reflects the rigidity of old-school STEM educational pathways and a lack of commitment to ensuring that accessible opportunities are adequately communicated and taken advantage of by underrepresented populations.



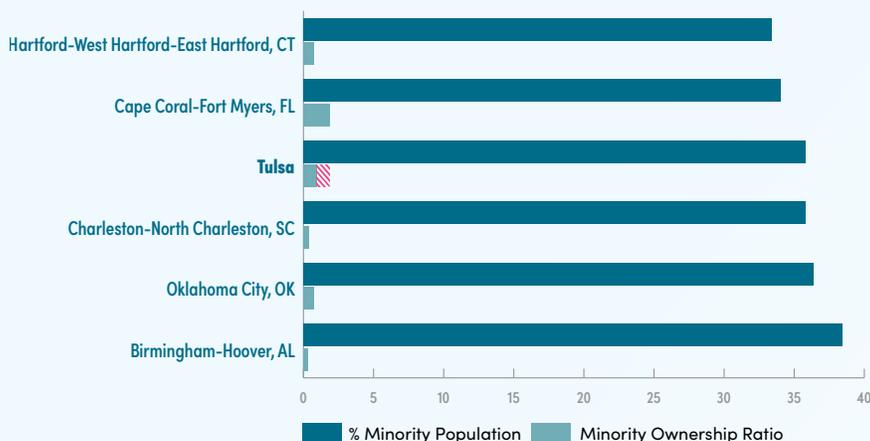
TIL is working with TCC on a new **Cyber & Analytics Skills Center** to expand career and educational opportunities to underserved populations

To expand opportunities in the tech economy, TIL is establishing workforce and upskilling initiatives, including a new **Cyber & Analytics Skills Center at Tulsa Community College (TCC)**. The explicit goal of the Center is to diversify the tech workforce and extend the benefits of this transition to a wider array of talent. TIL-backed STEM educational initiatives will strive to enroll diverse students at a rate at least as proportional to the overall population.

**Share of Minority and Women-Owned Firms in Knowledge-Intensive Industries:** This metric captures the share of firms in knowledge-intensive industries owned or founded by traditionally underrepresented entrepreneurs. At present, the underrepresentation of women and people of color in STEM fields at all levels, difficulty accessing seed and growth capital, and myriad other factors act as significant barriers to would-be founders of color. As TIL strives to build ecosystem assets that are accessible and inclusive, several of our coalition partners, such as **Build in Tulsa**, an incubator for Black startup founders, are specifically dedicated to helping founders of color overcome these barriers.

### OWNERSHIP OF FIRMS IN KEY KNOWLEDGE INDUSTRIES

Tulsa performs better than OKC on this metric, but has significant upside potential.



\*Peer cities include those with similar white/non-white populations  
 Source: DatabaseUSA Data provided and accessed through EMSI Burning Glass



### TULSA'S GOAL:

Tulsa will double its share of minority-owned firms in these industries to 1.8% over the next five years

## Vibrancy

**Public Investment in Quality of Place:** As Richard Florida eloquently says, investing in cultural amenities directly supports a strong sense of place and community that in turn attracts talent.

Over the past 10 years, Tulsa’s combined public spending on **Social and Economic Development and Culture and Recreation** has grown by 33%, which has outpaced the growth in overall city spending (24%). As remote work and tech sector opportunities increase, it is essential that Tulsa continues this pace of investment in the amenities necessary to stand-out.<sup>44</sup>

### PUBLIC INVESTMENT IN QUALITY OF PLACE

Between 2011 and 2020, the City of Tulsa appropriations for Social and Economic Development and Culture and Recreation grew faster than overall City spending.

**24%**

Growth in overall  
City spending

**33%** ▲ **5%**  
(by 2026)

Growth in combined public  
investment in quality of place

Source: City of Tulsa – Consolidated Annual Financial Reports



### TULSA'S GOAL:

Through 2026, Tulsa’s annual spending growth in Public Investment in quality of place should be 5% higher than annual spending growth in overall city budget



Tulsa has rightly earned notoriety for The Gathering Place, but its growing Arts District and music scene are also generating buzz. In the spring of 2022, for example, the **Bob Dylan Center** (pictured left) will open—the official archives of the Nobel laureate and America’s greatest song writer.

Bob Dylan Center Rendering,  
<https://bobdylancenter.com/>

<sup>44</sup> These calculations are based on appropriations figures from the City of Tulsa’s *Consolidated Annual Financial Reports* from 2011 to 2020.



**Percentage of Residents with a Bachelor’s Degree or Higher:** This metric considers the share of Tulsa’s population that is highly-educated and speaks to the health of Tulsa’s knowledge economy job market, the potential for high-tech innovation, and the perception of Tulsa as a great place to live and work. Although the continued health of Tulsa’s legacy industrial and energy industries has so far slowed the city’s economic transition and postponed the necessity for higher education, it is essential that Tulsa catches up to its peers in the coming years.

## PERCENT OF POPULATION 25 AND OVER WITH A BACHELOR'S DEGREE OR HIGHER

Tulsa is currently 3.8% behind the average of peer cities.



Source: American Community Survey (2019)



### TULSA'S GOAL:

Tulsa's growth in this metric by 2026 should outpace peer cities, narrowing the gap to 2.5%

Our goal of increasing bachelor’s degree holders in Tulsa does not supplant our goal of expanding access and supporting associate degree holders in getting the upskilling and career opportunities they need to be successful in tech. In fact, over a third of the jobs TIL projects it could create over the next decade are attainable without a bachelor’s degree, and TIL has a significant partnership with Tulsa Community College to expand access to upskilling opportunities. Despite this, TIL recognizes that advanced education is often necessary for the type of R&D and startup formation needed to transform Tulsa into a tech hub. In an inclusive innovation economy, individuals with a spectrum of educational attainment levels should be able to find opportunities to succeed, and TIL is committed to partnerships that expand access to opportunities.

**Retention of Graduates from Local Educational Institutions:** Retention of home-grown talent indicates strong economic opportunities, efficient matching in the labor market, and a strong “sense of place” among people already familiar with Tulsa.



The Tulsa MSA sends thousands of students every year to the University of Oklahoma and Oklahoma State University, although the distance between Tulsa and both of these flagship campuses and the close proximity of Oklahoma City at present makes it challenging for Tulsa to retain graduates. As the city looks to increase its knowledge-economy workforce, it is essential that the Tulsa region is seen by graduates of these institutions as a dynamic and exciting place to live and work. At present, based on the research team’s estimates, the Tulsa MSA appears to do far worse at retaining recent graduates than the OKC MSA when controlling for the number of students each metro area sends to these schools (see Appendix).

## RETENTION OF GRADUATES FROM OKLAHOMA’S FLAGSHIP UNIVERSITIES

The Oklahoma City metro area is **1.7 times more likely** than the Tulsa metro area to retain a recent graduate of OU and **2.7 times more likely** to retain a recent graduate of OSU.

(controlling for where these students come from)

Source: LinkedIn Alumni Tool data, OSU Institutional Research and Analytics – Student Profile; OU Institutional Research and Reporting – Fact Book (see Appendix for more information)

▼10%  
(by 2026)



**TULSA’S GOAL:**  
Tulsa closes this gap  
by 10% by 2026

By expanding access to four-year degree programs in Oklahoma, growing the local innovation economy, and supporting investments in cultural and recreational amenities in the city, TIL and our partners hope to decrease the gap between Tulsa and OKC by 10% by 2026.



## Forging New Compacts

Moving the needle on any one of these metrics will be difficult. Most of the variables that influence them are beyond an EDO or city's control and are instead subject to macroeconomic trends that can dictate a city's success. Especially as we continue to battle COVID-19, economic development will be both art and science, and cities will need to balance agility with strategy. The Economy Forward Framework can serve as a flexible guide for organizations like TIL, working in midsized cities like Tulsa. The Framework's Inclusive Growth Metrics has enabled TIL to develop a clear definition of success and quantifiable ways to measure it.

**If Tulsa succeeds, it will be because the city came together around a shared set of priorities and metrics and worked collectively to achieve mutual goals.**

Because TIL was pioneered by a philanthropy, it enjoys a non-political status. Situated between the public, private, and social sectors, TIL sits in a unique position within the Tulsa ecosystem and functions as a natural convener for the type of city compacts Cordell Carter advocates for in his essay. By taking a flywheel approach, TIL is galvanizing such a compact in Tulsa, bringing educational institutions together with large employers to build strong, sustainable, and diverse talent pipelines as well as activating venture capitalists and plugging them into initiatives that support the growth of new firms.

Not every city is privileged to have a well-resourced philanthropy like GKFF or a forward-leaning economic development organization like TIL.



**So, how do cities forge their own compacts to advance inclusive growth goals?** Here are three recommendations:

**First, someone needs to lead and lead in new ways.** The absence of leadership precludes large-scale change, and so a local organization with capacity and desire needs to step up and take the lead on assembling a broad coalition, inspired by data-driven and creative ideas for growth. Increasingly, urban change agents are nontraditional actors: in Tulsa’s case, we contend it is the philanthropy-backed and non-partisan Tulsa Innovation Labs, but in other cities it has been universities (think west Philadelphia’s revitalization under the leadership of former University of Pennsylvania President Judith Rodin or a decades-long mission to reinvent Pittsburg driven largely by Carnegie Mellon University)<sup>45</sup> or even ambitious new public-private partnerships. Regardless, many mid-sized cities need a new perspective to challenge the status quo. Each city’s key institutions must support this leader and embrace disruption, for the status quo is not working in most Heartland cities.

**Second, the compact should draw upon the social sector’s expertise.** As the tech-led economic development arm of George Kaiser Family Foundation, an anti-poverty philanthropy, TIL has DEI in its DNA. Most EDOs and corporations do not, however. Philanthropy and the social sector, including community development and advocacy organizations, are important stakeholders and can provide guidance to a city’s compact, especially helping factor in race and equity into the city’s economic development calculus. Imagine a compact in which nonprofits and community groups are voicing concerns

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<sup>45</sup> For more information about the role the University of Pennsylvania played in the revitalization of its neighborhood in Philadelphia, see: Rodin, Judith. *The University & Urban Revival*. University of Pennsylvania Press (Philadelphia). 2007. Especially the chapter on strengthening the local economy, pages 107-137.



and developing strategies alongside venture capital and private industry. Diversity of perspective and new ideas will help compacts make impact and expand economic opportunities for their citizens.

**And third, industry must provide capital to the collective effort.** TIL has found that when you engage industry from the beginning—from our core “Tulsa’s Tech Niche” strategy—and through the initiative design process, working with corporates to ensure projects meet their needs, you can develop the relationships and buy-in required to make capital asks. TIL has been successful at raising funds from the private sector by making both the business and civic cases for investment. Ultimately, for Heartland cities looking to make a step-change in their knowledge economies, each member of the compact must have skin in the game, and the compact must leverage private capital to unlock additional philanthropic and public funds.

The Economy Forward Framework and the stark data our analysis shows about Tulsa reveals something TIL already knew: like every city, Tulsa has assets and strengths on which to build and through targeted and sustained investment, Tulsa can grow in stronger and more inclusive ways than it has over the past decade. The opportunity is there if Tulsa and other Heartland cities seize it, but it will require a keen understanding of what success means, quantifiable goals that unify efforts, and a strong compact of partners to execute on an intentional and long-term strategy for inclusive growth.

**The Economy Forward Framework and the goals we have set for Tulsa will guide our coalition's work in the years ahead.**

# CONCLUSION



**M**idsized cities are at a critical juncture as both acute turmoil and generational shifts favor more creative, entrepreneurial economies. With this turbulence comes enormous opportunity for midsized cities to move their economies forward and to expand access to new, more durable jobs.

This report makes three primary arguments about how midsized cities and the American Heartland can emerge from this transition stronger and more resilient than ever:

- The ongoing economic transition is creating both immense challenges and opportunities, and **midsized cities must develop collaborative, intentional, focused, and data-driven strategies to remain vital.**
- The path forward for Heartland cities is to **invest in and cultivate human capital at all levels—from education and entrepreneurship to health and digital infrastructure.**
- Underserved communities hold significant untapped potential—especially from a tech and entrepreneurial talent perspective—and must be at the center of future economic development strategies. **Cities should build a strong compact between employers and educational institutions to expand access to opportunities.**

At the heart of the Economy Forward Framework is the Inclusive Growth Metrics, which can aid cities in the hard work of building inclusive knowledge economies. But how can cities operationalize the Economy Forward Framework and put these metrics into practice? Cities can follow this short punch list to get started:

Inclusive Growth Metrics	
INDUSTRY	Share of Jobs in the “Knowledge Economy”
	Young Firm Employment Ratio & Young Firm Knowledge Intensity
	Academic Research and Development Expenditures
ACCESSIBILITY	Labor Force Participation Rate by Race and Sex
	Diversity of Enrollment in STEM Programs
	Share of Minority and Women-Owned Firms in Knowledge-Intensive Industries
VIBRANCY	Public Investment in Quality of Place
	Percentage of Residents with a Bachelor’s Degree or Higher
	Retention of Graduates from Local Educational Institutions

**1) Identify a Leader.**

Identify a local organization to lead the city’s data collection and analysis, ensuring capacity and access to data sources.

**2) Align on Goals.**

Share data with your local partners and encourage your city’s economic development coalition to adopt a common set of goals, with quantifiable metrics, so that you all move in the same direction.

**3) Develop a Dashboard.**

After refining the Inclusive Growth Metrics for your city, translate the metrics into an easy-to-use dashboard to monitor and track your city’s progress over time and adopt the dashboard across coalition organizations.

**4) Analyze the Data.**

Periodically review and analyze the data, surfacing insights on any required refinements to the local economic development strategy.

**5) Engage the Public.**

Together with your partners, hold public forums and issue a status update to the community on recommendations for the region.

**6) Act with Intention.**

Integrate the Inclusive Growth Metrics into your economic development investment process so that you create interventions with a keen eye toward impacting metrics that matter most to inclusive growth.

What matters most is organic growth designed to expand opportunities. This is complex and painstaking work, and it takes large-scale, thoughtful strategies. Cities will not see instant results, and communities cannot attract their way out of stagnation. What the Economy Forward Framework proves clearly is that merely importing talent or chasing the latest corporate headquarters will not work. The surest way to achieve and sustain inclusive growth is for cities to build capacity at their key institutions, leverage local assets, and grow from the inside out.

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# APPENDIX

## THE RETENTION OF GRADUATES FROM LOCAL EDUCATIONAL INSTITUTIONS

This metric seeks to capture a valuable and yet unmeasured component of knowledge economy development—the “return on investment” for metropolitans as it relates to non-local publicly funded institutions. In the case of Tulsa, this is especially important. Neither of Oklahoma’s two flagship public universities are located within the Tulsa MSA, but both enroll significant numbers of students from the region and are therefore important components of the educational system. Although both schools have Tulsa campuses, four-year degree offerings at these satellite institutions are extremely limited, making Tulsa’s ability to attract/retain graduates of the main campuses essential to developing a highly-educated regional workforce. Measuring changes in Tulsa’s “stickiness” over time will provide important insight into the progress of these cultural and economic development efforts, and comparing these changes to those in the OKC metro area will track whether Tulsa’s ROI is increasing or decreasing.

In addition to estimating ROI, this measure provides an important trend of the hard-to-measure “vitality” described herein. Of the highly-educated workers who fuel innovation economies in midsized cities, those educated recently at nearby universities are most likely to have an accurate impression of the cultural offerings and economic opportunities in a region, and have a substantially lower cost of entry (i.e. less distance to move, more likely to have social circle) than talent recruited from elsewhere. Whether this awareness and ease of access is sufficiently appealing to retain these individuals is an important measure of the city’s economic and cultural vitality.

The LinkedIn Alumni Tool gives data on graduates from an institution, filterable by year and geography. The utility of the “year” filter is limited because it includes students who attended the university at any point during the data range. For example, filtering by the year 2012 would yield accounts of people who started in the fall of 2008 and graduated in the spring of 2012, in addition to people who started in the fall of 2012 and graduated in the spring of 2016. For this study, we filtered by 2016-2017 to generate an Alumni Share representing the proportion of all LinkedIn-registered Alumni from the past five years that were currently based in the metro area. Presuming an average enrollment timeline of four years, this would include those who graduated in 2016 through those who first enrolled in 2017 (and graduated in 2021). Alumni Shares from Oklahoma’s flagship universities were extracted in this manner for both Tulsa and Oklahoma City, the two major metropolitan areas in the state. To control for the relative sizes of the metropolitan areas (OKC is larger than Tulsa), and the relative proximities of each school (OU - Norman is in the OKC metro area, OSU - Stillwater is approximately equidistant from Tulsa and OKC), the alumni shares in each MSA were divided by a rolling 5-year average of the percentage of the undergraduate student body from each MSA. Were the data accurate, this would give a retention rate — for each student that the Tulsa MSA sends to college in Stillwater or Norman, how many graduates return to the area.

This methodology has limitations. This metric cannot be standardized across cities or schools, as the relationship will depend heavily on the distance between the institution and the urban core, as well as by the size of the institution and size of the city. Thus, the true comparative utility of this metric is limited to relationships between one city and one school over time.

Even this straightforward analysis is complicated by the significant limitations of LinkedIn Alumni data. First, sampling error is likely, as a person's likelihood to have a LinkedIn account will vary based on geography, line of work, educational attainment, institution attended, and age. Furthermore, the methodology described above only includes people who include their dates of attendance at the institution and does not delineate between graduates and those who did not complete a degree. Additionally, recipients of professional or graduate degrees in the selected time period would be included, and are likely more prone to have established careers to keep them in the area. Finally, this sample may not include all transfer students or those returning to finish a degree. In this analysis, we make the assumption that the biases identified above are constant across the Tulsa and OKC MSAs, and thereby our results remain informative.