

# DFW 2026

Igniting Economic and Cultural  
Prosperity in North Texas



INSTITUTE FOR THE FUTURE



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# Foreword From Capital One

You don't have to know the future - you just need to know the direction in which it's headed.

The report that follows is about the direction we're headed here in Dallas-Fort Worth: the factors driving our growth, the individuals who will call this region home, how our infrastructure will evolve, and the ways in which we will learn and build community.

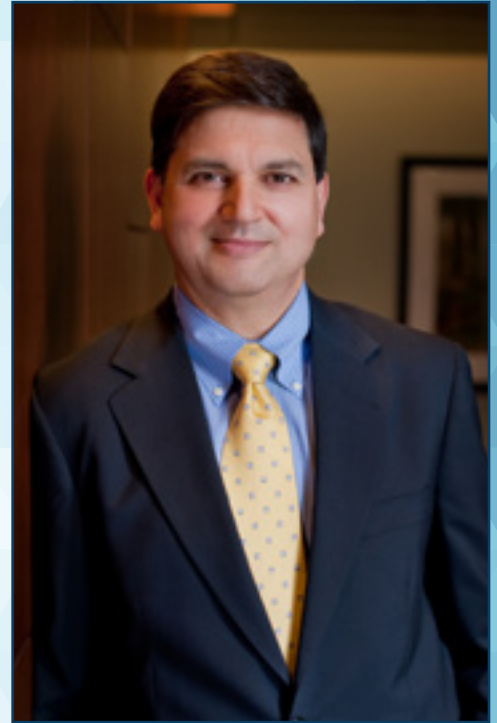
We commissioned this report because, as a company and as a community, we need to be grounded in the information that will help us determine the best ways to get ready for tomorrow, today.

Through our Future Edge<sup>SM</sup> DFW initiative, we're working with a variety of partners to grow the innovation and technology ecosystem within DFW that will fuel our economy and help our communities succeed in this rapidly-changing world.

As a member of the DFW corporate community, and as a forward-thinking technology company invested in the future of innovation, leadership and community impact in the region, we will continue to work with clear eyes on the signals and foresight revealed in this research.

We're in a state of transformation – one moving faster than any other time in history – and the future is ours to shape. Our hope is that what you read here will inspire you. Some of it might give you pause. All of it should serve as a catalyst for us and our communities and organizations to play an active role in shaping our future in DFW together.

*Sanjiv Yajnik, President, Financial Services, Capital One*



**SANJIV YAJNIK, PRESIDENT,  
FINANCIAL SERVICES, CAPITAL ONE**



# INTRODUCTION



The North Texas region is globally recognized as an economic powerhouse. Economists point out that if the gross metropolitan product of the Dallas–Fort Worth–Arlington area were compared with the gross domestic product of entire states, the region would earn ninth place, between New Jersey and North Carolina. And, if we were to imagine North Texas as a country, it would have the 23<sup>rd</sup> largest economy, coming in just behind Taiwan.<sup>1</sup>

How will this robust economy fare in the decade ahead? And, just as important, how will life in North Texas be altered by a broad array of forces that will shape individuals and communities? In autumn 2016, the [Institute for the Future \(IFTF\)](#), a nonprofit, independent, Silicon Valley–based research organization with almost 50 years of experience in futures research), in partnership with Capital One, conducted in-depth research to anticipate how the experience of living, learning, working, and building community in the North Texas region might change over the next 10 years. IFTF consulted a diverse set of thought leaders from the region to gain a broad perspective on future possibilities and challenges for North Texas.

This foresight report, a result of the research, is not intended to predict the region’s future. Rather, it is designed to provoke its readers to think creatively about the future of North Texas and to take systematic and deliberate actions today to begin to build a future of inclusive economic and cultural prosperity.

## ABOUT THE RESEARCH

In its study of the future of North Texas, the independent, not for profit Institute for the Future (IFTF) did in-depth interviews with business and economic development leaders in the DFW area; facilitated a half-day expert workshop on October 5, 2016 that included a diverse mix of academic, industry, nonprofit, and arts leaders; and moderated panel discussions at the Workforce of the Future Leadership Summit produced by the Collin County Business Alliance on October 11, 2016, and at Techweek Dallas, November 2–6, 2016.

This study, *DFW: Igniting Economic and Cultural Prosperity in North Texas* was released at Capital One Future Edge and the Urban Institute's Reimagine Communities symposium on January 23, 2017 in Plano, Texas.

The qualitative research was supported by quantitative survey work conducted by Wakefield Research. The researchers surveyed 500 adults in the DFW DMA (designated market area) and 1,000 nationally representative U.S. adults ages 18+ during the period September 22–30, 2016, using an email invitation and an online survey. The margin of error was +/- 4.4 percentage points for the DFW study and +/- 3.1 percentage points for the nationally representative study. The findings offer revealing insight into the public’s attitudes on, assumptions about, and sense of preparedness for the next decade. This quantitative research will be referenced throughout as the Capital One Future Edge DFW Survey.



DRIVERS OF CHANGE  
FOR NORTH TEXAS

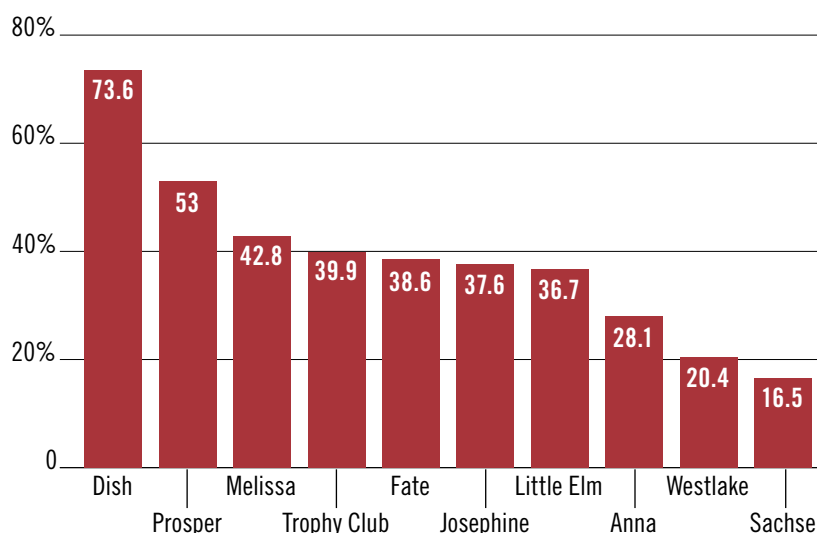




A convergence of familiar demographic, sociological, workforce, educational, and technological trends will continue to drive change in the North Texas region. These key drivers of change will impact the population, workforce, and technological infrastructure of the region, and will lay the groundwork for the directional shifts that will take place over the next decade.

## Rapid Growth, Diversifying and Aging Population

The eye-catching, rapid pace of growth in North Texas shows no signs of abating over the next decade. The population of the 16 counties that surround Dallas and Fort Worth has already surpassed seven million, and steady population growth is expected to continue. For medium-sized cities in the region such as Frisco, which is routinely listed as one of the fastest-growing cities in the United States, future growth is expected to exceed past growth. As Frisco mayor Maher Maso recently put it, “The majority of people who will live in Collin and Denton counties aren’t here yet.”<sup>2</sup> These millions of new entrants to the area will undoubtedly shape the future experience of living in North Texas.<sup>3</sup>



### FASTEST-GROWING DFW AREA CITIES

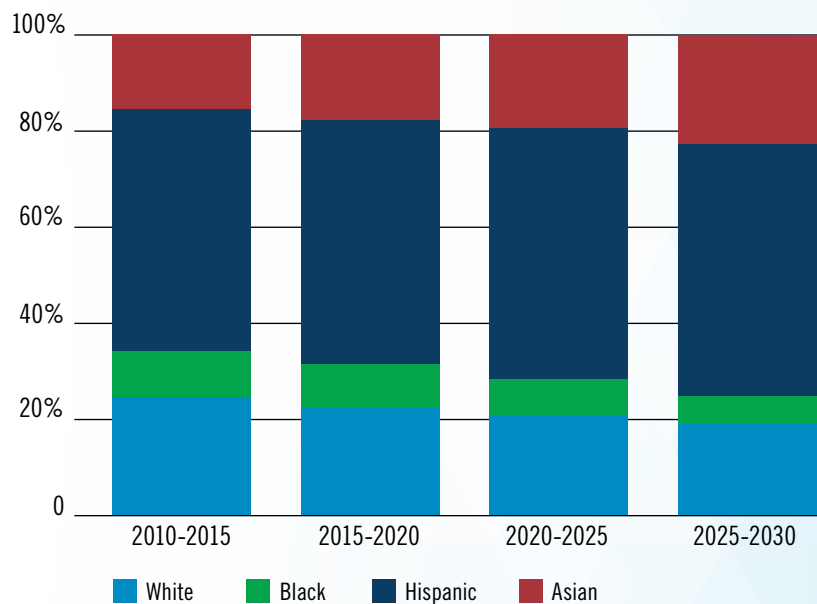
Percentage change in DFW Area cities' population from 2010 to July 2014 for cities under 50,000 residents

Source: U.S. Census Bureau

“**78%** of DFW residents would be likely to recommend that someone move to their area for a tech job.”  
 – CAPITAL ONE FUTURE EDGE DFW SURVEY

Aside from this rapid growth, nearly all demographers agree that the dominant factors influencing the population of North Texas are increasing diversity and aging of the population.

The Capital One Future Edge DFW Survey found that 47 percent of residents view cultural diversity as significantly improving their neighborhood over the next decade. With growth projected for the foreign-born and nonwhite populations in the region, North Texas will continue to diversify. Hispanics will account for the largest share of population growth, driven by both migration and natural increase (births over deaths).<sup>4</sup> Currently, 2.1 million Hispanics make their homes in the Dallas–Fort Worth–Arlington area.<sup>5</sup>



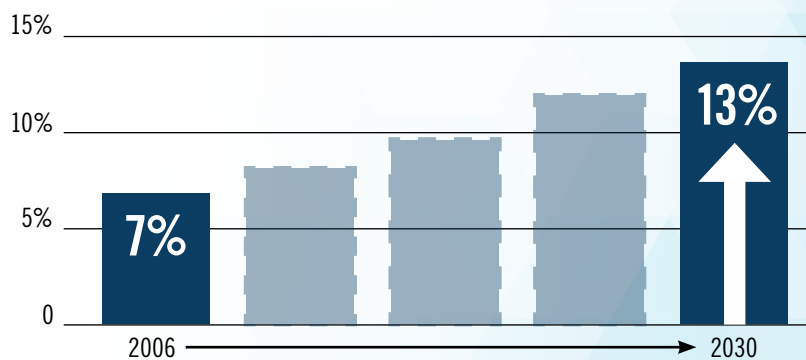
#### SHARE OF POPULATION GROWTH BY RACE/ETHNICITY

Share of Change vs. Years  
Source: Vision North Texas



With 17 percent of the population foreign-born, the Dallas–Fort Worth–Arlington area is among the 10 metropolitan areas in the United States with the largest number of immigrants.<sup>6</sup> And while the majority of the foreign-born are first attracted to the large cities, many—notably high-skilled Indian and East Asians—gradually move to the suburbanized areas. In fact, between 2000 and 2013, the suburbanized areas of the region saw more growth than the cities.<sup>7</sup> In other words, immigrants are not only residing in Dallas or Ft. Worth; they are also choosing to live in smaller and medium-sized cities in the region.

The large influx of new entrants (both foreign-born and relocating Americans) to the region tend to be of labor-force age, which has tempered the impact of the aging subset of those who have resided in Dallas for decades. Even so, seniors age 65 to 84 made up seven percent of the population in 2006 and will be 13 percent of the population by 2030. And the highest percentage increases between 2006 and 2030 will be in the age 70 to 79 group.<sup>8</sup>



#### AGING SUBSET OF DALLAS RESIDENTS

Seniors Age 65-84

Source: Vision North Texas, North Texas to 2030

## Neighborhood Inequality, Social and Economic Disparities

Growing income and wealth inequality has been a pervasive and vexing challenge for the United States and has led to a shrinking of middle-class or mixed-income neighborhoods in most cities – and North Texas leads in neighborhood inequality. In 2015, the Urban Institute reported that the Dallas commuting zone, home to approximately 3.7 million residents, had the highest degree of neighborhood inequality of any zone with at least 250,000 people.<sup>9</sup>

This study supported the Pew Research Center’s findings that in 2010, 37 percent of low-income households in the Dallas–Fort Worth–Arlington area were located in neighborhoods in which a majority of households were low-income, and 23 percent of upper-income households were situated in neighborhoods in which a majority of households were high-income. This means that the area has a high level of what sociologists call *residential segregation* by income, and fewer neighborhoods of mixed incomes (*residential segregation* refers generally to the spatial separation of two or more social groups within a specified geographic area, such as a municipality, a county, or a metropolitan area). The *residential segregation* in North Texas increased by 21 percentage points between 1980 and 2010; Houston was the only city ranking higher.<sup>10</sup>

While historical settlement patterns and housing laws may have helped to create the neighborhood disparities, the rapid influx of both low-skill, low-wage workers and high-skill, high-wage workers along with affluent retirees may further exacerbate these disparities in North Texas.<sup>11</sup> If barriers to quality education and employment are not removed, the growing gap between the region’s most and least wealthy neighborhoods is poised to expand over the next decade.

## Efforts to Train and Support Middle-Skill Workers

A dynamic and diverse job market has bolstered the steady influx of workers to the region. Over the next few years, the North Texas region will experience some of the fastest growth in middle-skill jobs, or work that requires some postsecondary education but less than a bachelor's degree. Many of these jobs, nearly eight in 10, require digital skills (spreadsheet and word processing proficiencies, productivity software and computer networking skills, occupationally specific digital skills for health or manufacturing work).<sup>12</sup> For present and future workers, ability and knowledge in the digital realm will open the door to more middle-skill options and more lucrative opportunities.

Deliberate efforts to ensure that new and long-standing residents have the needed skills to perform successfully in the middle-skill economy will shape the future of work in the region over the next decade. Equally important in shaping community, however, will be efforts to ensure that these new jobs and career paths are respected accordingly, and that middle-skill workers gain deserved dignity and meaning from their jobs. Middle-skill jobs should be ideal work opportunities for people without college degrees, and cultivating both workforce and societal cultures that appreciate the important contribution that middle-skill workers make will help sustain employment and enhance the quality of life for thousands of North Texas residents.

“**56%** of DFW adults view the access to quality education and skills training as a strength of the region.”  
– CAPITAL ONE FUTURE EDGE DFW SURVEY

## Smart City Innovations Built on Ambient Computing

Over the next decade, cities and suburbs in North Texas will leverage ubiquitous connectivity, real-time and big data, and algorithmic analytics to enable smart city services as technology invades everyday things and contexts. Here as elsewhere, our devices will be equipped with digital sensing, computing, and communication capabilities; computational power and connectivity will be built into virtually everything; and reconfiguring our personal technologies will be as simple as getting into our car or putting on a jacket.

The innovative work of the public-private partnership Dallas Innovation Alliance (DIA) has catapulted Dallas into the forefront of smart cities. In September 2016, the DIA received national attention for its leadership in promoting city-to-city collaboration through “For Cities, By Cities” and for the launch of the Dallas Innovation District, which will bring together civic, corporate, and start-up innovators.<sup>13</sup> As industry leaders and public initiatives run experiments and view Dallas as a test bed for Internet of Things (IoT) models, ambient computing will profoundly impact the future of working, learning, living, and building community in the urban areas of the region.

“**83%** percent of DFW residents believe Internet of Things connected devices will contribute to a significant improvement in quality of life five years from now.”  
– CAPITAL ONE FUTURE  
EDGE DFW SURVEY

To summarize the key drivers of change shaping the next decade in the North Texas region:

- A rapid uptick in new residents from all over the United States and the world will intersect with those already in the region, including the almost 20 percent who are foreign-born, and the almost 20 percent who are older, to shape communities throughout the 16-county area.
- A growing wealth and income gap between the most advantaged and the most disadvantaged neighborhoods will plague efforts to improve access to education and employment for all residents.
- Secondary, postsecondary, and workforce training initiatives will emphasize pathways to upskill workers and ensure that the workforce has the skills and capabilities to fill middle-skill jobs and build meaningful careers.
- Investments in both physical and digital infrastructure will continue, paving the way for ambient computing – the essential dynamics behind the Internet of Things – to drive smart city services and urban innovation.

The changing demographics, increasing levels of neighborhood inequality, evolving skill sets, and emerging technologies create the backdrop for marked shifts ahead in the experience of living, learning, working, and building community in the North Texas region. These directional shifts are described in the next section.



FORECASTS OF CHANGE  
FOR NORTH TEXAS





It's impossible to predict exactly how key drivers of change will intersect with other trends and discontinuities to inform our future experiences, but a systematic scan of present-day practices and emerging technologies can help narrow the cone of possibilities. The IFTF futures methodology of signal scanning helps reveal directional change early. After all, as Sanjiv Yajnik, president of financial services at Capital One, explained, "You don't have to know the future. You just need to know the direction that it is headed."<sup>14</sup> This section offers four forecasts of change from IFTF's research, each informed by the drivers in the previous section and supported by signals.

## How We Live: AI-Empowered Individuals

As ambient computing and coordinating technologies spill into the cities and suburbs of North Texas, an unprecedented amount of information will flow through people, objects, and devices. To navigate the information density of the next decade, individuals will seek out new tools to parse the onslaught of data and extract the most relevant information. Fueled by anticipated breakthroughs in artificial intelligence, personal bots (high-fidelity intelligent conversational agents) will transform how individuals interact with digital information and make daily decisions.

### WHAT IS A SIGNAL OF CHANGE?

A signal of change is a small or local innovation that has the potential to disrupt the status quo if it scales up to occupy a larger niche or a broader geography. Unlike drivers of change, signals turn our attention to possible shifts in direction before they become obvious, and they often orient us toward the edges of innovation and have the potential to grow in scale and impact. The signals of change included here are not product endorsements. Rather, they are examples of early indicators of change. Signal scanning captures emergent phenomena earlier than traditional social science methods.

Over the next decade, personal agents will become as accessible as smartphones are today. They will be able to read information from the Web, IoT-connected objects, wearables and lifestyle-tracking devices, urban mobility data, and other sources in order to make decisions on behalf of individuals. They will manage repetitive work tasks, such as calendaring and emailing, and conduct routine purchasing, such as food and household shopping. People will rely on their personal agents to track and monitor information for relevance, anticipate unfavorable outcomes ranging from traffic congestion to health problems, and nudge them to act when necessary.

As people develop more trust in their personal agents, just as they have done with their smartphones, the agents will become close confidants and advisors, serve as guidance and life counselors, and even provide emotional support and comfort when needed. Eventually, as Eric Schmidt, chairman of Alphabet (Google's parent company) forecasts, "Advances in artificial intelligence and machine learning will make each and every human being in the entire world smarter, more capable, better."<sup>15</sup>

## Signals of Change

**Viv** is an artificial intelligence platform designed to learn your preferences through self-teaching. Depicting a future in which “intelligence becomes a utility,” the developers envision that Viv will be embedded in Internet-connected everyday objects, facilitating people’s ability to access the “global brain” and simplifying our daily routines.<sup>16</sup>

**The Capital One skill for Amazon Alexa™**, launched in 2016, allows bank customers who have an Echo or Echo Dot to access their financial, auto, mortgage, and home equity loan account information using their voice. The recently announced functionality “How Much Did I Spend?” uses natural language to give users quick access to the information to better understand their spending patterns.

**The Memory Mirror**, developed in Dallas by MemoMi Labs and Neiman Marcus and deployed in select Neiman Marcus stores, combines a video screen and camera. The mirror gives shoppers a 360-degree view of their outfit, lets them compare clothing options side by side, and makes it easy for them to revisit previous outfits. The mirror also records a password-protected short video that can be shared with others. Neiman Marcus has also begun experimenting with Bluetooth beacons to help personalize shopping experiences by interacting with shoppers based on their location inside the store.<sup>17</sup>

## How We Learn: On Demand for In-Demand Skills

A combination of drivers is breaking learning—and education overall—out of traditional institutional environments and embedding it in everyday settings and interactions, distributed across a wide set of platforms and tools. Education and training is moving from a model in which learning is organized around formal, fixed curricula to a new environment in which learning is designed to be adaptive and responsive to changing conditions and skill needs.

Over the next decade, more learning resources will be distributed across platforms, including peer-to-peer networks and new mediums like virtual, immersive or mixed reality. For learners armed with sufficient digital literacy to take full advantage, continuous learning will be the new norm, and they will dip into and out of on-demand learning resources to gain new competencies. Those less fluent in or less connected to the new learning flows, however, risk being left behind.

### **Signals of Change**

**People ForWords** is a team effort by Southern Methodist University (SMU) Guildhall, SMU Simmons School of Education and Human Development, and Literacy Instruction for Texas (LIFT) to build an immersive, fun, and effective mobile application to teach adult literacy. The blending of expertise in game mechanics, mobile technology, education, and adult literacy represents a novel approach to increasing the quality of life for low-literacy adults.

**General Assembly** is the newest code school to open in North Texas. It joins the Iron Yard, Dev Mountain, and Tech Talent South to transform the education scene and make learning tech skills more accessible than ever before. General Assembly also offers student financing through online lending platforms such as Pave and Climb, which helps make their classes affordable to more people.

**The Texas Home Instruction for Parents of Preschool Youngsters (HIPPY) Center** at the University of North Texas runs a home visitation program with the mission of increasing school readiness and parental involvement. Only four percent of three-year olds and fewer than half of four-year-olds in Texas are currently enrolled in Pre-K or Head Start, so the HIPPY curriculum, designed with the TEA guidelines for pre-K and kindergarten in mind, works to increase the number of children who are prepared for kindergarten on the first day.<sup>18</sup> By flipping the model and bringing instruction to the home, HIPPY is able to reach more underserved parents and empower them to be the primary educators of their preschool children.

**The Star**, the \$1.5-billion practice facility of the Dallas Cowboys in Frisco, integrates emerging technologies into instruction and coaching. Experiments there are testing how to improve the team's performance with smart, connected, virtual, and immersive technologies—including the use of drones to capture real-time views of players on the field from different angles, VR tech that allows players to view live practice action in 3D, and IoT-enabled training footballs to refine how the ball is held.

## How We Work: Monetizing Personal Data Assets

A social, economic, and technological transformation is changing the way we work. Disruptive innovations like Uber, Airbnb, and TaskRabbit have become not just platforms for consumption but also entry points for work. Increasingly, people are using the sharing economy's abundant platforms to earn a living by marketing their underused assets—time to drive others around, a spare room, expertise in putting together Ikea furniture. As more people routinely take stock of their possessions that could be monetized, they are also learning that intangible assets such as reputation and social influence have value. By 2026, more tools will work to quantify and monetize intangible assets, and new services will make it possible for individuals to sell, donate, and share anything, whether tangible or intangible.

A new source of value will emerge as ambient computing and AI make it possible to constantly track behaviors and interactions (online and in the physical world) and instantaneously convert them into mineable data streams. Over the next decade, more people will realize that their behaviors, practices, and even their biological information are generating considerable value for enterprises and organizations. As a result, a marketplace for personal data will develop. As expressed in a 2011 report by the World Economic Forum, “personal data will be the new ‘oil’—a valuable resource of the 21st century.”<sup>19</sup> Already people are becoming aware that their health data is an asset that they can choose to share or not. Ownership of one's personal data will drive a new set of entrepreneurs who will actively guard their data assets and expect remuneration for their use. They will have new demands for companies that currently extract socioeconomic, social, location-based, financial, and other types of personal data as part of the service offering, and enterprising individuals will be keen to monetize their personal data assets.



## Signals of Change

**The Open Humans Network** is an effort by a team of scientists at Harvard University, New York University, and the University of California at San Diego to accelerate medical research and improve human health. Two early projects are American Gut and Go Viral; the former lets people contribute data about their gut microbiome and the latter collects fluid specimens from people when they are experiencing flu or flulike symptoms.

**Shoutly** is one of a burgeoning set of platforms that turn social influence into a monetizable commodity. Bloggers scroll through Shoutly's marketplace to find products they want to write about in their blogs and e-newsletters, and on their websites and social media channels. When followers make a purchase, the blogger is paid a percentage of the sale.

**Depop**, founded in 2011 in London, has been described as the love child of eBay and Instagram—and also as thrift shopping for millennials. Sellers open their own “Depop shop” and manage the marketing, pricing, shipping, and customer service related to the sale of their items. Depop has served as an effective platform for small clothing stores as well as fashion-forward individuals to grow their clientele and sales.

## How We Build Community: Cultural Innovation

While the DFW region's fast-growing tech industry is captivating most conversations about the future of North Texas, it will be the creative economy of artists, gamers, entertainers, reporters, and innovators that will both support the economic health and drive the overall well-being of the region over the next decade. We often assume that a high-performing economy will bring with it an increase in overall well-being, but that is not the present situation in Texas. In fact, as Ann Beeson, executive director of the Center for Public Policy Priorities, points out, "Despite our state's wealth, we're at the bottom of nearly every indicator of well-being."<sup>20</sup>

Creatives play an essential role in drawing a community's attention to difficult social and environmental issues such as unequal access to learning and work opportunities, food deserts, chronic homelessness, and racial tensions. They also provoke communities to engage in difficult dialogues and experiment with innovative solutions. Over the next decade, creatives will build communities in North Texas through cultural innovation—pioneering new solutions to the region's vexing challenges through novel collaborations and co-creations.

Denver's mayor, Michael Hancock, speaking of the challenges facing that city said, "It's important that we utilize the prosperity to bring along those who may not have the skills or tools necessary to come along on their own."<sup>21</sup> Building community in North Texas over the next decade will similarly depend on ensuring that the economic upswing isn't reserved only for the wealthy and well educated. Embracing and supporting creatives will be fundamental to ensuring that economic growth and overall well-being is shared by everyone in the region.

## Signals of Change

**The We Over Me** farm at Paul Quinn College in Dallas was planted on the college's former football field in 2010 and has provided more than 30,000 pounds of organic produce in a federally recognized food desert. More than half the food is sold back to the local community, and the rest goes to clients like the caterers at AT&T Stadium. In addition to improving affordable fresh food options, the farm provides hands-on agricultural education for youth and adults.<sup>22</sup>

**Make Art with Purpose (MAP)** initiates interdisciplinary collaborations to produce multiform projects that address social and environmental concerns. It creates artwork to serve as a platform on which to build public dialogue. In 2014, MAP launched Dialogues on Race in Dallas, which featured community murals and billboards. The billboard by artists Rebecca Carter and Daryl Ratcliff was inspired by the human genome, which traces back to Africa. As part of the Dialogues on Race project, a community conversation was held in 2015 with more than 50 people in attendance, including artists and academics, government administrators, activists, and other professionals.

**The Veggie Van** driven by farmer Beverly Thomas, the DFW region's first mobile farmers' market, is improving access to healthy food. This kind of modifiable, lightweight response to community needs exemplifies the collaborative and creative spirit that will improve the quality of life for all in DFW. Efforts by social entrepreneurs like Thomas can be encouraged by progressive policy changes in land use that allow vacant and underused lots to be turned into urban farms, as well as encourage pushcarts, mobile vendors, and temporary stands to sell fresh fruits and vegetables.

**Solutions for Dallas Homeless** uses its Facebook page to inspire a participatory research approach to finding new ways of caring for the city's unsheltered population. Like many large cities, Dallas has been struggling to address the chronic and complicated challenges associated with homelessness. Mayor Mike Rawlings created the Dallas Commission on Homelessness to analyze the community's current efforts, encouraging community participation to design and develop novel and sustaining solutions for its homeless members.

In summary, life in North Texas by 2030 will be shaped by the trends described in the previous section along with directional shifts marked by:

- empowering individuals through emerging AI
- an ecosystem of lightweight learning platforms for mastering in-demand skills
- a new form of value creation based on personal assets
- the growing recognition of the important role creatives play as cultural innovators

In addition, forces that work against the future desired by North Texans must also be anticipated and thoughtfully explored, as suggested in the next section.



COUNTERVAILING FORCES TO  
ADDRESS IN NORTH TEXAS





Expert forecaster Paul Saffo warns, “Don’t mistake a clear view for a short distance.” Anticipating future directional change can help us picture how we will live, learn, work, and build community, but it cannot tell us how or at what pace the future will emerge. The future is always in process, with some forces propelling desirable change and others threatening to derail such change. The North Texas region will need to address a number of countervailing forces if it is to realize a future of economic and cultural prosperity for all. This section describes the key countervailing forces identified by IFTF in its interviews, panel discussions, and expert workshop with North Texas thought leaders. The hope is that these descriptions will jumpstart the critical conversations needed to mitigate the countervailing forces.

## Connected Technology and Security

A number of factors need to line up in order for the promise of a world of ambient computing and empowered AI, including self-driving cars and smart homes, to be realized. First, we need the technical capability at scale to enable the networks of connected technology. Second, we need a cultural shift toward, and enthusiasm for, connected technology to drive adoption and use, at both the enterprise and the household level. And third, we need to develop decentralized crypto-economic systems to ensure the secure flow of information and capital. Without a trusted infrastructure that enables secure transport of value throughout the networks of connected technology, connected communities will not realize their full potential.



## Job Displacement by Automation

In a 2013 working paper, the University of Oxford's Dr. Carl Benedikt Frey and Dr. Michael A. Osborne estimated that 47 percent of jobs in the United States are at risk of being automated in the next 20 years.<sup>23</sup> When the DFW public was asked about automation trends in the Capital One Future Edge DFW Survey, 88 percent of respondents remained confident that their jobs would not be replaced by automation, and 88 percent felt sure that they have the skills necessary for a tech-related job 10 years from now. Perhaps residents are optimistic about their ability to adapt to a changing workplace, but now is the time to jumpstart important conversations around the pace at which robotics and machine learning are advancing.

A recent article in *Forbes* suggests that although technology will bring significant change to certain aspects of jobs, it won't necessarily result in robots completely taking over a given occupation, and that employees and employers alike can use strategies to ensure that intelligent technologies augment and enhance rather than replace human work.<sup>24</sup> One thing is for sure: the skills being taught in traditional school settings and through on-demand learning platforms should equip future workers to partner with smart machines and not be replaced by them. With the proper preparation, and with proactive planning and transitional structures in place, middle-skill workers can be amplified rather than replaced by machines. As one executive remarked, automation will "put the workforce onto bigger, harder problems."<sup>25</sup>

## Job Competition that Leaves Locals Behind

North Texas has one of the largest professional workforces in the country, with broad skill sets in logistics, transportation, manufacturing, IT, and retail, to name a few. And the diversity in industries has long been seen as a core strength of the region. But as the digital transformation under way reshapes business, all industries will need workers with a similar set of digital skills. New entrants to the region who arrive with these skills will secure the jobs that are currently open, and the local population will need skills training and support to help them compete.

Public and private initiatives are underway to accelerate the learning curve, but if economic prosperity is to be enjoyed by all residents, the investments must be thoughtful and long term. Only 44 percent of respondents to the Capital One Future Edge DFW Survey anticipated that there will be greater access to quality education and skills training over the next 10 years; this is 12 percentage points below the number of respondents who view present-day learning opportunities as a current strength for the region. Without clear pathways from career and skill preparedness courses to actual careers, a sizeable percentage of DFW residents may not find dignity and meaning in their work.

## Uncoordinated Regional Planning

During the IFTF expert workshop in October 2016, the group coalesced around an exercise designed to spur discussion and big ideas: What might a master plan and unified brand for the DFW region look like? More thought needs to go into determining whether today's prevailing culture of co-opetition (cooperative competition) is the right model for the region's cities and towns. Given the growth projections, perhaps a more comprehensive plan of action that covers all metropolitan areas in the region is needed.

Independent and uncoordinated urban planning may compromise the area's ability to improve public transportation, but 53 percent of residents surveyed expect more transportation options over the next decade. Similarly, if urban planning is not coordinated, the region may not be able to develop sufficient affordable housing options (87 percent of those surveyed do not anticipate the cost of living to decrease in the next 10 years). And, a lack of coordination may also result in increased inequity in the region and in municipalities competing for highly valuable talent such as police, firefighters, and teachers.

## Community Amnesia

The allure of the future can overwhelm a community to the point where residents risk marching forward in pursuit of the Next Big Thing without reflecting on their history. Especially considering that the majority of people in Collin and Denton counties have yet to arrive, a deliberate grounding in the history of the area seems essential to strengthen the future for North Texas. As one of the experts remarked during the workshop, "You can't learn or plan for the future without knowing history." Leveraging immersive and smart city technologies can help bring the history of the region to life, vividly depicting the stories and the people who came before. Incorporating this history into the future of the region will enhance cultural prosperity.



# CONCLUSION



North Texas is buzzing right now. Energy is high and the future looks bright. Almost 80 percent of respondents to the Capital One Future Edge DFW Survey consider the region to be a great place for tech-related jobs and innovation. Considering the North Texas region's business-friendly environment and entrepreneurial spirit, robust economic growth appears likely. But the quality of life in a certain place depends on more than just economic opportunity. The experience of living, learning, working, and building community is informed by a diverse set of factors, some captured by measuring the health of the economy and others not reflected in our current economic indicators.

The challenge for business and community leaders in this time of enviable economic performance is to ensure that the North Texas region cultivates vibrancy and well-being for all communities, families, and individuals residing there. As Suzanne Smith, founder and CEO of Social Impact Architects, explained, “[In] DFW, we’re known for wide open spaces. And I hope [in the future] we’re wide open when it comes to opportunity, that we’re the place to come where you want to build a business, raise a family, impact your community.”<sup>26</sup> Investing in both the economic and the cultural prosperity of the region is a sound place to start.



# Future Edge<sup>SM</sup> DFW Strategy

DFW is a great place for for technology, innovation, entrepreneurship and education. The region is a growing, business-friendly global powerhouse and we're excited to be a part of it.

Capital One, for example, is passionate about helping our communities succeed in a rapidly-changing world and ensuring that those who live in the DFW area have the resources available to get ready for tomorrow, today. One way we'll do that is through our Future Edge DFW initiative.

Future Edge DFW is a strategic approach to making DFW a coveted destination for top talent, ensuring our region continues to be a leading, world-renowned technology hub, and last, but not the least, nurturing and celebrating leaders of tomorrow.

With Future Edge DFW, we are collaborating with leading academic, community organizations, and other businesses across the region, to address areas of critical need such as education, workforce development and infrastructure, to grow the area's innovation and technology ecosystem that will fuel our economy and help communities succeed in this constantly-changing world.

Working together with our partners, with clearly defined goals and objectives, will allow us to meet the opportunity for our region and ensure DFW continues to be an inspiration for all communities, families, and individuals.



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## About IFTF

IFTF is a not-for-profit (501c3) educational organization. IFTF collects research findings from a variety of sources using diverse methods. Some of these methods involve environmental scanning to collect examples of current innovations to demonstrate and map future trends. As an educational organization, IFTF strives to comply with fair use standards and publish only materials in the public domain. IFTF also publishes materials under the Creative Commons Attribution-NonCommercial-ShareAlike license.

# Notes

1. Bill Hethcock, "If the DFW economy were its own state, or a country, here's how it would rank," Dallas Business Journal, 15 December 2015, <http://www.bizjournals.com/dallas/blog/2015/12/if-the-dallas-fort-worth-economy-were-its-own.html>.
2. Michael E. Young, "Area Growth in Line with Texas Trend," Denton Record-Chronicle, 22 May 2015, <http://www.dentonrc.com/local-news/local-news-headlines/20150522-area-growth-in-line-with-texas-trend.ece?ssimg=2306936>.
3. Derek Thompson, "Americans Love Big Hot Suburbs," The Atlantic, 26 March 2015, <http://www.theatlantic.com/business/archive/2015/03/everybody-is-moving-to-texas/388775>.
4. Vision North Texas, North Texas to 2030: Extending the Trends, [http://www.visionnorthtexas.org/regionalchoices/RegChoices\\_NorthTexas2030.pdf](http://www.visionnorthtexas.org/regionalchoices/RegChoices_NorthTexas2030.pdf).
5. Texas Department of State Health Services, Texas Population, 2015 (Projections), <https://www.dshs.texas.gov/chs/popdat/ST2015.shtm>.
6. Migration Policy Institute, U.S. Immigrant Population by Metropolitan Area, <http://www.migrationpolicy.org/programs/data-hub/charts/us-immigrant-population-metropolitan-area>.
7. Jill H. Wilson and Nicole Prchal Svajlenka, "Immigrants Continue to Disperse, with Fastest Growth in the Suburbs," Brookings Immigration Fact Series, 29 October 2014, <https://www.brookings.edu/research/immigrants-continue-to-disperse-with-fastest-growth-in-the-suburbs/>.
8. Vision North Texas, North Texas to 2030.
9. Rolf Pendall and Carl Hedman, Worlds Apart: Inequality Between America's Most and Least Affluent Neighborhoods, Urban Institute, 1 July 2015, [http://www.urban.org/research/publication/worlds-apart-inequality-between-americas-most-and-least-affluent-neighborhoods/view/full\\_report](http://www.urban.org/research/publication/worlds-apart-inequality-between-americas-most-and-least-affluent-neighborhoods/view/full_report).

10. Richard Fry and Paul Taylor, The Rise of Residential Segregation by Income, Pew Research Center, 1 August 2012, <http://www.pewsocialtrends.org/2012/08/01/the-rise-of-residential-segregation-by-income/>.
11. The Rise of Residential Segregation by Income.
12. Burning Glass Technologies, “Crunched by the Numbers: The Digital Skills Gap in the Workforce,” March 2015, [http://burning-glass.com/wp-content/uploads/2015/06/Digital\\_Skills\\_Gap.pdf](http://burning-glass.com/wp-content/uploads/2015/06/Digital_Skills_Gap.pdf).
13. The White House, Office of the Press Secretary, “Announcing Over \$80 Million in New Federal Investment and a Doubling of Participating Communities in the White House Smart Cities Initiative,” 26 September 2016, <https://www.whitehouse.gov/the-press-office/2016/09/26/fact-sheet-announcing-over-80-million-new-federal-investment-and>.
14. Interview with Sanjiv Yajnik in Plano, Texas, 5 October 2016.
15. Sam Shead, “Eric Schmidt: Advances in AI Will Make Every Human Better,” Business Insider, 8 March 2016, <http://www.businessinsider.com/eric-schmidt-advances-in-ai-will-make-every-human-better-2016-3>.
16. Steven Levy, “Siri’s Inventors Are Building a Radical New AI That Does Anything You Ask,” Wired, 12 August 2014, <https://www.wired.com/2014/08/viv/>.
17. Sharon Gaudin, “Neiman Marcus Wants to Merge the Online and In-store Shopping Experience,” Computerworld, 19 January 2016, <http://www.computerworld.com/article/3024226/retail-it/neiman-marcus-wants-to-merge-the-online-and-in-store-shopping-experience.html>.
18. Texas HIPPI website, <http://hippy.unt.edu/index.html>.
19. World Economic Forum, Personal Data: The Emergence of a New Asset Class, 2011, [http://www3.weforum.org/docs/WEF\\_ITTC\\_PersonalDataNewAsset\\_Report\\_2011.pdf](http://www3.weforum.org/docs/WEF_ITTC_PersonalDataNewAsset_Report_2011.pdf).

20. Mitchell Schnurman, "How Long Can Stingy Texas Short Public Education and Remain a Business Juggernaut?" Dallas Morning News, 18 November 2016, <http://www.dallasnews.com/business/business/2016/11/18/long-can-stingy-texas-keep-shorting-public-education-remain-juggernaut>.
21. J. B. Wogan, "Public Officials of the Year: Michael Hancock, 2016 Honoree," Governing, <http://www.governing.com/poy/gov-michael-hancock.html>.
22. Amy McCarthy, "How a Football Field Farm Helped Bring Back a Struggling College," Civil Eats, 26 February 2015, <http://civileats.com/2015/02/26/how-a-football-field-farm-helped-bring-back-a-struggling-college/>.
23. Carl Benedikt Frey and Michael A. Osborne, "The Future of Employment: How Susceptible Are Jobs to Computerisation?," working paper published 17 September 2013, [http://www.oxfordmartin.ox.ac.uk/downloads/academic/The\\_Future\\_of\\_Employment.pdf](http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf); later published in *Technological Forecasting and Future Change*, available online 29 September 2016, <http://www.sciencedirect.com/science/article/pii/S0040162516302244>.
24. Jeanne Meister, "Future of Work: Three Ways to Prepare for the Impact of Intelligent Technologies in Your Workplace," Forbes, 6 July 2016, <http://www.forbes.com/sites/jeannemeister/2016/07/06/future-of-work-three-ways-to-prepare-for-the-impact-of-intelligent-technologies-in-your-workplace/#574ae04a410c>.
25. Author phone interview with Girish Bachani, 29 August 2016.
26. Author interview with Suzanne Smith, 5 October 2016.