

LIFE AFTER COVID

Economic & Job Market Phenomena to Ponder Post-pandemic

By Rich Froeschle

Senior Labor Market Economist
Texas State Technical College



Executive Summary

The societal and economic challenge brought on by the COVID-19 pandemic and the government's struggle to balance universal health, economic survivability and personal freedoms will be remembered for decades to come. How our institutions and individual behaviors will be shaped by the pandemic cannot yet be known. Although we find ourselves on the road to economic recovery and with a vaccine becoming widely available, this pandemic will long leave its mark on the global economy and the American psyche.

But how — and to what extent — the pandemic will shape future economic and workplace behaviors is unknown. There have been many prognostications over the years that completely missed the mark. For example, in 2007 former Microsoft CEO Steve Ballmer said, "There's no chance that the iPhone is going to get any significant market share. No chance." Similar dire and unrealized predictions were made for the future of the automobile, the telephone, X-rays, copy machines, and rock 'n' roll music. All of which affirms the words of economist John Kenneth Galbraith, who said, "We have two classes of forecasters: Those who don't know — and those who don't know they don't know."

This discussion offers a few thoughts on trends and behaviors that may be more permanently shaped by the events of 2020. Specifically, the focus of this report is on how these trends will impact worker preparation, and which industries and occupations will be most influenced. Futurist and *Megatrends* author John Naisbitt once remarked, "The most reliable way to forecast the future is to try to understand the present." With the COVID-19 pandemic, we have witnessed the emergence of some new practices, many of which were already evolving, with others unique to the times. This white paper considers 15 phenomena that have captured the headlines in 2020 and likely will get increased attention as the world turns toward economic recovery and beyond.

1. **Welcome to the less-than-full economy.** Social distancing will take a big bite out of available capacity. Many service and retail establishments, sporting events and concerts

will be limited by the number of customers they are allowed to be served or seated at one time. Limited capacity translates to limited earnings and fewer job opportunities.

2. **Global supply chains will be reexamined with greater emphasis on domestic and local markets**, and perhaps renewed emphasis on reshoring industries critical to national defense and self-sufficiency. The question is whether the politics of reshoring will mesh with the economics of production and pricing.
3. **Online retailing will continue to accelerate, speeding up the decline of brick-and-mortar retail stores**, many of which will be forced to move online in order to survive. This e-commerce movement was already well underway, accelerated during the pandemic, and will continue in the aftermath.
4. **Social conventions and interactions will change**, including the death of the handshake, the hug and the buffet, and the rise of plexiglass barriers. Businesses will find ways to provide services without touching the customer. Social distancing has become a concept everybody understands, and wearing a mask has become commonplace. But more important, a more virtual world with less personal interaction lessens empathy for others and creates a disconnect from community. Might greater isolation and segregation be a byproduct of the pandemic?
5. **School may never be the same: Back to campus or cyberspace?** Recessions typically trigger a return to college or at least a renewed vigor to learn newly marketable skills to catch the next wave of economic recovery. But in what form will that manifest and what trajectory will enrollments take? The jury is still out as to whether remote learning is as effective as in-person instruction. But once colleges make the investment to bring curricula online, it is unlikely everyone will go back into the classroom. Online learning gives colleges the ability to engage more students, but they must demonstrate a value proposition to retain student tuition dollars.

6. **Teleworking or work from home arrangements will become more commonplace** after the pandemic. But the skills required for success include huge doses of employability skills, including time management and digital hard skills, even for entry-level jobs. But if everybody works at home, where "home" is matters less. This will change individual and business location decisions and consumption patterns. Early assessment of remote work appears mostly positive. But as months turn to years, what will be the consequences on productivity, culture and morale of a work force with limited personal interaction?
7. **It's all about skills! Degrees still matter, but it's skills that really count.** So what's a "skill" and what makes a focused bundle of them just as important as a degree or credential? In practice, everybody has capabilities, but not all skills have equal value in the labor market. For many occupations, a degree or certification is essential. But for an increasing number of jobs, your technical skills, socio-emotional skills, digital skills, and employability or soft skills are the difference at hiring time.
8. **Public sector budget woes will emerge.** Who is going to pay for all this? When the private sector sneezes, the government gets a cold. Unbudgeted costs for COVID-19 testing and contact tracing, protective equipment, unemployment insurance benefits, etc., will challenge state and local budgets, affecting every government program, including health and human services and public education.
9. **The world is in recession too!** COVID-19 has been a global pandemic, causing recession in most countries. If 39 million U.S. jobs depend on international commerce, then the production and purchasing power of our trading partners has a direct effect on our recovery. How does the economy suffer, and who is most at risk when there is limited global trade?
10. **The stay-at-home culture: New forms of digital entertainment emerge.** If we're not personally interacting, then we're spending more time at home. And that usually means more time in front of a computer or television screen. Those that are homebound are turning their attention to improving their home environment and discovering a wide range of digital entertainment options. From streaming services to esports, this focus on digital content opens a wide range of career opportunities for both creative and technical occupations.
11. **The end of paper? An accelerating pace in digital transformation.** A real digital economy starts with new technology that drives fresh, innovative processes. This has been happening for some time, but the need to interact with colleagues and customers exclusively online through digital media has rapidly accelerated this transformation. As the need for ubiquitous information access filters down through organizations, more data processing and storage will move to the cloud.
12. **Building the new infrastructure: The kids ate all my bandwidth.** At-home people still need to reach out, and the internet is the web that connects us all. Expect greater emphasis on a build-out of digital telecommunication networks (5G technology), extension of those networks to last-mile customers — especially to reach rural students — and demands for improved network performance. We could even see an accelerated investment in physical infrastructure like roads and bridges that would increase demand in many special construction fields.
13. **Are robots the answer? The increasing use of robots in a post-pandemic world.** If interpersonal contact is deemed risky, then will more work activities previously performed by humans migrate to robots? There is already evidence that the pandemic has accelerated the transition. Technology already in limited application such as self-driving cars and large-scale 3-D printing will only become more appealing. Some aspects of existing occupations will be automated, changing traditional skill requirements. Robotic process automation will continue to change business processes, but at an accelerated pace.

14. Small business suffers while the gig economy flourishes. The pandemic has disparately affected the service sector, notably retail, leisure and hospitality, and personal services. These industries have a higher proportion of small businesses that have been traumatized by the economic lockdowns. Investors have rewarded the large technology companies, which dominate social media and global internet interactions, with outsized returns relative to small business. And the “big guys” should keep getting bigger. The trend from the last several decades in which new businesses have fewer employees with more entrepreneurs becoming freelance operators than business proprietors is exacerbated.

15. Will we hire, how we hire, who we hire: A new perspective on hiring practices. Getting a job, thriving on the job, and getting your next job is another process that has been changed by the pandemic. As with all recessions, but especially in the new virtual, socially distanced environment, businesses are rethinking their labor needs and how they recruit talent. The world of human resources, talent acquisition, and compensation has been presented with a new set of challenges that affect workers and businesses alike.



Introduction

If you put all the futurists end to end, they still couldn't reach a conclusion. This wordplay on the stereotypical joke about economists from playwright George Bernard Shaw dramatizes the fact that there is little agreement among most observers as to what a post-pandemic world will look like, not just economically, but from a behavioral and cultural perspective.

While the country walks the delicate balance between physical and mental health concerns and economic survival, we know that the pandemic has accelerated many trends that were already happening before the COVID-19 outbreak. In fact, the pandemic itself will cause fewer new trends than it will hasten changes that were being introduced with greater deliberation. Indeed, going forward we will notice how many transformations and digital technologies already known to us will more rapidly become commonplace. The pandemic will have served as a "force function," prompting businesses to speed up their pace of technology introduction and proliferation.

The unprecedented level of uncertainty surrounding both the recession and recovery in terms of lost economic activity and jobs will likely be accompanied by yet unknown microbehavioral changes that will occur in our daily lives post-pandemic. And it will build upon many new technologies, like green energy, drones, electric and self-driving vehicles, and myriad new business processes. It will also build upon demographic changes. The millennial generation continues to capture a larger share of employment, and with it comes different consumer preferences that will affect spending on various products and industries.¹ These important economic drivers have nothing to do with the pandemic.

1 Deloitte Insights, The consumer is changing, but perhaps not how you think, May 2019.

To be sure, this economic recession² was induced by the economic lockdowns in response to the COVID-19 pandemic. Every recession has a unique footprint when it comes to recovery, and this one is no different. The initial economic meltdown was swift, with job loss reaching its lowest point in just two months. However the job market captured back half of those losses in the next two months. To put this odd economic impact in perspective, it took eight months for the Great Recession to reach its lowest employment level and roughly 72 months for the nation to return to pre-recession employment levels.

"It's unrealistic to presume that an economy and a society, which have endured unprecedented structural and psychological hardships, will emerge on the other side unscathed and unchanged."

MarketWatch, Opinion: Three forecasts that will shape the economic recovery this year, Andrew Duguay, May 5, 2020

With such a severe and precipitous employment decline and recovery trajectory, discussions have turned quickly to the timing and breadth of an economic rebound. We are left to consider which industries or occupations will be most affected and whether there will

be any longer-term influences wrought by this particular downturn.

Apart from the general macroeconomic forces that are fodder for everyday discussion, the primary focus of this report is on the potential long-term influences of the pandemic on worker preparation. As with previous recessions, college graduates entering the labor market in 2020 and 2021 arrive at a difficult time. In general, recessions tend to drive wages lower for entry-level jobs. Lower employment and earnings outcomes of college graduates immediately after completion can persist for several years and lead to significant longer-term earnings losses, especially when compared to earnings of those that graduated into a good economy.³

2 Technically, a recession is defined by the National Bureau of Economic Research (NBER) as two consecutive quarters of negative gross domestic product. This was confirmed with GDP in the first quarter estimated at -4.8% and second quarter GDP falling 34.3%, or \$2.15 trillion.

3 Jaison Abel, Underemployment in the Early Careers of College Graduates Following the Great Recession, New York Federal Reserve, September 2016.

Lisa Kahn, Yale University economics professor, in her study of college graduates during recessions notes, “[T]aken as a whole, the results [of her research] suggest that the labor market consequences of graduating from college in a bad economy are large, negative and persistent.”⁴ This makes it all the more important that students learn market-relevant skills in school to get a strong start as they enter the workforce.

“If they’re graduating into a large recession, they’re going to suffer some pretty severe short-term consequences. And that’s probably going to stay with them for almost the next decade.”

Lisa Kahn, economist

Business cycles and recessions are not new to capitalism. Colleges and workforce development specialists are driven to plan and redirect resources, as needed, and to help unemployed and displaced workers get more quickly into jobs that will emerge as a part of the recovery. And capitalism is nothing if not steeped in reinvention, adapted processes, and a changing mix of products and services for changing market conditions.⁵ Although a biologic outbreak has not crippled the U.S. economy in over a century, it is quite common for social and labor market changes to occur after a recession in an ever-evolving quest for business to satisfy customer demand and make money.

But this recession was very unexpected, and its severity has been crippling for some businesses. A mid-year 2020 employer survey by the Texas Association of Business and several other entities found that many Texas businesses were not prepared for the pandemic and are concerned

4 Lisa Kahn, Jesse Rothstein, *The Lasting Scars From Graduating in a Recession*, December 12, 2020. University of Rochester and University of California, Berkeley.

5 Examples abound. The Internet killed Blockbuster as streaming video replaced moveable media. Starbucks replaced thousands of “mom and pop” cafes and coffee shops. Film was replaced by digital images and Eastman Kodak went bankrupt, etc.

about their future sustainability.⁶ Among their findings:

1. Only 30% of businesses reported being very prepared to meet the needs of changing industry due to COVID-19.
2. Only one-half of Texas businesses surveyed reported they can sustain more than a year in a partial economic shutdown.
3. One in 10 companies reported they are not sustainable at present.
4. About four in 10 of the businesses surveyed reported that not having funds to pay employees was a major or moderate problem.
5. About one in four business owners/managers reported that they had laid off staff to manage costs, and about 18% more are considering staff layoffs.
6. One-third of businesses reported cutting back hours, with 14% more considering it.



Every recession has a unique footprint when it comes to recovery. Ironically, the current recession, though unique in its own way, is likely to trigger market and behavioral changes not unlike all recessions before it.

The parts of the economy that triggered each past recession are typically those most scrutinized, such as construction and real estate in 1987, the information technology sector in 2000, and

6 In Fall 2020, under the moniker Return to Work, the Texas Association of Business (TAB), the Texas Economic Development Council (TEDC), Texas SHRM, and US Tomorrow engaged Polco to conduct an employer survey to assess the status of businesses across Texas in the wake of the COVID-19 pandemic.

housing and finance in 2007. In each case there is the inevitable thought of when things will return to normal. But there is seldom a return to normal, especially since “normal” is a static notion that one can only ascribe to a particular period or moment in time. A return to a “more familiar” or comfortable time and place may be more appropriate language. Either way, the question of “when” still stands.

The reality is that at any given time there are always economic or labor market trends at various stages of maturation, dictating economic winners and losers. J.C. Penney, Neiman Marcus, Brooks Brothers, and Lord & Taylor have gone bankrupt during the pandemic. But the trend toward online shopping crowding out brick-and-mortar storefronts and large department stores in particular was already well established. One aspect of the economic lockdown was a reduced need for formal clothing, exacting a big chunk of high-end department store business. In other words, evolution and change in the economy is normal. But COVID-19 in particular has been a negative accelerator for businesses that lack dynamic capabilities, i.e., the ability and willingness to adapt to changing market conditions, adjust to changing customer demand, and identify new supply and distribution channels. Some would even put higher education at the forefront of this “adapt or die” challenge.

In this context, many specific skill shortages that existed prior to the pandemic are likely to return as the economy recovers. This will be especially true for skilled construction trades, manufacturing technicians, logistics and sales occupations, and many information technology occupations that were already in demand. This includes business applications of cloud technology, robotics, artificial intelligence, and greater demand for cybersecurity professionals to protect it all. It will include demand for many health care occupations, especially nursing and a variety of health technicians. Despite a pause in hiring early in the pandemic as people postponed visits to health care providers, demand for health care services is driven largely by demographic trends that will persist after the pandemic.

The Way Forward

For longer-term strategic planning purposes, it is valuable to think about the recovery from the COVID-19 recession in three waves: 1) the recovery from the “hurricane effect,” which is the rapid bounce in jobs caused by pent-up demand and the ability to spend money at reopening businesses,⁷ 2) the downstream or delayed recovery as business adjusts payrolls to the emerging spending environment. This likely slows the recovery as new rounds of layoffs accompany new waves of hiring, and 3) the labor reallocation phase as businesses take advantage of the recession to adjust how they use labor, what skills they need, and which new business models they will employ going forward. This slows the employment side of the recovery as business likely chooses technology for labor substitution, altered labor practices, (contract workers, job decomposition based on high value and lower value skills, etc.) and also changes the skill mix most in demand.

COVID-19 Recession Recovery



The ability of a company to reassess, change and move forward during this phase will differentiate growth companies from those that seek to just “return to normal” after the pandemic. According to Harvard business professor Willy Shih, “Companies who use the crisis as a way of ‘unfreezing’ their ways of working, unfreezing their organizational processes, adopting new ways of doing things — those are the ones who I think can survive and thrive.”

7 Federal Reserve Chairman Jerome Powell opined in his October 6, 2020, address to the National Association for Business Economics that “the pandemic shock was essentially a case of a natural disaster hitting a healthy economy.” Much of this initial bounce back occurred in May, June and July 2020.

For education and training intermediaries, the challenge is to identify those changes that will affect the future employability of our students, i.e., are we offering in-demand programs and teaching relevant content applicable to future job-growth opportunities? This white paper aspires to inform that process. Because most economists are captive to their data, much of which lags considerably from real time, it is still too soon to offer many details with absolute certainty. This particular speculative exercise is designed to raise awareness, be thought-provoking, serve as a guidepost for discussions within your regional business community, and be generally useful as we plan for life after COVID-19 in this time of uncertainty.

It may be too early to see with clarity, but not too early to consider various phenomena that could influence individual and institutional strategic planning and future actions. More important, it is not too soon to consider what might be the implications of these trends on educational operations, program offerings, curricular content and instructional modality.

It is clear that job losses due to COVID-19 and social distancing practices will continue to affect some occupations and classes of workers differently. Front-line jobs that typically require face-to-face customer interaction, such as those in hotels, restaurants, non-food retail, and related service industries tend to pay lower-than-average wages and require less education. A large percentage of workers in these jobs are young, female, and minorities⁸ who have been disproportionately affected.

The lingering impact of the pandemic and continued fear of the virus puts any recovery on an uncertain path with few historical precedents.

8 The Conference Board, May 5, 2020.

One can also think about economic recovery in terms of the relationship between employer, employee and customers. Ultimately, back-to-work requires the individual assessment of counter-party risk, i.e., the reestablishment of trust among the economic actors. For workers, do they feel comfortable and safe going back into the workplace? Do customers feel comfortable and safe personally engaging business at their facilities and establishments? Does business trust the customer to reengage with them if they reopen? Opening a business requires putting capital at risk for success or failure, but ultimately the entrepreneur has to trust that customers will return. Because each economic actor has a different level of trust and fear, reopening the economy will be an uneven process — for individual businesses, geographically, and for differing industry sectors.

“Travellers (sic) and restaurant-goers will be cautious until some sort of vaccine or treatment is widely available; social-distancing rules, even if relaxed, will continue for some time.”

The Economist, How High Will Unemployment in America Go? April 1, 2020

As the recovery has unfolded, many of these lower-skill jobs have not bounced back as quickly, leading some to describe a K-shaped recovery.⁹ The K shape indicates a bimodal recovery with a V-shaped recovery for professional positions, many of which can be

done remotely, but with continued stagnation for many jobs on the front lines of the service economy. Under this scenario, the already bimodal distribution of wealth and earnings will continue to swell.

In addition to a rebound in job growth, there is also speculation that a cultural reversion or whiplash effect will occur once vaccine distribution and advanced therapeutics become widespread. Inc. magazine noted in their article, “The Post-Pandemic Economy: The Great Reboot,” that many people will be eager to return to familiar, pre-pandemic cultural displays. They noted coincidentally that the Roaring ‘20s followed on the heels of the Spanish flu epidemic of 1918.

9 Allana Akhtar, Meet the ‘K-shaped’ recession, where professional workers are largely fine and everyone else is doing awful, Business Insider, September 30, 2020.

In the meantime, phenomena such as urban flight to suburban living, and reductions of in-person gatherings, will continue until we no longer fear the hidden risks of contagion. What remains to be seen is whether people will crave a “return to the familiar” and value more human contact having been denied it for such a long period.

What to Watch: Fifteen trends that may stay with us in recovery

We have all participated in planning that has gone awry. Writer and cartoonist Allen Saunders is quoted as saying, “Life is what happens to us while we are making other plans.” There is a Yiddish proverb that translates to “Man plans, God laughs,” decrying the efficacy of forecasting the future. But while not all plans are perfect, the process of planning requires one to at least think about how the future might unfold. It gives one the opportunity to imagine what might happen if you take a specific action — or where you might find yourself if you take no action at all. In other words, even if your plan is less than perfect, the process of planning is invaluable.

“Plans are worthless,
but planning is everything.”

President Eisenhower in a speech in 1957

When it comes to the labor market, it is difficult to assess the extent to which any specific technology or business process will disrupt existing skill requirements. Microsoft CEO Steve Ballmer once claimed that the iPhone would have no chance of becoming a popular device.¹⁰ Ballmer might have missed the mark on that prediction, but there are many forecasts that have helped prepare us for alternative futures.

We cannot know with certainty which COVID-19 pandemic-inspired responses and behaviors will

¹⁰ The full quote was “There’s no chance that the iPhone is going to get any significant market share. No chance.” Steve Ballmer, CEO Microsoft 2007.

change the trajectory of our labor markets. But the process of thinking through how we, as human beings, have reacted to the virus gives us some valuable insights into how we might be forever changed. As such, the observations offered herein are less forecasts than they are “trends to watch.” And most important, they make good fodder for discussion as business, educators and individuals engage in planning their economic future.

All that said, here are 15 observations on what a “future normal” might look like in the post-pandemic world. As important, each section includes a Why Does it Matter? section that highlights potential impacts of the trend, especially on worker preparation.

1. Welcome to the less-than-full economy.

Okay, maybe not half-full for every industry, but social distancing will take a big bite out of available capacity. Most pundits agree that until the new vaccines are widely distributed and reliable therapeutics for COVID-19 are available, Americans will be wary about reengaging intimately with their fellow citizens. But the economy continues to slowly reopen, as both a rolling process and, in some cases, a staged formal end to shelter-in-place ordinances.



Restaurants are reopening, many with new outdoor dining options, but seating is being spread wider apart in deference to social distancing. Many restaurants and entertainment venues, especially those in states with more severe lockdowns, will never reopen. Business Insider reported that more than 6,000 stores closed in 2020. The Texas Restaurant Association believes that between 12% and 30% of Texas restaurants will never reopen.

Air travel has continued, but airlines are booking fewer passengers per flight. Some carriers are leaving open middle seats to inject some level of distancing and requiring masks or vaccine “passports” for all flyers. Taxis and Uber/Lyft will reengage but may put restrictions on the number of people that can travel in any single car. Barbershops and hair and nail salons will all be limited in the number of people they can serve until more people are vaccinated and the pandemic abates.

As these practices unfold, it is likely that supply — not demand — will reduce capacity and earnings power for population-serving industries. The hospitality, entertainment, leisure and travel sectors will bear the brunt of this practice.

Why does it matter? *The pace at which the economy recovers will be constrained by two major drivers: 1) the ability of businesses to accommodate customers, and 2) attitudes and concerns of the citizenry. Until capacity is increased at low-margin businesses such as restaurants, personal services, and recreation and tourism venues, there is an artificial cap on revenues. Many students rely on flexible, lower-paying service jobs to pay tuition and make ends meet while in school. Fewer or smaller paychecks may hamper some students financially either while attending school or limiting their ability to enroll. Don't be surprised if some form of student loan relief is enacted by the new federal administration. If it is true that “unconscious social mood regulates social actions” as argued by stock market analyst and author Robert Prechter, then how people feel about their safety will influence the extent to which they will reengage with the in-person economy — regardless of capacity.¹¹ Thus, the ability of governments and institutions to instill confidence will go a long way toward dictating the pace of the recovery.*

2. Supply chains will be reexamined with greater emphasis on local markets, and perhaps renewed

¹¹ The Wave Principle of Human Social Behavior, Robert Prechter, 1999.

emphasis on reshoring industries critical to national defense and self-sufficiency. The concept of a “supply chain” is commonly used in business as a term relating to the sourcing of inputs to the production process. It can be, however, viewed as a much broader notion. A supply chain is how we connect supply and demand. It can apply to goods, technology, ideas and capital.¹² For example, the demand for worker training utilizes a diverse supply chain in which public community and technical colleges play a vital, but not exclusive, role. There are other sources of “supply” from which one can get workforce training. Thus, when we talk about revisiting supply chains, it really means how we will go about connecting supply and demand in the future. So while this section examines supply chains in a traditional sense, you will see that each section of this paper is questioning how, in the months and years after the pandemic, supply will be marshalled to address

demand — whether that is increased use of technology in teaching, streaming video for entertainment, or access to global suppliers in the manufacturing process. And increasingly, those supply chains are global, digital in nature,

and include worldwide competition for workforce talent.

If the pandemic has revealed anything about global supply chains, it is that companies should consider reducing the risk of concentrating all supply sources with one vendor, country (even within the U.S.) or region.

Business management guru Patrick Lencioni says that “life is a team sport.” Supply chains are the epitome of a team sport. If a restaurant closes, the people who sell food to the restaurant suffer, the people who transport food from suppliers to the restaurant suffer, the producers of food and related products suffer, etc. Companies that only knew their tier-one suppliers (those companies from whom they buy directly) before

¹² Parag Khanna, The Future of Supply Chains, The World After Coronavirus: A Pardee Center Video Series, January 2021.

the pandemic discovered that their production was actually dependent on tier-two and tier-three suppliers that were unknown to them. The demise of these suppliers disrupted their production schedules and left many without alternatives. The pandemic has exposed narrow supply chains and revealed interdependencies that were not a problem — until they were.

Many companies will revisit and map supply chains to better understand their vulnerabilities and embark on supply mitigation strategies by identifying alternate/auxiliary suppliers. But global supply chains exist for a reason. Namely, they allow companies to reduce inventories using just-in-time production processes and access parts and components less expensively. To move production to more expensive countries, including the U.S., typically means price increases that would be passed on to consumers. Thus, the question arises as to whether consumers are willing to pay higher prices so a company can have a more stable supply chain. This remains to be seen.

The best way to diversify a supply chain without raising prices is to create cost savings elsewhere in the production process.¹³ Don't be surprised to see business modifying their supply chains to include "local-first" options, accelerating automation in manufacturing, streamlining transportation and delivery costs, (e.g., drone deliveries and driverless trucks), and using 3-D printing as a substitute for over-complicated or congested supply chains. 3-D printing has already emerged as a way to produce just-in-time replacement parts to avoid warehousing, save retooling costs for small-scale production runs, or provide parts in remote locations when logistics make costs prohibitive.

Federal and state governments will begin to look at supply chains in the national interest, not just from a financial perspective. There will likely be growing "anti-Chinese" sentiment, but most of it will come from those who already dislike China based on its expanding economic and political influence in the world, not just responsibility for the COVID-19 virus.

13 Willy Shih, Creating More Resilient Supply Chains, Harvard Business Review podcast, September 8, 2020.

The National Association of Manufacturers conducted an employer survey as to the impact of the pandemic regarding their supply chain operations and their financial expectations. Of the 558 respondents, 35.5% said they are facing supply chain disruptions, while 64.5% said they were not. More than 53.0% of manufacturing firms anticipate a change in their operations in the coming months, and more than 78.0% say that uncertainty around the COVID-19 outbreak is likely to have a negative impact on their future finances.

Finally, the definition of what constitutes an "essential worker" has caused many folks to realize the "interrelatedness of everything" and develop an appreciation for the roles that people in various walks of life play in our society. Never before has the grocery store stock clerk or the fast-food cook been seen as so critical to our day-to-day lives. Hopefully, the pandemic has underscored the value of all work — and all workers.

Why does it matter? *Logistics, warehousing and storage was a growth sector before the pandemic and will likely become even more important. In September 2020 Amazon said it will hire 100,000 new workers to meet its growing e-commerce business.¹⁴ That doesn't include the 33,000 technology and corporate jobs it wants to fill before the end of the 2021. Target and Walmart are also expanding their warehousing and distribution systems to accommodate more online shopping. Collectively, these companies will continue to automate their distribution facilities and work to get more products to the customer. Warehouse automation drives demand for robotics technicians, logisticians, order fillers, and heavy truck and route delivery drivers.*

Supply chain disruptions disproportionately affect manufacturers because they cannot get the necessary parts for final assembly and sale. This reduces revenues and has a dampening effect on employment — especially in the face of increased use of robotics in manufacturing. Companies will value workers with experience and background in supply chain management and mapping, risk

14 Washington Post, Amazon to hire 100,000 workers as e-commerce swells amid the pandemic, September 14, 2020.

management, process engineering, and supply chain digitization (digitally mapping supply chain business processes and creating dashboards that monitor “end-to-end” operations).

3. Online retailing will accelerate, speeding up the decline of brick-and-mortar retail stores, many of which will be forced to move online to survive. Small firms working on smaller margins, with less cash flow — and likely with smaller lines of credit — are being disproportionately affected. Fewer stores have been able to reopen even as lockdowns are lifted, and all are subject to social distance limitations.



Retail bankruptcies will continue to rise, with Americans currently carrying more consumer debt than even before the Great Recession. Large companies that are in or approaching chapter 11 bankruptcy include J. Crew, J.C. Penney, Neiman Marcus, and Ascena Retail Group, which operates Lane Bryant and Ann Taylor retail stores. Even if they come out of bankruptcy, they will close stores and operate as smaller companies.

The trend toward fewer and more technology-dependent retail outlets was already expanding prior to the pandemic. The percentage of retail sales in the U.S. attributable to e-commerce grew from 11.8% in the first quarter 2020 to 16.1% in the second quarter 2020. A year prior, in the second quarter 2019, e-commerce accounted for 10.8% of total retail sales.¹⁵

Moreover, as total retail sales expanded by over 12% over the past decade, retail employment has grown by less than 2%. Not surprising,

growth in e-commerce supply chain industries like warehousing, delivery couriers, and electronic shopping and mail-order houses has expanded while traditional sporting goods stores, bookstores, electronics stores, and clothing stores have had the slowest growth over the past decade.¹⁶

Those looking to the future see new retailers starting first with an online presence. This may be followed by physical stores, but primarily to enhance the customer experience. Texas boot maker Tecovas is an excellent example of this direct-to-customer (D2C) model.¹⁷ The Bureau of Labor Statistics has predicted a long-term decline in sales occupations through 2028, especially for cashiers and retail salespersons, which comprise almost 52% of all sales occupations.¹⁸ In fact, in their 2029 employment projections, the BLS predicts that as e-commerce continues to grow in popularity, retail trade will lose 368,300 net jobs between 2019 and 2029.¹⁹

In an article titled “The Big Tax Shift” from the Brookings Institution, the reality of a “retail apocalypse” is highlighted as a phenomenon not new to the marketplace. They prophesize doom for companies that don’t have a unique selling proposition and/or haven’t adopted multichannel marketing schema to reach customers outside their primary brick-and-mortar location.²⁰

Commercial real estate as a whole will be challenged as businesses realize the extent to which their employees can work from home. Already threatened shopping malls will be even more stressed. They may make good targets for universities or technical/trade schools. Austin Community College converted a dying mall into a full campus with technical training space and dormitories. In San Antonio, Rackspace took

16 Bureau of Labor Statistics, Beyond the Numbers, <https://www.bls.gov/opub/btn/volume-10/employment-trends-in-retail-trade-2010-19.htm>

17 Other high-profile D2C examples include Warby Parker (eyeglasses), Bonobos (socks) and Casper (mattresses).

18 See Bureau of Labor Statistics, Beyond the Numbers, Inside the decline of sales occupations, May 2020. According to BLS, “These declines are attributable to the continued rise of online sales; when customers purchase goods online, demand for in-store sales workers declines.”

19 Employment Projections: 2019-2029 Summary, Bureau of Labor Statistics, September 2020, <https://www.bls.gov/news.release/ecopro.nr0.htm>

20 The Big Tax Shift, Brookings Institution, August 2020.

15 U.S. Census Bureau News, Quarterly Retail E-Commerce Sales 2nd Quarter 2020, August 18, 2020.

a dead mall and converted it into a corporate headquarters with a massive, air-conditioned data center — all while demanding more skilled workers from nearby Alamo College.

Why does it matter? Coresight Research forecasts that as many as 10,000 retail outlets nationwide could close in 2021. Fewer retail outlets translate into fewer retail jobs, many of which support student educational pursuits. Online retailing will continue to flourish, along with jobs that support digital marketing, web design, and online infrastructure. Management guru Peter Drucker said, “The aim of marketing is to make selling superfluous.” Emerging job titles in the online marketing space include brand strategist, brand activation manager, content strategist, web marketer, e-commerce marketer, and search engine optimization (SEO) specialist. The internet is a great equalizer in terms of starting a new business with less capital investment, and thus this sector is also ripe for entrepreneurial training.

4. Social conventions and interactions will

change, including the death of the handshake and the hug. Business will increasingly ask if there is a reason a meeting has to be held in person instead of online. The quest for personal interaction will be substituted for more impersonal, remote digital interaction. One need only look at the spike of emails, texts and even phone calls made during the pandemic to see that this trend, which was already occurring, will accelerate.²¹ Although the world continues to go digital, employers will still value employability skills including teamwork, communication, willingness to learn, and work ethic. One particular skill, time management, has been a bane to many college students and becomes even more critical in a work-at-home environment.²²

21 Verizon, a company focused much more on telecommunication architecture than digital content, has seen its usage spike during the pandemic – with voice calls up 25% through April 9. Verizon claimed to be handling an average of 800 million wireless calls a day during the week, more than double the number made on Mother’s Day, historically one of the busiest call days of the year.

22 Impact of Time Management Behaviors on Undergraduate Engineering Students’ Performance, Richelle V. Adams, January 2019.

All of these skills will be transformed as they relate to a remote or virtual workplace.

There is also some evidence of a revival in do-it-yourself (DIY) skills like cooking, simple electrical work, and other practical skills. Many younger people have been brought up in a consumer society in which things are not fixed but replaced. Views of DIY videos on YouTube are up, providing anecdotal evidence that there may be a resurgence of demand for household skills. Those in doubt can also point to the surge in “adulting” classes being offered in universities around the country.²³ The ability to be self-reliant may make a comeback, driving a need for curriculum and innovative delivery options that appeal especially to younger people. But perhaps the most

“Future entrepreneurs will start building their businesses online before they open any offline location. Even then, the physical channel will serve more as an experience center and a marketing channel rather than the main consumer touchpoint or sales channel.”

The Future of Small Business, Richard Yao, IPG Media lab

significant impact is the level of isolation and community segregation that comes with a more virtual society introduced by the pandemic. New York University professor Scott Galloway refers to this virtual social distancing as “dispersion.” He notes that dispersion “has the

power to erode our [already] weakening ties of community and cooperation.”

On the positive side, dispersion also means more shared knowledge (think crowdsourced intelligence through platforms like Yelp!) and shared value (Airbnb, now a publicly owned company, is dispersing the vacation travel supply chain). In the case of Airbnb, dispersion creates value for vacationers and property owners alike by facilitating host-to-consumer connectivity. More dispersed information creates a common value proposition that works for everybody. For Airbnb, it succeeds by connecting buyers and sellers directly through the dispersion of rental property information.²⁴

23 The Texas Legislature passed HB 3165 effective September 2019, allowing the Lone Star College System to offer an associate degree program under the label Occupational and Life Skills.

24 BMI, How Airbnb’s business model works, (<https://www.businessmodelsinc.com/exponential-business-model/airbnb/>). At the close of 2020, Airbnb claims to have more listings than the five largest hotel chains combined.

Whether we call it “peer-to-peer,” “crowdsourcing,” or “dispersion” the process of using information in a virtual setting to connect users and producers of information more directly will continue to expand post-pandemic. Professor Galloway says that these internet platforms “have become the connective tissue for billions of people.” Clearly, as pervasively and quickly as these platforms have developed, this is one emerging social convention that is here to stay.

Why does it matter? *Changing social conventions result in changes in behaviors and attitudes, including workplace skill requirements. “Soft skills” were the most sought-after skills by employers before the pandemic. This will not change after the recovery, except maybe to add social awareness and time management to the mix of interpersonal skills that have previously been deemed to be in short supply. DIY trends and greater migration from urban to suburban living should lead to greater demand for short courses in home repair topics, including home economics. Greater dispersion creates a demand for information-based internet platforms, cloud computing, and the data scientists, web developers, and marketing professionals critical to their success.*

5. School may never be the same: back to campus or cyberspace? The biggest question explored in this white paper is how the pandemic will affect higher education. Americans have historically turned to higher education in the face of a recession, hoping to pick up new knowledge and skills to be better positioned for employment during the eventual recovery. But this pandemic-induced recession is not the result of any specific economic bubble and has disrupted lives and livelihoods in unprecedented ways.

So, in the face of such uncertainty the question is whether we will behave differently this time. There are three major issues to explore: 1) what will happen with postsecondary enrollments during and after the recession, including growth trajectories? 2) will online education continue to capture a larger share of the student education dollar? and 3) how will students evaluate the value proposition of postsecondary education in general, and online education in particular?

Recessions typically trigger a return to college or at least a renewed vigor to learn newly marketable

skills to catch the wave of economic recovery. From a national perspective, in each of the three previous recessions there was a spike in total community and technical college enrollments at the beginning of the recession. Interestingly, however, in the three prior recessions enrollments were already rising pre-recession, with the downturn providing an extra stimulus. This pandemic-induced recession will be the first in three decades to occur at a time when community and technical college enrollments have been trending down.



Cost may be a concern as well. The extent of job losses in the leisure and hospitality industry, which tends to offer flexible, part-time employment for students, has been the most severely affected labor force group by the pandemic. These younger service-sector workers — and especially women — have borne the brunt of this recession, which is historically indicative of future postsecondary enrollment growth. Students without part-time jobs to pay tuition may not be able to afford to enroll — even at a community or technical college. There is also the possibility of fewer foreign students being able to return to the country to attend class.²⁵

Student mindsets are clearly conflicted, with enrollments influenced by complex attitudes about whether campuses will open, modality of instruction (online, hybrid, in-person), and whether students, parents and even instructors will view campuses as safe. This presents a unique set of variables and circumstances to

²⁵ Nonresident alien students comprised roughly 4.0% of Texas college and university enrollments in 2018. Texas community and technical colleges foreign enrollments were much lower at 1.8%, with the largest percentage coming at Houston Community College at 10.9% (IPEDS).

those projecting 2021 college enrollments and beyond. Although complete data are not yet available, on September 24, 2020, the National Student Clearinghouse provided its First Look at higher education enrollments. Nationally, undergraduate enrollments were down in every college provider category. The largest decline was in public two-year colleges, down -7.5% from the prior year, and -3.8% for private nonprofit colleges. Undergraduate certificates took the biggest enrollment hit at -9.7%, followed by associate degrees at -7.5%. Interestingly, post-baccalaureate certificate enrollments are up 24.2% from the prior year.²⁶

Online education is not new and has been trending upward, gaining traction with the initial introduction of MOOCs (Massive Open Online Courses).²⁷ While MOOCs are still more likely to be accessed by more educated and higher skilled adults (i.e., to boost skills at the margins of their résumé), they offer low-cost ways to acquire specific knowledges and skills regardless of location. With the trend toward increasing college costs, there is every reason to believe that the pandemic will accelerate the movement to online education. Online learning enhances student choices, especially for nonresidential options, and engenders tuition dollars for institutions while lowering their cost of services.

A recent survey (April 1, 2020) by Gallup asked adults 18 and over if they had \$5,000 available to invest in their future education or training, where would they prefer to spend it? “Employer-provided training while on the job” had the highest score at 25%, but 50% list online education at either a university (22%), community college (16%), or another provider (12%). The pandemic has forced most colleges to expand their online curriculum, for better or worse, with some committing to online simply for survival.

An October 2020 Strada Education network survey of 4,000 students found that emotional well-

being, not college cost, internet or curriculum access, or academic rigor, was the biggest challenge for 75% of students. Student stress and anxiety, as documented in the Strada survey, likely contributed to delayed or suspended fall 2020 enrollments.²⁸

One byproduct of so much online learning is an enhanced data test bed to give us a much better idea about the effectiveness of distance learning at all grade levels and various cohorts of learners. The value proposition for remote learning is more than costs, technology and politics. We have to answer the question as to whether students (and which students) are learning effectively. The jury is still mixed on this, but we will eventually have quite a lot of statistical and anecdotal data to assess what works, for whom, and under what conditions. This will have an influence on how much remote learning continues when schools physically reopen.

And, in the case of higher education, if the value proposition is less, how much tuition will students and parents be willing to pay for a nonresidential experience, i.e., how much of their tuition really goes to “enjoy the college experience” and how much is dedicated to learning marketable skills? Higher education institutions, especially higher-priced private colleges, have unique challenges amplified by the pandemic. Many of these colleges are committed to moving more of their curriculum online to address social distancing issues. As this occurs, students and parents have begun to ask the question as to whether the diminution of the typical on-campus “college experience” will still be worth the hefty tuition — especially when there are less expensive, credential and non-credential, online learning opportunities. Rising college costs and increased levels of student debt are worrisome metrics in the assessment of the higher education value proposition.²⁹ Average costs for college tuition and fees have increased by 100.7% since 2000, while median wages for college graduates have only increased by 56.4%.³⁰

26 National Student Clearinghouse Research Center, First Look update on higher education enrollment, September 24, 2020.

27 It appears that online learning especially appeals to nontraditional and master's degree markets. According to data from the National Student Clearinghouse enrollment at predominantly online institutions increased by 5.0% between Fall 2019 and 2020, despite the fact that total undergraduate enrollments were down 4.4% over the same period (see The Edge newsletter, The Chronicle of Higher Education, January 27, 2021).

28 Strada Public Viewpoint: COVID-19 Work and Education Survey, Strada Education Network, October 2020.

29 The value of outstanding student loan debt in the fourth quarter of 2020 was over \$1.7 trillion. STATISTA, February 2021.

30 Data on tuition and fees for public four-year colleges from The College Board. Median earnings data by education level from the Bureau of Labor Statistics.

At present, there is little evidence that students attach equal value to online learning as they do learning in a residential environment. Results from a survey by Art and Science Group LLC and published in *The Chronicle of Higher Education* showed that “most students expect to pay much less if virtual learning is mandatory this fall. They want costs to be adjusted, and not just to account for the irrelevance of room and board.”

There is also the issue of the quality of online learning. An April 2020 study from the National Research University Higher School of Economics found that high-quality online courses are no less effective than traditional classes when it comes to student learning outcomes. They claim online courses provide an opportunity to expand access to high-quality education without increasing costs. Thus, it could be opportunistically argued that online courses offer a new market for higher education. The National Research University claims that universities will be able to enroll 15%–18% more students with more online offerings.

An increase in online, nonresident students, even at a lower price (credit or noncredit) could generate a new revenue stream for institutions and broaden their reach to students — especially nontraditional students — that otherwise might not matriculate. We have already witnessed the success of the Western Governors’ Association and Southern New Hampshire University expanding into this market. This push into more online instruction should drive demand for persons with skills in graphic interface design, digital curriculum creation, online curriculum development, and specialists in e-learning platforms like Blackboard, LearnWorlds and Teachable. A contrarian perspective from students is documented in the Strada Education Network survey, which found that 71% of students thought online education was worse or much worse as it relates to their ability to learn.

Ultimately, the crucial concern that influenced spring 2021 enrollments for most institutions was how many students and faculty are still wary of returning to campus, even after vaccines have started to roll out. Now that major parts of a college curriculum can be found online and students have had the opportunity to see what remote education is like, student expectations for higher education may change. What if students (or their parents) perceive major differences in college as a maturing experience vs. college for knowledge or educational preparation and are unwilling to pay the high tuition associated with on-campus living — simply to have the “college experience”? As Chancellor/CEO of Texas State Technical College Mike Reeser points out, “Study after study has shown that 85 plus percent of college students define ‘getting a better job’ as

the real purpose of college. So, when a college focuses merely on the number of students it’s teaching, it’s easy to overlook the fact that far too many college graduates in America can’t find a good job.” Will students in

“Within traditions of higher education, enrollment is considered the gold standard of key metrics for a college or university. The problem with this traditional approach is that it ignores the students’ definition of success.”

Mike Reeser, Chancellor, Texas State Technical College

coming years think about college differently than their parents or previous generations? For which aspects of the college experience will they be willing to pay? There is a strong argument to be made that the pandemic will usher in an entirely new thought process as regards student expectations for higher education, with employability remaining at the top of the list.

Complicating the move to online is that not everyone has broadband access, especially some K–12 students in rural areas. Pew Research from May 2019 shows that 79% of suburban adults and 75% of urban adults, but only 63% of rural adults, have home broadband access.³¹

³¹ Pew Research, <https://www.pewresearch.org/fact-tank/2019/05/31/digital-gap-between-rural-and-nonrural-america-persists/>

An additional repercussion of the pandemic has been the impact on higher education employment.³² Using data from the BLS, *The Chronicle of Higher Education* estimates that America's private (nonprofit and for-profit) and state-controlled institutions of higher education lost roughly 560,000 workers between February and October of 2020. These losses were disproportionately seen among adjunct faculty, administrative support workers, and a range of lower-paid cleaning, maintenance, and food preparation positions.³³

Finally, because of the uncertainty associated with the post-pandemic period, the concept of taking a "gap year" has become more common. In December 2020, the National Student Clearinghouse Research Center released a report showing that the percentage of students that went to college straight after high school declined by 21.7% in 2020. The decline was particularly precipitous for high school students with lower incomes (-29.2%), with high minority concentrations (-26.4%) and students in urban districts (-25.1%).³⁴

On April 23, 2020, Strada-Gallup polling stated, "So far, the number of people intending to pursue more education or training has not increased in the last year. But those considering more education or training within the next five years are leaning toward different providers (types of institution) than they were a year ago."

Why does it matter? *With government underwriting of higher education comprising a shrinking part of the revenue stream and tuition becoming a bigger part of the budget process, enrollment forecasting has increased importance. For programs that have been filled to capacity prior to the recession, there is reason to believe those same programs will continue to be capacity constrained during the economic recovery. Because of the expected short-lived nature*

of the economic recession and the general sense of uneasiness the virus created among students and faculty alike, it could be argued that the country lacked the impetus for fall 2020 enrollment growth seen during prior recessions.

With advanced therapeutics and several vaccines hitting the market in late 2020, there is reason to believe that more college students will return to the classroom in spring 2021. However, the timing of vaccine access to college-age students matters in terms making commitments for the spring 2021 semester. Given the large number of students who chose not to go directly from high school to college in 2020 (gap year), higher education has a significant recruitment challenge for 2021.

As the pandemic continues to rage across the country, the mechanisms colleges will use to deliver learning content are widely divergent. Technical colleges that emphasize hands-on instruction will be forced to find acceptable ways to balance academic and applied instruction in a safe environment. However, technical colleges can and will continue to demonstrate a strong value proposition and point to specific job opportunities in many essential jobs that directly relate to college coursework. Other colleges, especially liberal arts institutions, will be harder pressed to demonstrate the relationship between enrollment and marketable skills — especially with large segments of the curriculum taught online. With so many public and private colleges migrating to virtual classes, for-profit online providers have gained de facto credibility as a viable education option. This will draw more students away from traditional college programs, causing enrollment declines at many brick-and-mortar colleges.³⁵

Do not be surprised if more students demand, and colleges institute, income-share agreements (ISA) in which students pay back to the college a percentage of their post-graduation income rather than borrowing money and paying in advance. Because repayment is based on a percentage of a student's post-exit earnings, an institution has an outsized vested interest in making sure the student is acquiring knowledge and skills that enhance employability.³⁶

32 The Pandemic Has Pushed Hundreds of Thousands of Workers Out of Higher Education, Dan Bauman, *Chronicle of Higher Education*, October 2020, <https://www.chronicle.com/article/how-the-pandemic-has-shrunk-higher-educations-work-force>

33 Danielle Douglas-Gabriel and Alyssa Fowers, The lowest-paid workers in higher education are suffering the highest job losses, *Washington Post*, November 17, 2020, <https://www.washingtonpost.com/education/2020/11/17/higher-ed-job-loss/>

34 Eric Hoover, The Real COVID-19 Enrollment Crisis: Fewer Low-Income Students Went Straight to College, *Chronicle of Higher Education*, December 10, 2020.

35 Goldie Blumenstyk, What's Different About This Recession and Why That Matters to Higher Ed, *Chronicle of Higher Education*, Feb. 17, 2021.

36 Johnson, Sydney, Income-Share Agreement Providers Want to Woo Higher Ed. But Will It Work? www.edsurge.com, August 2018.

Because the service industry, and its many customer-facing occupations, has been disproportionately affected by the downturn, there is a compelling argument that higher education has a responsibility to find ways of helping Texans get back to work. This includes more noncredit courses and microcredentials that are cheaper, faster and labor market relevant. This is without regard to whether such offerings fit neatly into traditional college formats, schedules, funding frameworks, or if faculty are enthused about new teaching methods. The increasing need for reskilling (upgrading an obsolete skill set), upskilling (adding marketable skills to an existing skill set to facilitate career progression), and outskilling³⁷ (training to help workers adjust to technology displacement) will demand more options for short-term workforce training and credentialing.

6. Teleworking or work-from-home arrangements have continued to become commonplace

as the pandemic continues. Forced telework experimentation due to economic lockdowns has uncovered more possibilities for a virtual workforce. Those who were once reticent have gotten more experience working with remote technology. Management has seen that more workers have the capacity for productive work in work-at-home arrangements and become more accommodating to worker requests to spend at least part of their workweek at home. New definitions of work/life balance have already started to emerge.

Many technology companies have discovered benefits of work-from-home arrangements during the pandemic. Twitter CEO Jack Dorsey announced that most work-at-home situations will be made permanent. Twitter human resources head Jennifer Christie said “the company would probably never be the same” in the structure of its work. Facebook has followed Twitter’s lead with CEO Mark Zuckerberg saying that he expects 50% of the company’s employees to work from home over the next five to 10 years.

This also translates into changes in the hiring and recruiting process. The Conference Board estimates that the percentage of remote workers will increase from roughly 5% of full-time workers

to the 20%–30% range.³⁸ For organizations that employ a higher percentage of professional and office workers, that percentage could rise to 40%. This means that for many jobs the location of the candidate will become less important. Since more mobile remote workers tend to be in white-collar jobs, patterns of population growth and relocation are already being altered.



Telework arrangements are not for everyone, nor do they benefit everybody. The BLS 2019 American Time Use Survey shows that up to 50% of workers in the top quarter of all earners were paid for at least some work at home. Only 4% of workers in the bottom quartile of earners, dominated by retail and service occupations, were paid for any work at home.

A related impact will be fewer commuters into downtown or central city employment centers, driving a reduction in demand for commercial real estate and office space, and downtown restaurant and retail services. While major urban employment centers and commercial office space have been negatively affected, the total demise of urban centers may be premature. Famed urban studies guru Richard Florida notes that large cities still offer the “clustering of talent and innovation.” But he also believes the increase in remote work will be a boon for small and mid-sized cities. As Florida notes, “[A]ny decline of the central district will also allow jobs to be spread closer to where people actually live, enabling a broader regional rebalancing of work, while reducing horribly long and wasteful commutes.”³⁹

37 Forbes, As Pressure to Upskill Grows, 5 models Emerge, October 28, 2019.

38 Gad Levanon, Remote Work: The Biggest Legacy of Covid-19, Forbes, November 2020.

39 Richard Florida, Will Coronavirus Be the Death of Cities?

Why does it matter? Working at home will be a mixed bag for different employers and their workforce. Businesses that rely on the “customer experience” to differentiate their company are likely to return to prior business models. Work-at-home technologies will improve, as will virtual supervisory skills that have been tested in many unaccustomed ways. Initial assessments of the success of work-at-home policies show that it works — documenting: 1) reduced commuting time and tardiness, 2) reduced costs for business travel (a negative effect on the travel industry!), 3) greater intentionality before calling in-person gatherings, and 4) reducing time-wasting meetings and trips to the break room. But it requires a unique skill set including digital hard skills to manage technology, and employability skills such as time management,

remote conflict management, and active listening. Longer term, there is concern that teleworkers could take on a different status than those that appear at the workplace in person. Sid Sijbrandij, CEO of code collaboration firm GitLab, is concerned

that remote workers may feel less included and have a more difficult time communicating with peers. His concern is that “remote-first” workers will take on a new status as “remote-allowed” workers who will not be penalized for working at home but also not be proactively integrated into the fabric of a company culture. Organizations will have to be mindful that remote workers remain connected to their colleagues and the organizational culture.

Increased telework will have other consequences, especially for city centers. Small and mid-sized city economic developers will actively promote their “country living in the city” ambiance to attract both new residents and business. Some communities, including Topeka, Kansas, Tulsa, Oklahoma, and northwestern Arkansas are even offering relocation incentives to attract newly footloose workers.⁴⁰ Fewer commuters also means less spending on transportation, retail, food and personal services

near former high-traffic employment centers threatening many small businesses.

7. It’s all about skills! Degrees still matter, but it’s skills that really count. Not all college degrees are created equal in the labor market. Some offer significant labor market worth, others less. But all signify a level of persistence and valuable life experience. The one thing we know is that there is no employer focus group or survey that resulted in a finding that the business community demands more academic degrees. Degrees are a proxy for knowledge and skill mastery, some of which are more meaningful than others. But while degrees still matter, the pandemic has accelerated the uptake of skill-based hiring and increased the

acceptance of skill mastery in the form of industry-based certificates, badges and related credentials.

So, what is a “skill” and what makes a specific bundle of skills just as important as a degree or credential?

In practice, everybody has capabilities but, like degrees, not all skills have equal value in the labor market. For many occupations, a degree or certification is essential. But for an increasing number of jobs, your mix of technical skills, socioemotional skills, digital skills, and employability or “soft” skills are the difference at hiring time.

In an uneven recovery by industry and even occupation, skills training becomes more important. It is incumbent on the education and employment and training communities to provide resources to help people move from declining or affected industries to growth sectors. One approach is to leverage a worker’s existing skill set to identify other occupational opportunities to put them on an upward career progression.

One definition of a “skill” is that it is something that has a positive effect on worker productivity.

“And while the ability to have large remote working staff has been a potential for many years, companies that resisted the move are now being forced to adapt. Going forward, many companies will likely be unable to wind the clock backward.”

Jason Schenker, Prestige Economics,
The Future After COVID

⁴⁰ Jeff Ostrowski, Working remotely? Some cities, states will pay you to move in, Austin American-Statesman, February 22, 2021.

But skills take many forms. In the post-pandemic world, employers will increasingly consider a wider array of skills at hiring time.

Technical skills: These skills are the abilities or the knowledge one needs to perform a specific task. Historically when one thought about “skills,” the reference was to technical skills, i.e., the ability to weld metal structures, install environmental sensors, or analyze medical health records data. In some environments, technical skills might imply the ability to work competently in the computer and information world. However, most higher-paying occupations have at least a handful of specific, learned technical skills that are necessary for hire. No matter how charming or personable you are (employability skill!), if you want to be a statistician you must be able to do things like “develop mathematical concepts, models or simulations.”



Socioemotional skills: The process of coping in everyday life is something most people take for granted. Thus, it’s hard to think of coping behaviors as “skills.” And yet, strong socioemotional skills have been discovered to be equally as important as cognitive skills in the workplace.⁴¹ Examples might include conscientiousness, emotional stability, conflict resolution and the concern for others. Although these “skills” are most often viewed as part of the child development process, integrity and related socioemotional skills matter in the workplace. Or as the saying goes, “No matter how educated, talented, rich or cool you believe you are, how you treat people tells all.”

41 Social and Emotional Skills: Well-being, connectedness and success, Organisation for Economic Co-operation and Development (OECD), 2016.

Digital skills: Every nation in the world is developing a digital skill strategy that requires workers to possess the essential digital skills necessary to operate digital systems and tools for performing everyday job tasks. But what is a “digital skill”? Sometimes referred to as digital literacy, digital skills include the ability to manipulate and apply digital data for productive purposes. They include skills like: 1) locating and retrieving digital information, 2) judging the quality, relevance and validity of digital information, and 3) generating new digital content.⁴² Comfort in using and manipulating digital information is critical to an effective remote workforce and thus can be a critical skill dimension at hiring time.

Employability skills: Workplace employability skills represent a critical dimension in human capital development. Also known as “soft skills,” these fundamental attitudes and behavioral characteristics are critical to success on the job. The demand for workplace employability skills such as communication and professionalism is common across all occupations. But most occupations have a group of employability skills that are optimal to success in both getting the job and being successful on the job. For example, if you want to be in a customer service role, you must have excellent communication and interpersonal skills. Electricians need a strong attention to detail. Air traffic controllers need to be able to work under stress and stay calm.

For many employers, employability skills are becoming as equally important as technical skills. Unlike hard skills (which are technical and can be gauged through tests and certifications), soft skills are subjective and not clearly measurable. In a November 2020 Georgetown University research paper,⁴³ the author(s) denoted the most in-demand skills across the labor market. Among these are communication, teamwork, leadership, problem-solving, and sales/customer service. But while these are sought-after skills, they are far from the only ones to surface on employer surveys. The

42 For a robust discussion and useful framework of digital skills, see Defining Essential Digital Skills in the Canadian Workplace by Chris Chinien, April 2011.

43 Workplace Basics: The Competencies Employers Want, Georgetown University/CEW, November 2020, <https://cew.georgetown.edu/cew-reports/competencies/>

push to work at home requires time management skills, personal initiative, and accountability. In a 2020 research brief from Valamis/Gartner titled "Digital Transformation of the Workforce: Creating Human Touch for AI Revolution," CEO survey results listed adaptability, problem-solving, creativity/innovation, and leadership as their "most wanted skills."⁴⁴ The ability and willingness to learn also shows up on many of these surveys.

The bottom line is that employers are increasingly concerned about having workers that can respond and adapt to changes in technology and business practices and add value to their enterprise. Many of these employers believe that the necessary technical skills can be learned through microcredentialing programs, online continuous learning, or other competency-based instructional programs.

"The future of work won't be about degrees. More and more, it'll be about skills. And no one school, whether it be Harvard, General Assembly or Udacity, can ever insulate us from the unpredictability of technological progression and disruption."

Stephane Kasriel, CEO of Upwork

Lost in the discussion contrasting degrees with skills training is the fact that most degree programs are comprised of bundled learning objectives that are based on academic knowledges and skills. But they are not often communicated as such. Edward Burger, president of Southwestern University, decries that a college education has too often become a "checklist mentality."⁴⁵ He explains that too many students and parents think of college coursework as requirements to "get out of the way," defining formal education

as an obstacle course to navigate simply to get a diploma. But success in the new labor market is much more about what you know, the skills you acquire, and the attitudes you bring to the workplace, than being able to say that you've checked the higher-education box.

***Why does it matter?** Many educational institutions are still structured around inflexible academic calendars, focus exclusively on degree attainment, and demonstrate a lack of intentionality in teaching employability skills. This surely must change to give students the tools to compete in the labor market. Employability skills can be integrated into any general education curriculum to the benefit of graduates but also leavers. Digital skills translate across all industries and occupations and can similarly be integrated into any program or the general education curriculum. High schools are increasingly putting in programs for socioemotional learning with great success. As Robert Fulghum might say, it's remarkable how much can be accomplished if everyone can play well together in the sandbox. To help students communicate the skills they have learned, many institutions are implementing a digital skills transcript that can be used to develop customized résumés and form the foundation for stackable skills credentials and occupational skill awards, e.g., badges, microcredentials.*

8. Public sector budget woes will emerge. While many workers have been sheltered in place, states and municipalities continued to provide community services — most on budgets set in the booming economy of 2019. The federal CARES relief act provided \$2.2 trillion to offset individual, business and local government costs, including \$150 billion to state and local governments. Economists generally agree that the initial massive federal stimulus eased the likelihood of an even larger economic collapse.

However, the economic lockdown caused many uncompensated costs that are now being borne by individuals, governments and businesses alike. Additional pandemic-related costs to most state and local governments include the acquisition of personal protective equipment and other medical supplies. But most important will be the lost sales taxes from decreased personal consumption, upon which most states (including Texas) rely as their primary revenue stream.

⁴⁴ This 2018 white paper from Valamis/Gartner documents these skills as most wanted by CEOs on a global scale. A representative, free-form comment from this study emphasized the need for "marrying technology with exclusively human capabilities." (<https://www.valamis.com/documents/10197/407546/digital-transformation-of-the-workforce-white-paper.pdf/>)

⁴⁵ To Southwestern's president, college is about shaping a thoughtful mind, Austin American-Statesman, May 9, 2018.

As the economy starts to open up, these government entities will see budget shortfalls resulting from reduced tax revenues and likely losses in government employment. Exact estimates of the impact of the pandemic on government tax revenues are hard to come by and will vary by state and locality. The National Tax Journal says that state tax revenues will be affected by three factors: 1) the severity of macroeconomic conditions due to the economic lockdown in a particular state, e.g., extent of job loss, health costs/caseloads, declines in personal consumption, etc., in Texas, 2) the sensitivity of state revenues to the conditions precipitated by the COVID-19 crisis, and 3) the historical sensitivity of state

revenues to external economic shocks.

Thus, factors such as the length of shelter-at-home orders, and the extent to which a state economy relies on tourism, property values, or other specifically impacted revenue sources all determine the final impact of the pandemic on government finances.⁴⁶

The state of Texas gets 57% of its non-federal revenue from sales taxes, which have plunged with decreased personal consumption. Fortunately, local governments are heavily reliant on property taxes for revenue, and housing valuations have continued to increase throughout the lockdown, with demand for housing outstripping available supply in most markets.⁴⁷

Texas state government gets a third of its total revenues from the federal government,⁴⁸ and supplemental federal government financial supports (like the CARES Act) will help but

not cover all revenue shortfalls. States and municipalities in financial distress before the pandemic will find themselves in an even more precarious position. Mandatory budget balancing will require budget cutting, both in community services, public education and higher education.

CARES Act funding is also being used by state and local governments to offset costs of “educational support staff or faculty responsible for developing online learning capabilities necessary to continue educational instruction.” With many Texas public school systems moving to hybrid or school-at-home models, there is a tremendous demand for talent and capacity to translate and migrate curricula online. Some of these costs will be

“When states go broke, it’s not just the clerk at the DMV taking the hit. Downstream, millions of more jobs are covered in part by state budgets at nonprofit groups, which as a whole make up the third-largest sector of the U.S. economy, behind only manufacturing and retail.”

Time Magazine, “There Are Going to Be Layoffs,” State and Local Governments Brace for Cuts as Budget Crisis Looms

covered at the campus or district level, while others will come from state legislatures or state agencies. In any case, moving huge chunks of curricula online has immediate costs. And once these costs are absorbed, it is likely that

school districts, and higher education institutions, will seek to leverage those investments by offering more online learning in the future.

With the opening of the 2020 fall semester, we see that higher education has been significantly impacted, including some colleges with fewer total students and enrolled credit hours. Some institutions are going to all-remote learning models. Many universities have found themselves with fewer students (especially on campus) and less tuition revenue, smaller allocations from state government, diminished employer spending on training budgets (with a decline in tuition reimbursement opportunities), and an inability to raise tuition concomitant with the learning experience. This will lead to additional faculty and staff layoffs and/or changes in staffing models.

Decreases in government budgets will also ripple through the nonprofit sector, which is primarily

⁴⁶ National Tax Journal, September 2020, Implications of the COVID-19 Pandemic for State Government Tax Revenues, Jeffrey Clemens and Stan Veuger.

⁴⁷ TAMU Real Estate Center, Texas Housing Insight, James P. Gaines, Luis B. Torres, Wesley Miller, Paige Silva, and Griffin Carter (October 13, 2020).

⁴⁸ Texas Comptroller, <https://comptroller.texas.gov/transparency/reports/revenue-by-source/>

reliant on government grants and philanthropy for its revenues. This sector, which also includes churches, will become more reliant on private foundations.

Why does it matter? *State government plays a significant role in funding higher education. A belt-tightened state is likely to demand budget cuts from workforce, education, and health and human services agencies, resulting in layoffs in these typically recession-resistant sectors. Public colleges have a dual challenge with probable state budget reductions and also the possibility that a couple of graduating classes will enter a distressed labor market, affecting their employment and earnings prospects. This could affect funding formula calculations and puts a greater emphasis on offering education programs with the greatest labor market opportunities. Moreover, in the face of unprecedented job loss, students will more than ever be asking colleges how their education will improve their job prospects.*

9. The world is in recession too! COVID-19 has been a global pandemic causing recession in most countries. According to the U.S. Chamber of Commerce, 39 million U.S. jobs depend on global trade, including 6 million U.S. manufacturing jobs. The pandemic lockdown has closed borders and limited international shipments, removing a large chunk of potential revenue for exporting companies and affecting the supply chains for thousands of other companies.⁴⁹

A large part of the Texas economy is dependent on trade with other countries. In 2000, exports accounted for 14.1% of the Texas gross state product. By 2019 that percentage had grown to 17.4%. As the largest exporting state in the U.S., Texas is disproportionately and negatively affected by depressed world economies. Texas' largest exports are oil (and various types of gas), civilian aircraft and parts, computer parts and accessories, and a variety of petrochemical inputs, most of which will find diminished markets overseas — at least in the near term — as the global economy sputters. Federal Reserve chairman Jerome Powell lists the global aspect

of the crisis and its impact on the U.S. economy as one of four major headwinds to a strong U.S. recovery.⁵⁰

According to International Monetary Fund forecasts, instead of growing by a predicted 3% in 2020, the pandemic will cause the world economy to shrink by 4.4%.⁵¹ To put this in perspective, in the middle of the Great Recession in 2009, global GDP shrank by just 0.1%. In an \$88 trillion global economy, that is \$6.5 trillion of economic activity that evaporated because of the pandemic.

The global travel and tourism industry alone is expected to drop \$376.2 billion in 2020 from the original forecast.⁵² The logistics of tourism will be more challenging and ultimately less appealing, especially to older folks with more discretionary income who would otherwise be prime candidates for travel. That will depress income in the travel/tourism industry, but it will also affect the budgets of communities, and even countries, that rely heavily on tourism as a big part of their income.

According to the OECD, tourism will be “among the last sectors of the economy to recover lost demand.” Research by the World Tourism Organization (UNWTO) cites restrictive practices such as complete or partial closure of borders to tourists, destination-specific travel restrictions, total or partial suspension of flights, and requirements for quarantine or self-isolation after travel as headwinds to full recovery in that sector.

Speaking of older workers, the evidence is mixed on how the pandemic will affect older workers. Some signaling suggests that the mass layoffs have affected many older workers close to retirement who now may be unable to afford to retire and will stay in the labor market. This possibility is reinforced by fewer travel opportunities and more freelance and work-at-home choices, perhaps enticing some retirees back into the labor force or to delay retirement.

50 When questioned about the possibilities of a V-shaped economic recovery, Chairman Powell cited general uncertainty over the pandemic, the risk of longer-lasting (structural) unemployment, the potential of a wave of defaults in small and medium-sized businesses, and the deteriorating global economy as major headwinds.

51 International Monetary Fund October 2020 Forecast, [IMF: 'Less severe' but 'still deep' recession predicted | UN News](#)

52 Mobility Market Outlook, April 22, 2020.

49 U.S. Chamber of Commerce, see www.uschamber.com/international/international-policy/benefits-international-trade

However, data from the BLS indicate that labor force participation among older workers (55 and over) has fallen by 2% or roughly 2 million workers since the pandemic began. To put this in context, during the Great Recession between 2007 and the end of 2009, labor force participation for workers over the age of 55 increased by 1%.

Why does it matter? *As part of the community of nations, the U.S. and Texas have interdependent supply chains, tourism, and consumer relationships with countries around the globe. The economic health and well-being of these other countries has an effect on many high-paying Texas businesses, including those in the oil and gas cluster and manufacturing sector. Airlines have announced almost 50,000 layoffs effective October 1, 2020, with many thousands more taking voluntary severance packages.⁵³ Cutbacks in air travel, both foreign and domestic, reduces the demand for airline pilots. Fewer miles logged by an aircraft fleet reduces the amount of required maintenance and repair and demand for workers with those skills. Also affected are flight attendants, baggage handlers and counter/ramp agents. As more older workers leave the labor force, jobs they once performed become opportunities for younger workers. Many occupations with the highest average age of the workforce are in manufacturing, special trade construction, and supervisory roles.*

10. The stay-at-home culture: New forms of digital entertainment emerge. The aforementioned travel and tourism industry, also known as leisure and hospitality, has taken a serious hit to its domestic revenue streams and employment base. Airlines, cruise lines, hotels, casinos, restaurants and bars, live performance venues, movie theatres, theme parks, sporting events, and tourist-oriented activities have been among the hardest hit by the lockdown — and also have the biggest challenges to returning to previous employment levels.

According to the National Association of Theatre Owners (NATO), "The pandemic has been a devastating financial blow to cinemas ... 69% of small and mid-sized movie theater companies will be forced to file for bankruptcy or to close

53 Bloomberg Business, Airlines Near 50,000 Job Cuts as American, United Feel Squeeze, Mary Schlangenstein and Saleha Mohsin, September 30, 2020.

permanently." Each of these industries relies on the spark of human interaction for success and will be highly affected by social distancing practices and the trepidation of touch.

So, are there viable entertainment alternatives in the stay-at-home culture? The answer appears to be yes — at least for some. Sales of board games and jigsaw puzzles skyrocketed⁵⁴ during the pandemic, but most of our collective attention went to the internet. Streaming media giants like Netflix offer inexpensive, engaging online content that, when combined with big-screen LED televisions, approximates the movie-going experience. Interactive gaming, including competitive "esports," is already one of the fastest-growing activities in the country.⁵⁵



While cord cutting and interactive gaming was already popular before the pandemic, it is now mainstream. The computer networks and physical infrastructure (5G) to support this trend will continue to drive demand for more efficient connectivity and will become more important, as will the demand for companies and workers that construct, maintain and enhance the architecture of these networks.

Similar demand will be found in the highly competitive but potentially lucrative fields that create engaging game and related entertainment content. One company founded in 2006 called Roblox is a collection of online games, all created

54 Tanya Bricking Leach, Interest in Puzzles Soars, Along With Sales. Jigsaws provide multigenerational fun and an escape from worry, [AARP.org](#), May 18, 2020.

55 Esports (electronic sports) offer accessibility and inclusiveness of gaming. The diversity and increasing quality of the games themselves is engaging. In 2020 esports reached the billion-dollar mark in revenues, and prize money in the biggest competitions now rivals that of many professional leagues.

by its community of players. Some people call it the YouTube for games instead of videos. Children (and adults) can download the Roblox app and use it to browse and play its catalog of games. It also has social media features, like the ability to add friends and chat with them while playing. According to research from Sensor Tower, users spend as much time on Roblox as Instagram, Tik Tok, and YouTube combined.⁵⁶ It has created an interactive community in which gaming, game development and social media all converge in an environment that is protective of children.

The demand for high-speed internet service may widen the economic viability and quality-of-life gap between areas that have 5G broadband access and those areas with more limited access. High-speed broadband access is also being viewed as a significant factor in economic development, especially for attracting younger workers into a region or community.

Why does it matter? *Competitive esports attract new students to college. According to Pew research, 90% of teens (ages 13–17) play video games. Among boys the percentage is 97%. There is a strong recruiting angle for a college without a marquee sports program to gain notoriety in competitive esports and attract tech-savvy students. Moreover, network architecture, game development, esports statistics, AI, video editing, and related fields offer high-paying jobs for graduates at multiple award levels. Gaming will become an even more legitimate entertainment option, especially for young people, as*

“One of the major drivers of the video streaming market is the surging popularity of social media platforms, which can be credited to the improved access to the internet and connectivity.”

Video Streaming Market Report Analysis 2026, Share, Revenue, Growth Rate With Forecast and Impact of Covid-19, May 8, 2020

⁵⁶ Scott Galloway, Roblox and the Dispersal of Creativity, December 11, 2020, www.profgalloway.com/roblox-and-the-dispersal-of-creativity?utm_source=newsletter&utm_medium=email&utm_campaign=NMNM20201211

they endeavor to keep up with their friends without a physical presence. The limited social skills of young people, already a concern of many parents and employers, could be exacerbated by this trend. Shackled by restrictions on face-to-face contact, the pandemic will drive more social interaction online, negatively affecting personal communication skills, but potentially enhancing digital literacy skills.

11. The end of paper? Speeding up digital transformation. We often say that it’s a “digital world,” but most of us still conduct business using the same analog processes we always have; we just use computers to replace paper notebooks and databases to replace ledgers. There’s a reason why Microsoft Office is the world’s most popular software. But a real digital economy starts with new technology to drive fresh, innovative processes. This has been happening for some time, but the need to interact with colleagues and customers exclusively through digital media has rapidly accelerated this transformation.

Futurists have long predicted the digital transformation revolution, portending the end of paper as the primary medium of storage and communication. That transformation has been happening, but the pandemic has kicked it into overdrive. Hewlett Packard Enterprise (HPE) CEO Tarek Robbiati sees digital transformation accelerating. He says, “The enterprise of the future will be uncensored, cloud-enabled and data-driven. That is a reality today.” His contemporary Microsoft CEO Satya Nadella noted early in the recession, “We’ve seen two years’ worth of digital transformation in two months.” Digitization of records facilitates touchless access, eliminates the need for storage in centralized facilities, and opens avenues for remote access needed to facilitate an at-home workforce. This also includes a potentially declining use of paper currency, driving greater demand for credit cards and digital pay platforms like Apple Pay, Venmo and PayPal. Specific technologies that are clearly here and expanding include:

- **Cloud computing:** The use of cloud-based web services becomes a fully operational transition, not just a shift in technology.

- **Data analytics:** Analytics and use of natural language processing becomes pervasive and accelerates into new markets and industry applications.
- **Artificial intelligence:** AI will increasingly be used to streamline and automate business processes.
- **Information/cybersecurity:** Security becomes even more crucial to inspect, detect, protect and deflect stores of digital information.



- **Blockchain technology:** Blockchain is a different type of database that stores detailed data into small groups or blocks that are then linked through digital chains. The distributed design makes the technology ideal for new transactions such as education and skill records, finance, cryptocurrency, and supply chain management.

Why does it matter? *As more sensitive data records are digitized and stored in the cloud, the greater potential there is for cybertheft. This will accelerate the demand not only for cybersecurity specialists, but also for digital archivists and persons with digital library management skills. The increased use of digital payments accelerates the need for blockchain analysts and those with related digital finance skills. In a larger sense, the pandemic has accelerated the famed "Internet of Things" (IoT) movement in which all aspects of society are digitally integrated. This digital world requires two primary talent groups: those that can create and manipulate digital records, and those that understand and can conceive of applications of digital record technology. Whether it is bridges and overpasses communicating with engineers or*

items of clothing providing environmental feedback, the IoT will stimulate demand for technical talent in network and telecommunications. A byproduct of this is the demand for technicians to install, repair and maintain cell towers and various parts of the telecommunications infrastructure. It also requires creative minds to envision new applications of technology, new products and new approaches to customer service (customer onboarding specialist) and digital marketing. One creative application is the advent of telemedicine. By applying video streaming technology as a substitute for personal interaction with a physician, telemedicine gives broader access to health care to rural populations and non-ambulatory persons. It is another example of where an emerging trend was simply accelerated by the pandemic.

12. Building the new infrastructure: The kids ate all my bandwidth. People restricted to home confinement or even spending most of their workday at home still need to reach out to co-workers, friends and family. The internet is the web that connects us all. As more educational content moves online, schools need to guarantee that all students can access digital curricula and lesson plans, which can include video-heavy and streaming content. The same applies to at-home entertainment with more streaming, interactive content requiring larger amounts of high-speed bandwidth. Expect greater emphasis on a build out of digital telecommunications networks, fiber optics, a heightened and competitive race to install 5G network capacity, an extension of those networks to "last-mile" customers — especially to reach rural students — and demands for improved network performance. Consumers will expect some of these service upgrades to come automatically from their service providers at no additional cost. Other upgrades will fall into a pay-for-services model.

In addition to communications infrastructure, the pandemic may result in greater public infrastructure investment. Public transportation and utilities (including green energy) infrastructure investment can be used to stimulate economic and employment growth as we recover from the recession, while also addressing issues

of America's aging infrastructure.⁵⁷ The Bureau of Labor Statistics⁵⁸ studied the employment impacts of updating America's infrastructure and identified multiple phases of what a build-out entails and the occupations involved. Constructing new roads, bridges and airports starts with workers who create the plans and structural designs and affects jobs for civil engineers, environmental engineers, architects, cost estimators, drafters and surveyors. Worksite preparation involves finding workers who know how to drill into, move and dredge earth and site debris. This includes operating engineers and other construction equipment operators.

Why does it matter? *This trend was well underway before the pandemic but has since accelerated. To address all these markets, demand will increase for engineering workers to design these next-generation networks, telecommunications, and network managers and architects to customize the technology for customer-oriented solutions, and a host of related marketing and support positions. Should a renaissance in construction and physical infrastructure repair occur, the already strong demand for skilled construction workers, plumbers, electricians, welders, and related professions will increase.⁵⁹ BLS projects the fastest occupational growth in infrastructure upgrades to occur for solar photovoltaic installers, wind turbine mechanics, and earth drillers. Because of the technical nature of many of these jobs, there will likely be increased demand for high school and college technical training in these fields.*

13. Are robots the answer? The increasing use of robots in a post-pandemic world. If interpersonal contact is deemed risky, then more work activities previously performed by humans will migrate to robots. Although automation of many work activities is already well underway, evidence from a new study by the Philadelphia Federal Reserve Bank suggests that the pandemic has accelerated that transition. The study suggests that "the pandemic displaced more workers in automatable occupations, putting them at a greater risk of

being permanently automated." Examples include self-service kiosks such as cashless toll booths or hotel check-in stations, AI-driven menu trees replacing human customer service agents, and germ cleaning and delivery robots.⁶⁰



There are robots performing complex surgical procedures. As a result of the pandemic, robots can be found cleaning hospital rooms and facilitating telemedicine visits, allowing doctors and nurses to talk with patients remotely. Even the food delivery industry, which has created thousands of entry-level jobs during the pandemic, could be replaced by robot food delivery.⁶¹ DoorDash, which frames itself as a technology company that connects people with the best food in their cities by facilitating door-to-door delivery, is piloting automated delivery for high-density city environments. In fact, robotic food delivery in restaurants and hotels is no longer unusual. The permanent adoption of such technologies is a function of the economic costs and customer willingness to interact with machines over people.

There are even more mundane, but significant, applications of computer technology. Robotic process automation (RPA) provides a way for machines to take over routine and repetitive tasks, especially office and clerical tasks, without investing in a big software project or worrying about legacy computer systems.⁶²

57 Infrastructure Post Covid-19: Sector in Focus Amidst Economic Stimulus Push, Fitch Solutions, July 17, 2020.

58 Bureau of Labor Statistics Beyond the Numbers series, The employment outlook for occupations tasked with building America's Infrastructure, October 2018.

59 Both political parties have proposed infrastructure plans for 2021. See Trump Team Weighs \$1 Trillion for Infrastructure to Spur Economy, Jenny Leonard and Josh Wingrove, June 15, 2020.

60 "Forced Automation" by COVID-19? Early Trends from Current Population Survey Data, Lei Ding and Julieth Saenz Molina, Federal Reserve Bank of Philadelphia, September 2020.

61 See <https://www.mlive.com/news/ann-arbor/2020/05/robots-delivering-four-times-as-many-food-orders-in-ann-arbor-during-coronavirus-crisis.html> Food delivery company DoorDash has also begun using robots to drop off food orders.

62 The Pandemic Is Propelling a New Wave of Automation, Will Knight, Wired magazine, June 12, 2020.

Why does it matter? As robots proliferate, so will the demand for robotics technicians, knowledge of mechatronics, and industrial technology/technician programs. The push toward autonomous vehicles, including delivery robots and drones, will create new demand for workers to program, maintain and repair the technology. But equally important are those jobs that design industrial systems, such as industrial or process engineers, and people who invent new applications of robotic technology within business processes. This latter group of workers will require strong critical thinking, creativity, and problem-solving skills — but also a background in how various technologies function. Some of the fastest-growing fields will be in areas of applied technology, test instrumentation, test system design, and process automation. On the flip side, governments will face social policy questions about jobs lost to — or restructured by — technology, many of which are likely to be entry-level customer-facing positions most affected by the pandemic. Many of these jobs provide students with their first work experience or to offset tuition costs. Projections on the potential number of technologically obsolesced jobs have even resulted in serious conversations about a universal basic income and payroll taxes being levied on the value-added of robotic production.⁶³ Ultimately, reskilling displaced workers will become a top business and economic priority to replace and fill gaps in an evolving economy.

14. Small business suffers while the gig economy flourishes. The pandemic has disparately affected the service sector, notably retail, leisure and hospitality, and personal services. These industries have a higher proportion of small businesses that have been traumatized by the economic lockdowns. In Texas, only 34.7% of workers in accommodation and food services were in companies with 500 or fewer workers, while only 19.8% of workers in the arts, entertainment and recreation sector were in large businesses. The National Federation of Independent Business notes that “what happened in 2020 will not stay in 2020, it will spill into 2021 with a vengeance”⁶⁴ as measures of small business optimism move into negative territory. Economic research from Yelp.com indicates that 163,735 businesses have

closed, with 97,966 indicating that they have closed permanently, both highs not seen since the Great Depression.

Evidence abounds that shows increased bankruptcies among small businesses. But most businesses don't show up in the bankruptcy statistics. According to research by Robin Greenwood, roughly 91.7% of firm closures are due to companies that simply stop operating without bankruptcy proceedings or involvement of the courts. In the wake of small business decimation during the pandemic, the success of larger, capital-rich technology companies has led some to question the true competitiveness of the American economic landscape.⁶⁵



Despite these closures there is one promising sign: a surge in new business applications in the midst of the recession. Since the 1980s the number of start up businesses has been declining. However, the number of new business applications surprisingly rose in 2020. In fact, new business applications in the third quarter of 2020 were at their highest level since 2004.⁶⁶ Interestingly, restaurants and bars and online retailing were the top business categories. Notably, the strongest growth was in new business applications in which there was no expectation to hire employees. More entrepreneurs are becoming freelance operators than business proprietors. This continues a trend from the last several decades in which new businesses have fewer employees.

65 Will Competition Be Another COVID-19 Casualty? Nancy Rose, The Hamilton Project, July 2020.

66 Business Formation: A Tale of Two Recessions, John Haltiwanger, et al, Census Bureau, Center for Economic Studies, January 2021. The authors also caution that only a portion of business applications result in actual businesses and that this transition rate may be lower than trend.

63 The 'Robot Tax' Debate Heats Up, Richard Rubin, Wall Street Journal, January 8, 2020.

64 [Small Business Economics Trends | NFIB](#)

The gig economy, characterized by independent contractors rather than employees, has flourished in recent years. Prior to the pandemic, much of this growth came from ride-sharing companies like Uber and Lyft. However, companies like DoorDash and Grubhub that offer door-to-door delivery services expanded significantly during the pandemic. This self-employed sector of the economy has provided enormous opportunities for many workers, including those who supplement their income from their primary job or who choose not to work a full-time job.

But the employment status of these contract workers could change. Many states, especially California, are introducing legislation promoting employee-like benefits for contract workers. With vocal support from the new federal administration, don't be surprised to see a resurgence of the Protecting the Right to Organize (PRO) legislation to formalize the gig economy and give workers employment rights rather than being treated as contractors.⁶⁷

Why does it matter? *A major tenet of the American dream is that small businesses are the backbone of the U.S. economy, with over half of Americans working in companies with fewer than 500 workers. Yet, on the flip side, in 2020 almost 48% of workers were in companies with 500 or more employees, an increase from just over 42% in 1995. Many high schools, colleges and workforce development entities are rightly encouraging entrepreneurship. But recent trends tell us more likely than not this means working as an independent contractor rather than starting a business with employees.*

The skills to run a business and be your own boss are not dissimilar, but there are differences between organizational management and self-management. Self-employment puts a premium on employability skills like initiative, time management, communication, and digital skills.

15. Will we hire, how we hire, who we hire: A new perspective on hiring practices. How one gets a job, learns to thrive on the job, and gets a next job

is another pattern that will be changed after the pandemic. If more remote work becomes the new norm, more virtual recruiting and interviewing will become the human resources response. In his work *The Future of Recruiting*, Gregory Lewis notes that virtual recruiting is here to stay.⁶⁸ In a 2020 LinkedIn survey, 81% of talent professionals agreed that virtual recruiting would continue post-COVID. Another 70% said that virtual recruiting would become the new standard. Most likely, as with the location of work, recruiting and interviewing will be a hybrid model with in-person interviews reserved for key personnel.

Bringing back former, valued workers will be a priority for many businesses. Recruiting new, increasingly diverse talent will remain important, but business is less likely in the near term to massively ramp up direct hiring. Companies will be more likely to build greater internal talent pools from the core of employees that survived the pandemic restructuring. In the new socially distanced world, it will be easier to look for talent from within rather than bringing in candidates from afield. More talent will be bought or borrowed through the use of contract workers or contracted services.⁶⁹ This practice emerged strongly from the Great Recession and has accelerated during this recession.

“The future of talent acquisition lies in reskilling, rather than finding someone better in the market. If you need to hire today, you need to reskill yesterday.”

Rajesh Ahuja, Global Head of Talent, Infosys

The hiring that does occur will increasingly be competency- or skill-based hiring, especially for higher-paying jobs. On the positive side, this practice increases the visibility of candidates with appropriate skills but who may not have a degree from a prestigious university or live in an

67 In February 2021 the UK ruled in favor of Uber drivers by declaring that drivers are “workers” from the time they log on to the app until they log off, thus establishing a form of minimum wage. Conversely, in 2020 California voters passed Proposition 22, which said that freelance workers should continue to be classified as independent contractors.

68 Gregory Lewis, *The Future of Recruiting*, LinkedIn Talent Solutions, October 21, 2020.

69 Brian Kropp, Distinguished Vice President, Gartner, notes that, “Our research finds that 32% of organizations are replacing full-time employees with contingent workers as a cost-saving measure.”

Employability Skills for Independent Work	
Characteristic of Work	Necessary Skills
High degree of autonomy	Initiative, organization and time management
Payment by task or assignment, no benefits	Money management, financial awareness
Short-term relationship between worker and client	Self-promotion, ME Inc., entrepreneurship
Digital platforms are the foundation of networking	Mastery of digital information processing skills
Competition based on portfolio	Differentiated and specialized skill set
Work often requires collaboration with others	Teamwork, project management

adjacent geographical area. It also places greater pressure on schools and workers to articulate their skill sets and not just rely on a diploma to signal worker qualification.⁷⁰ This will lead to greater reliability on badges and third-party certifications to document skill sets.

A greater likelihood of more remote work has also caused business to rethink pay strategies, including adjusting pay based where the worker lives, location-based wage premia, and how to price contract workers.

Business has also learned a few lessons about staffing in an unexpected crisis. Many did not have formal remote work guidelines or online onboarding materials. Two specific trends that converged during the pandemic recession have been: 1) the growing demographic importance of millennials and Gen Z people in the workforce,⁷¹ and 2) the fact that Gen Z is a social media generation and to reach them means to be active on a variety of social media platforms. This includes job postings but also promoting a culture or brand that is attractive to potential employees from these generations. As important as brand and culture are to recruiting new generation workers, the pandemic has stymied some of that

momentum. As Tim McElgunn of HRMorning⁷² puts it, "Nurturing culture gets more challenging in dispersed workplaces."

Why does it matter? *As business moves to more project-based, cross-functional work, the demand for project management skills increases. Recruiters will look more for willingness and ability to learn. Identifiable, transferable skills will take priority over academic pedigree. The pandemic has also placed a premium on business recovery strategies and succession planning. Business needs to be able to catalog the skill profile of their workforce to move talent to projects as needed, identify skill deficiencies in their current workforce, and identify the best internal candidates for upskilling and promotion. This enhances the need for workers to be able to articulate their skills in the work context and keep current their skill and knowledge portfolio. With business more reticent to bring in outside talent, employees seeking to move up in their current organizations will have better opportunities to promote themselves for higher-paying positions with the assurance they are willing to learn any additional skills necessary. Schools and workforce services providers that conduct practice interview sessions will want to add a section to their lessons on effective virtual interviewing.*

70 Connecting Credentials work group report, Applying Demand and Supply Signals, November 2017.

71 Author calculations of generational employment using the Pew Research definition and data from the American Community Survey show that millennials (39.2%) and Gen Z (7.3%) collectively represent 46.5% of 2019 Texas employment. In contrast, baby boomers comprised just 19.6% in 2019, down from 45.7% in 2000.

72 5 Ways the COVID-19 crisis will transform HR's role, <https://www.hrmorning.com/articles/covid-will-transform-hr/>



Conclusion

These are not the only trends in motion, and you might have noticed how many of those mentioned here are highly interrelated.

There is a tendency in these types of exercises to drift into discussion of general macroeconomic trends, i.e., when will the economy recover, how will the financial markets respond, which industries will grow fastest, what will happen with wages, etc. And these are all important metrics to consider as the recession winds down.

For example, average wages skyrocketed in the early days of the recession, but only because so many low-wage jobs were lost. These numbers are returning more to normal. The pandemic caused many people to change residence and businesses to reconsider their location. It is also true that many young people moved back home and older people consolidated residences. Personal and corporate migration, especially from New York and California to Florida and Texas, and folks leaving central cities for the suburbs, will have an effect on regional macroeconomic conditions and housing markets.⁷³ These trends will affect certain regional economies but not necessarily how we enhance employability or worker preparation.

There is also a tendency to reexamine all the cool technology advancements and proclaim that they are either driven or accelerated by the pandemic. Who doesn't want to talk about autonomous vehicles, drones, holograms or 3-D printed human organs? As important, how will these technologies influence the disciplines of bioethics, aviation priorities, traffic patterns and privacy laws? Technologies seldom proliferate in a vacuum. Some of these technologies are discussed in this analysis but only within the context of a larger trend. While these specific technologies are already thriving, many other technological advancements are closely on their heels. Which specific job titles, knowledges and skills will be most influenced are yet unknown. As we've seen, the labor market is seldom in a static state.

But universally the challenge to our education and training community is to decipher which phenomena will become so commonplace that they create new jobs, alter the training regimen, and affect the demand for workers, educational programs and specific skills. This is where science meets the crystal ball. As the economy recovers, how these and other business practices, trend and phenomena forever shape our purchasing patterns, our personas, and our economic potential remain to be seen. Hopefully, the trends presented here will stimulate additional thinking on this topic.

⁷³ Zack Wichter, The coronavirus pandemic upended moving trends, USPS data shows, October 20, 2020, <https://www.bankrate.com/real-estate/moving-data-shows-exit-from-cities/>

