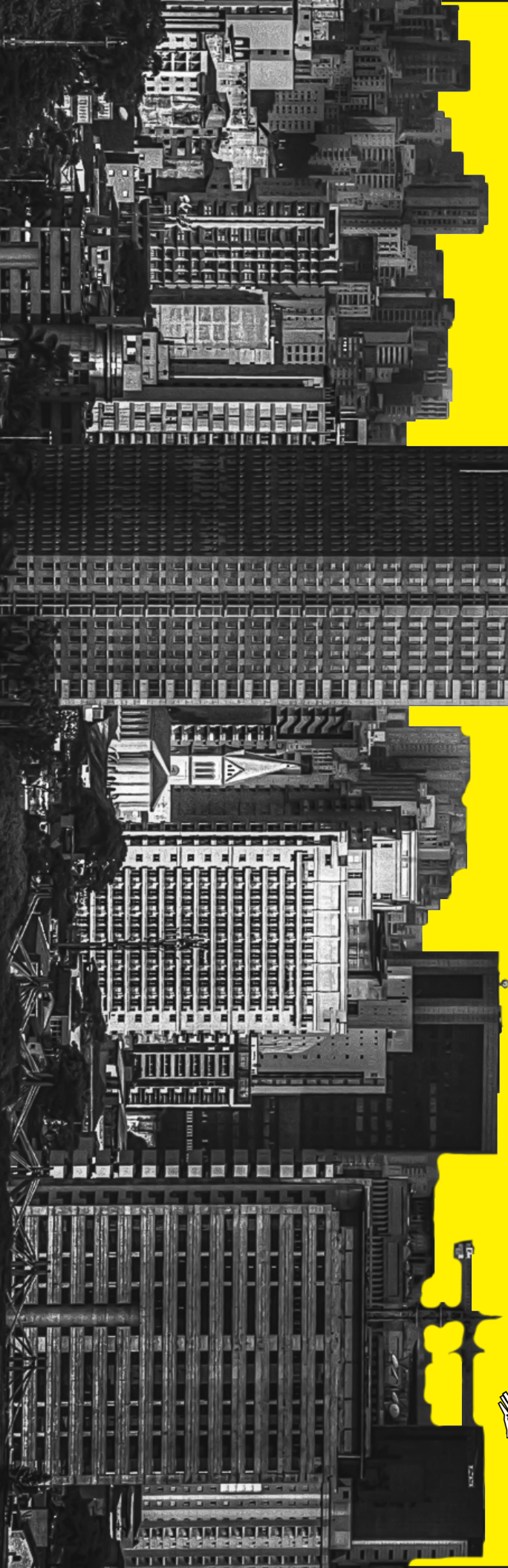

THE FUTURE OF MILLENNIAL JOBS

BY
TOM ALLISON AND
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YOUNGINVINCIBLES

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About Young Invincibles

Young Invincibles is a non-partisan, non-profit organization that works to expand economic opportunity for young adults -- ages 18 to 34 years-old -- through policy analysis and advocacy. With offices in six major cities across the country, its research and organizing experts seek to elevate the voices of young adults in top policy debates, and provide solutions to major economic challenges for the Millennial generation.

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Introduction

As a high school student in Joplin, Missouri, Chris Delzell witnessed some of his older family members struggle with lay-offs and long-term unemployment. Rather than risk repeating the employment difficulties of his family's past, Chris looked to the future, and planned his education and career with two priorities in mind: job security and flexibility. Chris enrolled in Missouri Southern State University to earn a Bachelors of Science in Nursing.

In nursing, Chris said, "I will always have a job. People are always going to be sick, need surgery, and keep having babies. My job is never going to be sent to China or get phased out over time." Chris, now 26, enjoys a successful career and comfortable lifestyle: "I'm never going to get really rich, but I will always have my income. I don't need a million dollars a year to be happy, but I am always going to have what I need." Chris is currently pursuing an additional technical accreditation in anesthesiology to advance his career even further.

A sustainable and successful economic future will require forward thinking like Chris'. But predicting the economic future is a challenging task, and the huge technological changes that we have already seen – combined with what is yet to come – only make it more difficult.

Futurists are split on whether technological advances will produce a net increase or decrease in employment,[1] and rapid changes in technology mean that the jobs of the future may be vastly different than what we see today. Despite those great unknowns, we can start to take count of what we do know. Because young workers are the first to experience this new era, we can offer a unique lens into what may be to come. We can dig into trends already impacting today's Millennial in the changing workplace, analyze Millennial worker habits and aspirations, and see how they align with established projections. By doing this, we can offer a vision to better prepare today's youth for the future workforce, while also working toward reversing economic and racial disparities already present in our society.

What's in store for young people? Even after rigorous analysis, we cannot be certain. But we know that young workers will have to be prepared to approach the workplace from a new perspective – with creativity, versatility, technological literacy, and the ability to adapt to high-demand fields – and many Millennials already bring that perspective and tech-savvy background, if not the specific experience required.

However, there are huge disparities in how young people prepare for careers. To make the future workplace a positive reality for all workers, it is crucial that we identify and alleviate the digital divide, while also revamping our higher education system to ensure all young workers have an on-ramp to a successful future.

Background

The 1964 World's Fair in New York was dedicated to "Man's Achievement on a Shrinking Globe in an Expanding Universe." The fair encapsulated the optimistic mood of the decade. Young workers graduated from high schools and colleges into an expanding economy filled with manufacturing jobs. Pavilions run by corporations such as IBM and Bell featured their visions for rapid computerized language translation, mainframe computers, and telephone modems, suggesting that computers would one day revolutionize the world we live and work in.

Fifty years later, that vision of technology brings the global community closer together. Yet the optimistic vision of economic prosperity has been tarnished by severe economic retraction, industry shifts, and ironically, lost jobs due to increased technical efficiency. And while Millennials—young adults born between 1976 and 2001—may have access to and the knowledge and skills to use portable devices more powerful than IBM could have dreamed of, they are graduating into the worst economy since the Great Depression and suffer from chronically high unemployment rates.[2]

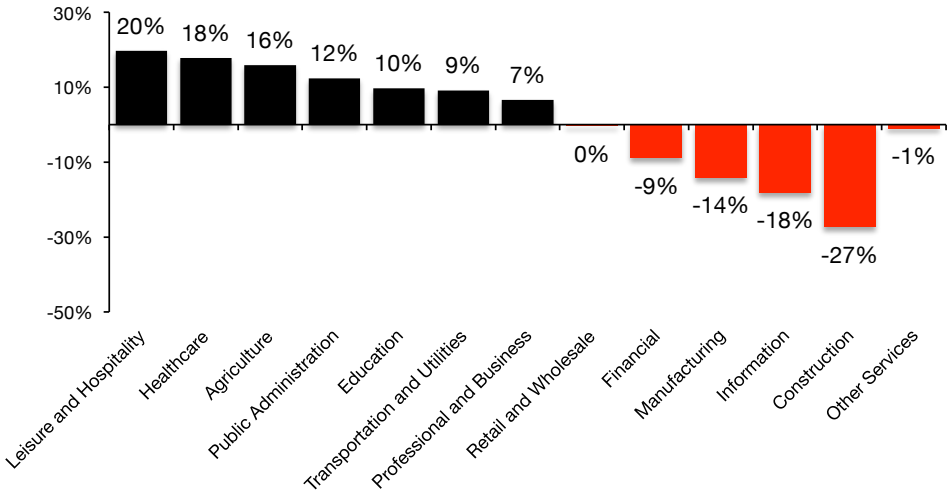
For those young adults fortunate enough to be employed, their jobs are disproportionately more likely to be part-time. One out of every four employed 18 to 34-year-olds is working only a part-time position, as opposed to one in six adults over 34 years old.[3] Furthermore, employers have shifted towards hiring more part-time and temporary workers in lieu of investing in full-time employees. While still making up a relatively small sector of the labor market, contract workers have also increased four-fold in the last thirty years.[4] According to Career Builder's annual jobs forecast, 42 percent of employers plan to hire temporary or contract workers in 2014.[5] The good news is that over 40 percent of companies say they plan to turn some of those positions into full-time positions in the future.[6] Yet the trends are alarming for young adults who are starting their careers with fewer options than before.

Given today's struggles, how have these experiences shaped expectations for the future, and what do trends in demand for labor mean for tomorrow's worker?

Changes in What We Will Do

Over the past 10 years, four major industry sectors have seen rises in Millennial unemployment—construction, manufacturing, information, and the financial sector (Figure 1).[7] Research has shown that manufacturing and construction are more sensitive to changes in the economy,[8] and the Great Recession crushed the housing market. Furthermore, the decline of the information sector is almost certainly due to the dissolution of traditional media, due to the spread of technology. Publishers of newspapers, books, and magazines are rapidly slashing their payrolls. Finally, the recession also pushed troubled financial institutions to make large cuts. For instance, Citigroup and Bank of America implemented two of the largest layoffs in U.S. history between 2008 and 2011, cutting 80,000 jobs.[9]

Figure 1: Change in Employment by Sector (ages 18 to 34) 2004-2013



Note: The sector related to mining and forestry is omitted from this figure for scaling. This sector has exploded among Millennials, with a 182 percent increase in employment over the past ten years. Even with this growth, this sector represents less than 1 percent of the jobs held by 18 to 34-year olds, and its growth is projected to slow dramatically over the next ten years. Data: 2013 Current Population Survey, March Annual Social and Economic Supplement, United States Census Bureau.

It is unclear how the slow rise out of the Recession will change these sectors in the future, but the good news is that all other sectors remained approximately the same or grew in varying degrees. In the past 10 years, the health care, public administration, and leisure and hospitality sectors have all experienced double-digit increases in the number of 18 to 34-year olds employed.[10] These sectors largely represent the expansion of the service economy. As baby boomers age and retire, there has been a shortage of medical personnel. Combined with the recession, this increased demand

makes health care professions more desirable.[11] These trends give us a window into what the economic sector breakdown could look like further out, but may also mask greater changes that may occur due to continued technological innovation.

While it can be hard to predict what future technological shifts will mean for available jobs, we are already seeing glimpses. Imagine a system that enables data flows from roadside sensors as well as transceivers in each vehicle that transmit real time weather and road conditions, allowing faster and more accurate weather advisories to be distributed, as well as more efficient road treatment in inclement weather. This kind of system is not fantasy, but is the Department of Transportation's experimental Clarus project.[12] With its implementation, not only will roads be more quickly cleaned during winter weather – allowing more people to access their workplace or families safely – but the driver of the salting truck will drive fewer miles to clear the roads that need it most.

In health care, Dr. Ritu Agarwal, the chair of the Department of Information Systems at University of Maryland's Robert H. Smith School of Business, envisions personalized health care based on constantly updated data streams, along with the implementation of mobile technology to monitor our activities to stay healthy.[13] Nurses could see more patients because they have instant access to readouts of blood pressure, heart rate, and more. This increase in efficiency means that one nurse can actively work with more patients, decreasing hospital wait times. Whether efficiency's impact will outpace the projected shortage of nurses, and hurt someone like Chris' future job prospects is unclear. (For what it's worth Chris doesn't think so: "You can automate many things in the world but the changing dynamics of a patient's sickness or disease process are not something I think a machine can ever diagnose and fix efficiently.")

Building an infrastructure capable of handling the mass digitization and transfer of information will touch virtually every economic sector, including middle-skill jobs.[14] An enormous workforce will be needed to design, build, run, maintain, and protect these new systems. Indeed, the Bureau of Labor Statistics (BLS) projects that between 2010 and 2020, the computer systems design and related services sector will see its output grow by 6.1 percent annually, double that of the 2.9 percent projection across all industries. Furthermore, BLS projects this sector's employment will grow 3.9 percent annually, representing 700,000 new jobs by 2020.[15]

Certainly, while these near-future projects promise economic efficiency and increases in safety and health, their negative effects on members of the workforce, such as the truck driver or medical assistant, could be significant. The effects of self-driving cars on taxi and bus drivers, delivery people, and the automobile industry itself, could be devastating, rendering millions of jobs obsolete. On the other hand, it will

fundamentally change and improve the way many people will work. The same may be true for other low-skill jobs that technology can and will displace, potentially exacerbating inequality by removing the jobs of those who need them most. Thus, while we may not know the exact breakdown of the future workforce, we can say confidently that skills and education will continue to drive worker success in the labor market. By just 2020, approximately 65 percent of future job openings will require at least some post-secondary degree, and one can only expect this trend will continue far beyond. Millions of these jobs will not require a bachelor's degree, but instead a vocational degree or certificate.[16] This means opportunity for the educated and disadvantage for those without.

Changes in How We Do It

Technology will also drive changes to the workplace experience, not just the kinds of jobs we take on. Broadly, expanded access to information, faster analysis, increased connectivity, and better predictions will have broad impacts on the way we live and work. J.P. Rangaswami, the chief scientist at the database management company Salesforce, describes a technologically integrated future: "The net effect will be to reduce waste everywhere: in physical flows and logistics, in the movement of people and goods; in logical flows and logistics, in the movement of ideas and information; decisions will be made faster and better, based on more accurate information; prior errors in assumption and planning will be winkled out more effectively."[17] In Rangaswami's vision, work will require less storage and recall of information. John Hagel, a researcher and business consultant, describes this phenomenon as a "Big Shift" from emphasizing information stocks to prioritizing information flows. Future businesses will innovate by drawing concepts from a diverse variety of resources and consolidating this information into new ideas.[18]

In the current system of information stocks, businesses stockpile information and access it internally. This system is inefficient, hinders creativity, and discourages utilizing outside information. Indeed, research has shown that diverse teams of workers approaching problems from different perspectives produce more new ideas and improve economic performance.[19] Put another way, the greatest economic boons will come from informative collaboration and the rapid flow of knowledge, instead of internal information stockpiling. In this future, individuals who are capable of quickly accessing information flows and analyzing the ideas that move through them will thrive.

The increased digitization of work has created another trend – the rise of teleworking. Over 30 million employees work from home (approximately one out of every five

working Americans), and another 63 percent will start by 2018.[20] Teleworking is estimated to save employers thousands of dollars per year. Employees also reap the benefits, saving between $1,600 and $6,800 per year in reduced transportation costs, clothing costs, and more – on top of saving about 15 days per year in reduced commuting time. [21, 22, 23] These savings, along with demonstrated increases in productivity and morale,[24] mean that increased teleworking is sure to be a part of the future of work. Yet positions that allow teleworking are generally the highest paying, with over 75 percent of those working from home earning over $65,000 per year.[25]

The future workplace will require an increasingly educated and skilled workforce with a level of comfort with technology vastly different than previous decades, and capable of adapting to technologies radically different than those which exist today. In some ways, Millennial workers are ready and waiting for these changes. However, those two demands – skills and technological savvy – could also threaten to widen existing disparities even more in the decades to come.

Millennial Workers

Despite the often-negative stigma seen in coverage of today's twenty-somethings, Millennials are hardworking and driven – and in fact many Millennial aspirations seem to align with the broader trends and projections for the future of work, more so than other generations.

Recall Chris' second priority for his economic future: flexibility. Chris liked the flexibility of working three twelve hour days - as opposed to the traditional 9 to 5, Monday through Friday schedule - and knowing that he would never be confined to one specific city, state, or region of the country. Fitting his adventurous spirit, Chris said of his nursing career, "I could move across the world and know that I could find work."

The research into this generation's view of the world and work is limited, but does give us reason to be hopeful, as does Chris' story. In general, Millennials value flexible hours, geographic and employer mobility, social impact, team collaboration, and technology in their work. Many younger workers are also uniquely prepared for a shifting economy that requires digital competency and the adoption of new technologies and models. Taken together, these aspirations offer both challenges and opportunities for the future workforce.

Work-Life Balance/Workplace Flexibility - Millennial workers appreciate a healthy work-life balance, often over increased compensation and faster advancement.[26, 27] They are not convinced that devoting excess time to work is worth the sacrifice. This means that Millennials favor flexible hours, teleworking opportunities, and easy transience between employers. Interestingly, these are all defining characteristics of temporary work.

Commitment - Millennials change jobs more than other age groups, although it is unclear if this is driven by age, the business cycle, or generational differences. On average, members of "Generation Y" change jobs every two years. By comparison, members of "Generation X" typically spend about five years with each employer, and baby boomers spend about seven.[28] Furthermore, 38 percent of Millennials do not expect to work at a job for more than nine years.[29] Relatedly, Millennials assume that they will never benefit from a pension or social security, leading to aspirations for financial independence through 401(k) or retirement benefits.[30]

Young people are also less attached to location - a quarter of those aged 20 to 29 moved between 2011 and 2012,[31] more than double the national average of 12 percent.[32] In a world with nearly instant communication and digital collaboration -- geographic location matters less and less.

Meaningful, Collaborative Work - Contrary to assertions that they are lazy and spoiled, Millennials work as hard at their jobs as past generations.[33] But they are also more idealistic: young workers value meaningful work and personal fulfillment over higher pay,[34] accolades, or promotions.[35] That being said, young workers are sector-agnostic, flexible to work in large corporations, small businesses, nonprofit and government organizations.[36]

Millennial workers also tend not to tolerate unpleasant workplaces that do not allow them to express their values.[37] They value a collaborative approach to work tasks, preferring to work in diverse groups emphasizing teamwork and community.[38]

Technological Aspirations - Not only are Millennials prepared to use technology in the workplace, they demand it: they expect to have access to the best tools and latest technology for collaboration and execution.[39]

Where does this vastly different perspective come from? Much of it must be cultural – the result of changing times and changing attitudes and a childhood vastly different from others as a result of technological innovation. Some of it may the result of a new reality seen by Millennials, in which a pension is not a realistic expectation, and in which steady work at one workplace is not necessarily unappreciated, but is often not viewed as a viable option. Interest in impact and workplace environment could clash with some trends in the direction of workplace changes, although there

is some evidence that those values are in fact driving the decision-making of at least some employers.

More research should be done to understand and quantify those expectations and their impact. In the meantime, it is clear that many of the future changes on how we do work may be less of a shock to this generation than to seasoned workers. Yet there are additional pressing concerns. Current educational and technological disparities threaten to widen inequality and leave some workers behind.

Creating A Workable On-ramp to the Future

Working against today's young workers is a mismatch between educational outcomes and workforce demands. On top of this, there is a growing divide in digital access and literacy. Together, these impediments threaten to exacerbate major socioeconomic and racial disparities that already exist. Without forward-thinking interventions, Millennial workers without the technological skills and education required to thrive in the future economy will be at a serious disadvantage in coming years.

The Digital Divide

Just like Chris, Marcus Spurlock, a 24-year old Washington D.C. native, struggling with student loans and an incomplete college record, also tried to predict the future and prepare accordingly: after returning home to live with his mother, Marcus began taking free computer and IT classes at a local non-profit. "Computer skills have become more important to every job, and will continue to be as we move into the future," Marcus said. "I want to own my own business, but for right now I want to get my foot in the door with IT, where I'm provided increased stability and reliable hours and pay. I don't want to get stuck in a dead-end job."

But Marcus' socioeconomic background threatened to exacerbate his disadvantages, particularly considering his interest in the growing IT field. Marcus' mother has never been able to afford an Internet subscription at home, creating barriers in pursuing his education and career. For instance, nearly every work or educational opportunity he has discovered has been through word of mouth. Marcus uses the public library's computers to study, communicate, or apply for jobs, but he is restricted by the two-hour-per-day time limit. On a tight budget, transportation to and from access points quickly becomes a factor as well.

Studying at home has been another challenge: "I went to class a little bit early to

catch up on the materials sent via e-mail I might have missed. I downloaded things I needed to my desktop, saved things on a USB drive. Aspects of his curriculum housed online like certain videos and tutorials, "I just didn't use as much," he stated.

Marcus's story reinforces the essential fact that Internet access, research skills, and analytical ability are all essential for capitalizing on the economy of the future. Every aspect of the employment process, from finding a job, to actual work – both in the office and at home – benefits from an Internet connection. Even the job search process is becoming increasingly multi-modal and organic, relying on multiple streams of information rather than a direct and organized process.[40] According to Federal Communications Commission Chairman Julius Genachowski, over 80 percent of Fortune 500 companies post job openings exclusively online.[41]

While 25-34-year-olds access the Internet at the highest rates of any other age group,[42] there are gulfs in Internet access by race, ethnicity, socioeconomic class, and education. Unfortunately, the groups with the least Internet access are already among the most disadvantaged in our society. In 2012, only 68 percent of African American and 64 percent of Hispanic Americans use the Internet, compared to 80 percent and 83 percent of their white and Asian counterparts, respectively.[43] There is also a clear correlation between income and access. Just over half of workers making less than $25,000 have Internet access at home, compared to over 95 percent of all earners making more than $75,000.[44] Unsurprisingly, this is also related to education -- people with at least a bachelor's degree are about twice as likely to access the Internet at home than high school dropouts.[45]

If technological literacy and analytical skills are essential for capitalizing on the economy of the future, our current path will only entrench previously existing inequities in our economy. As K.G. Schneider, the university librarian at Holy Names University in Oakland, California told Pew's Project on the Internet:

> "Students today are burdened if they don't have home Internet […] there will be an expectation that successful living as a human will require being equipped with pricey accouterments […] Reflecting on this makes me concerned that as the digital divide widens, people left behind will be increasingly invisible and increasingly seen as less than full humans."[46]

Despite the stereotype of a twenty-something huddled over their mobile phone with near-constant connectivity, creating an equitable, workable future for this generation requires bold interventions to decrease the digital divide.

The Skills Gap

Approximately 65 percent of the job openings will require at least some post-secondary degree by 2020, and we are currently five million degrees short of that threshold.[47] This includes vocational degrees and post-secondary certificates, not just degrees from two-year and four-year institutions. More students are enrolling in post-secondary education than ever before, but the numbers are still falling short, and even fewer are completing those degrees.

Moreover, it is one thing to produce degrees, but entirely another to produce the degrees in fields that are in demand. After all, not everyone has Chris' foresight to study fields in high demand in the workforce. For instance, science, technology, engineering, and mathematics (STEM) fields are projected to grow by 17 percent from 2008 to 2018 – more than double non-STEM fields.[48] However, if current trends hold, we are facing large deficits in educational attainment within these fields.[49]

To improve employment outcomes, we will need to bridge the data chasm between higher education and the workforce. Students need to be equipped with information about the specific workforce results of not just the educational institutions, but also the individual programs within them. This will allow market mechanisms to reward programs that produce better outcomes through increased student demand and perhaps discourage students from enrolling in programs with inferior economic outcomes.

Even if we bridge the education-workforce gap, the importance of education still threatens to broaden already present inequities. For instance, African American 25 to 34-year-olds are twice as likely to have dropped out of high school than their white peers, and are roughly half as likely to have a post-baccalaureate degree.[50] We need to pursue policies to make college more accessible, affordable, and easier to complete, particularly for low-income and underrepresented minorities in order to alleviate these disadvantages.[51]

It is critical to consider how we can increase both technological literacy and education attainment, as well as provide a more valuable education, for those who will be taking key jobs in the coming decades.

Changing our Lens in Education

While the aspirations of many Millennials may align with certain projected changes to the workforce, these changes will still require a large-scale change to the way in which we prepare tomorrow's student. Technological changes mean that jobs in the

future will require less storage and recall of information, relying more on the ability to access the best information available from a variety of resources. Howard Rheingold, an influential internet writer and researcher, points out that "education systems in the U.S. and much of the rest of the world are still sitting students in rows and columns, teaching them to keep quiet and memorize what is told to them, preparing them for life in a 20th century factory." Google Chief Economist Hal Varian offers a similar critique: "One industry that will be hugely affected is education: what should be people be taught when they can access all human knowledge all the time?"[52]

Multiple-choice standardized tests rely on a student reproducing content or stock knowledge. In post-secondary education, many exams are conducted through in-class essays, drawing from material facts covered in the course. This is a classic test of knowledge stocks, and will not have the same utility in the future of knowledge flows and access. Future research is needed in how to reform our education system to reflect this shift.

Making it Work

Just as the technology introduced at the World's Fair captured the imagination of the world, in many ways the specific tools it introduced, such as color television and telephones with video screens and cameras, also brought an end to the larger concept of a global gathering of ideas and culture – a World's Fair. The advances in communication made it no longer necessary for the curious to travel great distances to exchange information. Similarly, the future of Millennial work is one in which the significance of geographic location and distance continues to diminish.

Young adult workers should be prepared to approach the workplace from a new angle, in which education, creativity, and technological literacy are essential. More research is needed, but many Millennials seem to bring experience and values that align with at least some of the changes in how we will work, even if there is less alignment with what we will do. But most urgent is a review of the changes these shifts will have on disadvantaged communities. Unless we significantly alter our education pathways and address our country's digital divides, much of the future positive value and meaning experienced in the workforce by this generation will be felt inequitably -- perhaps more so than in the past.

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