Shift: The Commission on
Work, Workers, and Technology

Report of Findings

SHIFT

NEW AMERICA

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Preface

by Michael R. Bloomberg

Capitalism has brought opportunity to billions of people around the world and reduced poverty and disease on a monumental scale. The advances in knowledge and technology driving that progress have produced benefits that were unimaginable at the start of the Industrial Revolution. Today, the poorest Americans have higher living standards — and live healthier, longer lives — than the richest Americans in the 19th century.

At the heart of that progress lie market disruptions: innovations that drive fundamental changes in the way industries operate. We celebrate these disruptions for the overall benefits they generate, but they also present challenges to workers whose skills are rendered obsolete. The Luddites were only the first group to protest technological disruption.

Resistance to technological advances is an old story, as is the worry that robots will displace all human work. But never before has automation affected so many industries, and so many people, so thoroughly. That reality has generated an important public conversation around the future of work. But too often the conversation proceeds from fear and wild speculation more than careful analysis. This report sets out to begin changing that.

Attempting to slow the pace of technological change is neither possible nor desirable. But nor should we sit back and allow it to happen without giving thought to what shape it will take and what that will mean for society. Those questions, which are important to anyone who studies economics or public policy and anyone who works in financial markets, lie at the heart of this report.

Michael R. Bloomberg,
Bloomberg L.P. and Bloomberg Philanthropies

Given Bloomberg's expertise in data and analysis, the interest this issue holds for our customers and readers, and my own concern for the societal implications, we formed a partnership with New America to establish Shift: The Commission on Work, Workers, and Technology. Our aim was not to propose solutions to problems that are not yet clear, but to analyze the various theories around the future of work, using data, interviews, focus groups, surveys, and other original research. By doing so, we hope to strip away the hyperbole and doomsday tone that so often characterize the discussion of the issue and to do what Bloomberg does best: bring greater transparency and clarity to the forces shaping the way we live, work, and invest.

I want to extend my thanks and appreciation to everyone at Bloomberg and New America who helped make this report possible, and I look forward to the discussion it will generate.

Executive Summary

The future of work is the future of everything. For many of us, work is the reason we get out of bed every morning. It is the way we support our families; the way we build toward our dreams; the source of status in our communities; and a core part of our sense of self. When we ask children, "What do you want to be when you grow up," we are asking them what work do they hope to do. How much and what kind of work will be available over the coming decades will steer our economic growth, our technological progress, our social health, our physical geography, and our political stability. It is a question that affects us all.

Once our names carried our work's identity. Think of some common Anglo-Saxon American last names: Baker, Brewer, Butcher, Carpenter, Cooper, Mason, Miller, Sharp, Smith, Tailor and so many more. All of these were trades, with masters and apprentices. They required craft and expertise acquired over years and passed down through generations. Mass production displaced these identities. A century later, the factory and office jobs that replaced farming and cottage industry are themselves disappearing.

Economists are hopeful that, like the Industrial Revolution, the Digital Revolution will create as many jobs as it destroys — even though dislocations are inevitable. But is this generation of technological advances different from past ones? Will automation and artificial intelligence result in a fundamental rethinking of our relationship to work and to one another?

New America and Bloomberg examined these questions when we convened *Shift: The Commission on Work, Workers, and Technology.*

Over the past year, Shift assembled a distinguished group of national leaders in technology, business, policy, and culture. We asked them to look ahead 10-20 years. Without wedding ourselves to predictions, we asked if we could prepare by imagining potential futures.

Shift Commission members imagine potential futures at Washington, D.C. meeting.

Our goal wasn't to resolve the debates about whether "this time is different." Our goal was to create a common frame for understanding the problem, one that could connect the many economic and social questions entwined with the future of work.

We used a specific method: scenario planning. More than 100 Shift Commission members gathered in five cities to create 44 different scenarios, which we distilled into four. We examined economic trends, identified with a wide range of individuals from different backgrounds, surveyed the American public on what they value in work, and listened to the voices of those whose professions are most likely to transform.

Our four core scenarios — with more work and less, with work continuing to exist mostly in the form of jobs or fragmenting into "tasks" — give us a shorthand for discussion. They give us a way to find the "must do" actions that we should take regardless of how the future unfolds. Named after games played by millions of people, our four scenarios (over)simplify the game of our future work so that we can share a common vocabulary.

Rock-Paper-Scissors Economy

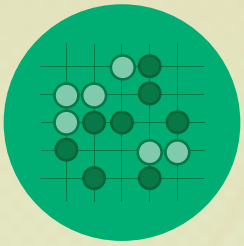
Less work, mostly tasks.

King of the Castle Economy

Less work, mostly jobs.

Jump Rope Economy

More work, mostly tasks.



Go Economy

More work, mostly jobs.

No one scenario, or even four scenarios, could possibly capture the future of work. The unknowns are simply too many and too big. However, we cannot stand by and casually discuss robots as "labor-saving devices" when the labor being saved is the livelihood of millions of our fellow citizens.

Comparing the differences and, more important, the similarities between these scenarios, we concluded:

» *Each of the four scenarios could work out well for America, or poorly, depending on how we respond.* Many members started discussions with set assumptions about technology (for example, that automation was either a wonderful or a terrible phenomenon). It's unclear whether we should wish to work more or less — it's all in how we handle it. But, as we projected scenarios from the perspective of different workers, we realized that all of them have good and bad dimensions and we should prepare for all of them.

» *For workers, it's about stability.* Our research reminded us that most workers want certainty more than making more money, more than doing work they feel is important and meaningful. They value stability of income — and also of health care, retirement, and the other benefits we expect in an ordinary life. How do we counter insecurity and anxiety when the ground is moving beneath our feet? What new forms of education and training will we need to enable workers to cope with the realities of constant change? Individuals take more personal risk under almost any scenario. So our society needs to provide new pathways to stability in work, while at the same time empowering people to reap the rewards of risks taken.

The scenarios (and common sense) presume a change in the type of tasks that a given worker performs. We need to figure out better ways to prepare people for that change, because the ironic and sad truth is that we have bipartisan agreement that "retraining" is a panacea, even as we increasingly learn that the ways we've tried to retrain workers have not been that successful.

J.D. Vance
Author of *Hillbilly Elegy*

It's crucial that company founders look for ways to include everyone in the new economy — if that means new programs to help motivated workers identify opportunities, then that's what we need to do.

Ankur Gopal
Interapt

» *Employers' central role in society needs a re-examination.* If large employers are no longer islands of security and stability, what will replace them? We must explore alternative arrangements: networks of small businesses, modern guilds, worker associations, and entrepreneurship training, while at the same time facilitating new ways to administer worker benefits.

» *The future of work fails to align neatly with traditional political coalitions.* The effects of technology are a mismatch for the usual left-right continuum. For the first time, automated systems could affect prospects for people in every demographic and skill level. This issue requires concerted action by every sector of society — individual, cultural, technological, corporate, philanthropic, academic, and political. New alliances are possible.

» *We must focus on older workers.* It's tempting to imagine the future of work centered on millennials, who, of course, have shaped much change. The fastest-growing segment of the workforce, though, continues to be — and will be for the foreseeable future — older workers.

» *The future of work will shape cities and regions.* The data reminded us that the richest cities are pulling away from the rest. Commission members from non-coastal areas and smaller towns pointed to discrepancies in education, technology, access to capital, and networking opportunities. Long-distance moves are on the decline. Different futures might affect some areas in wildly different ways than others. And, while our research focused on the United States, we recognize that the global standing of the U.S. depends on its economic and social health, so changes in the future of work in the United States could result in geopolitical effects everywhere.

Capital still concentrates in a few particular wealthy cities, making it difficult to accelerate and de-risk entrepreneurship in smaller towns.

Ashley Swearengin
Former mayor of Fresno

Mitch Landrieu, Mayor of New Orleans

This is about more than jobs. It's about the place work and workers hold in our society. How should we treat those who do work society needs but undervalues (like care work or teaching)? How can we move away from the idea that the post-World War II industrial era is returning and, instead, make a forward-facing scenario a reality? We need to reconcile a multicultural, multigenerational, socioeconomically diverse society with a strong sense of support for one another. In this report, we present four potential scenarios. But we will need a new understanding of the meaning and role of work — really a new American identity — for individuals to succeed under any of them.

For many workers, the future is already here, for better or worse. So we should stop obsessing over predictions and start working to improve our society now. There is plenty of crisis and opportunity to go around. If we cannot predict, at least we can prepare to adapt. The strength, health, and wealth of our society and economy depend on it.

In this report of our findings, we share an overview of the data we considered, the original research we conducted, the four scenarios we contemplated, and the potential responses we identified. We conclude with thoughts for leaders in different sectors on what to do next.

Co-chairs Anne-Marie Slaughter, New America and Roy Bahat, Bloomberg Beta
Executive Director, Kristin Sharp, New America

Economic Background

Trends we expect to continue

We took several trends as givens, so we could focus on the uncertainties on which the future of work depends. We identified four almost-inevitable forces:

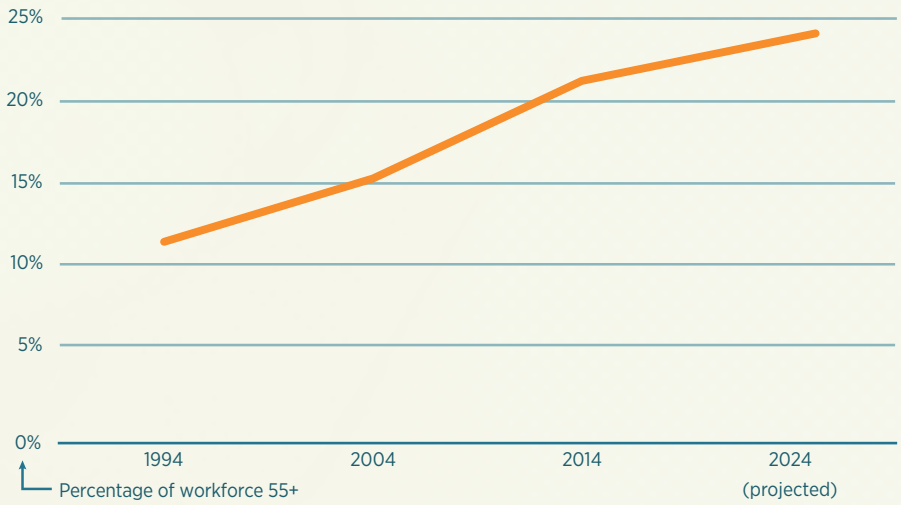
1. An aging workforce;
2. The decline of "dynamism," the movement of people between jobs, firms, and places;
3. A societal shift to non-work income;
4. Growing geographic gaps.

By 2024, nearly one-quarter of the workforce is projected to be 55 or older — more than double the share in 1994. Older workers are more likely to be in alternative work arrangements like freelancing and consulting than other age groups, and they are more likely to work in occupations predicted to shrink as a result of automation.

Worth observing that it's not just that the workforce is aging, but that many emerging economies will benefit from improved education of younger and growing workforces.

Marcus Brauchli
North Base Media

The Aging Workforce

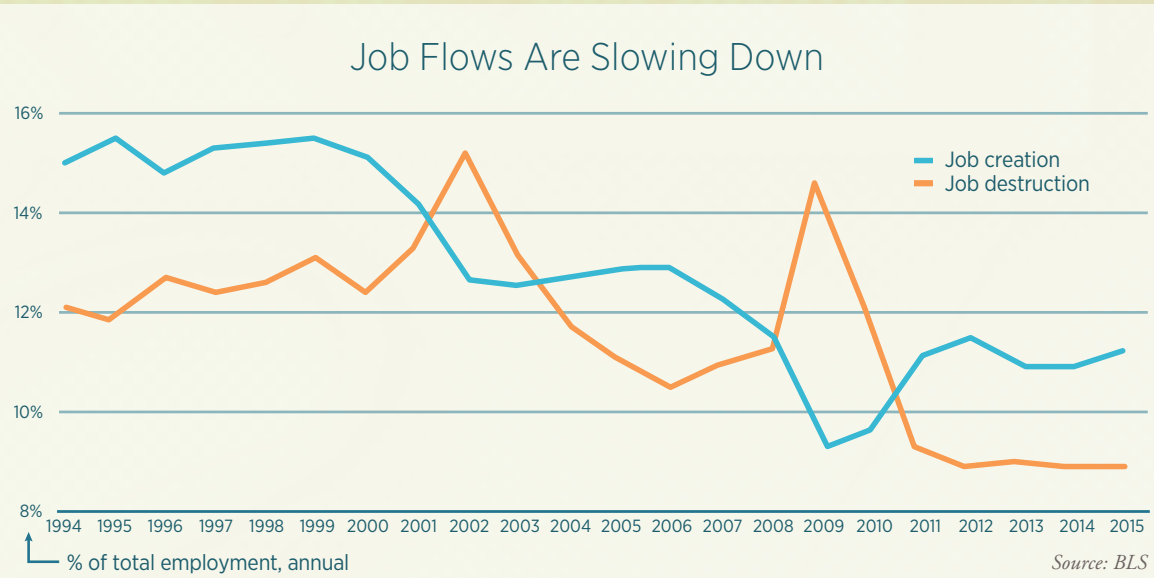


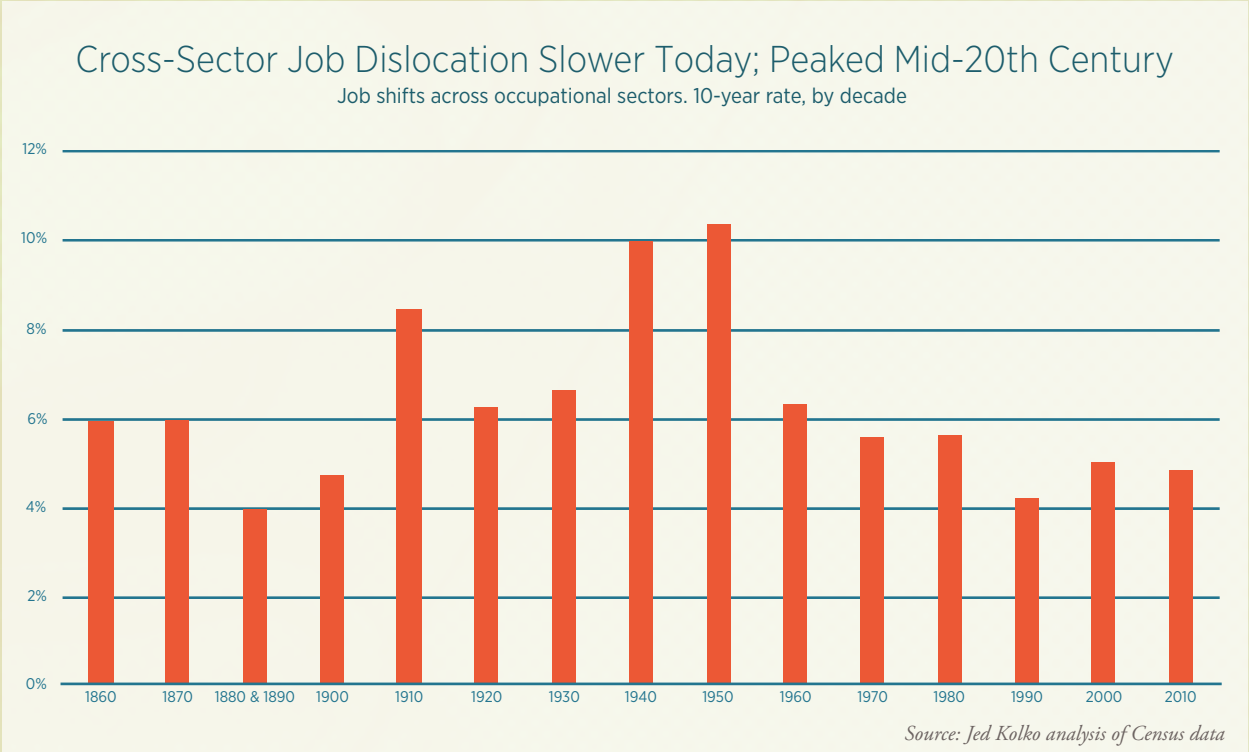
Source: BLS

One of the most important things we can do to redevelop and reinvigorate our cities is to think carefully about the role of creativity and connection in work. People want to live, work, and play in healthy and vibrant communities. Facilitating quality building-rehab work in historic areas plays a tremendous role in modernizing cities and motivating citizens to engage in the shaping the future of their communities.

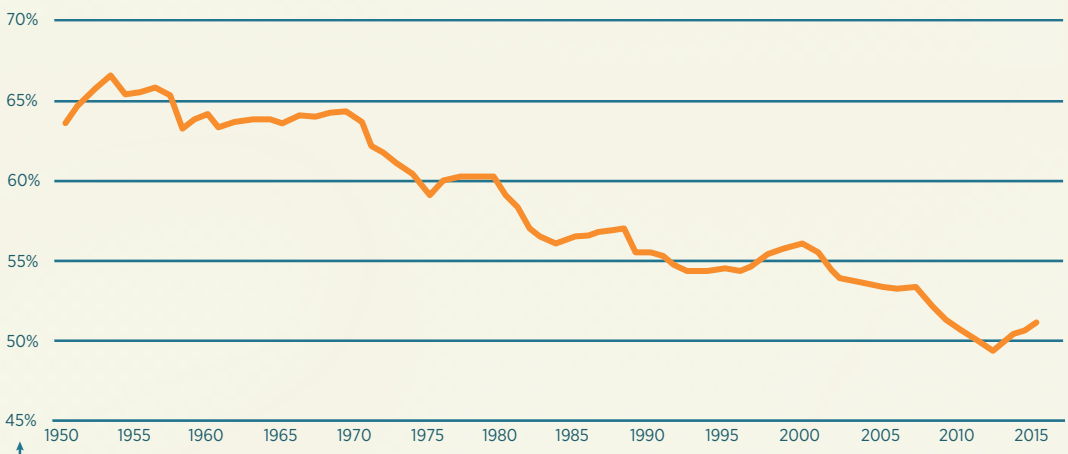
Kimberly Dowdell
Century Partners

The second trend is what economists call "declining dynamism:" the decades-long fall in the rates at which Americans start businesses, switch jobs, or move for a new job. It's unclear whether the culprit is high housing costs in areas with expanding growth, regulatory burdens like occupational licensing requirements that vary across state lines, or that caregiving needs and a sense of community connectedness make people reluctant to leave. Nonetheless, economists agree that a less dynamic economy is a weaker basis for adapting to automation and the rise of new work arrangements.

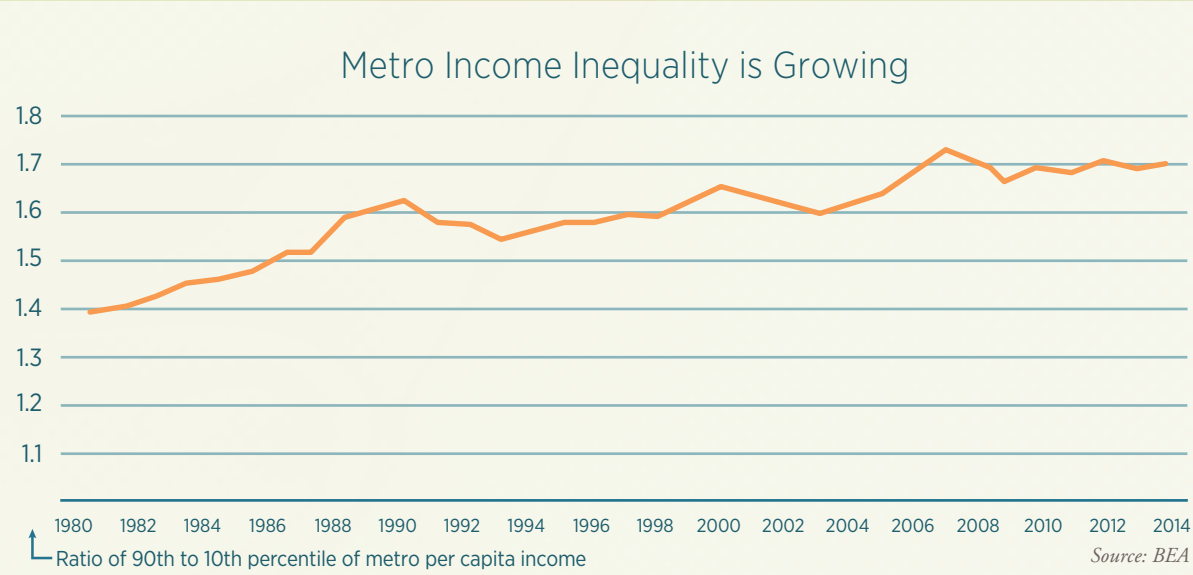




The third trend is that less of our income is coming from work, and more is coming from other sources, including dividends, investment income, and government programs like Social Security and disability insurance. Today, only half of personal income comes from wages and salaries, down from almost two-thirds in the 1960s. This shift has contributed to rising inequality, since a higher share of investment income goes to the rich. And as more income flows from non-work sources, the role and meaning of work potentially shift.

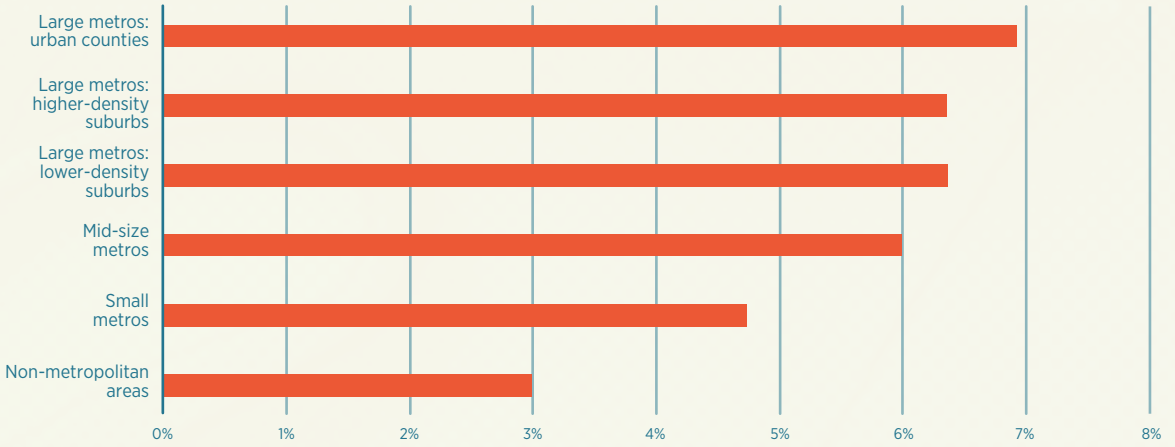


The fourth trend is geographic polarization. Richer places in America have been pulling away from poorer places; the gap in average incomes across labor markets has grown, and rural areas are lagging behind. Some activities at the forefront of new industries, like venture capital investment, have increasingly clustered in large urban areas. And the percentage of college-educated Americans living in cities has increased rapidly.



Rural Areas Are Lagging

Aggregate Wage Growth, Year-over-Year, Third Quarter 2016



Source: QCEW, originally appeared on the Indeed Blog

Uncertainties

The basis for different future scenarios

Accepting these economic trends as givens, our members then considered the most important uncertainties about the future. After initially considering 16 variables, we selected these two as most important:

1. the structure of work — will there be more "tasks" (a catchall including contracting, projects, the "gig economy," and the like) or will work remain concentrated in traditionally structured jobs?
2. the effect of automation — will technological changes result in more or less work to go around?

The structure of work has to do with the employer-employee relationship. What will happen to it? Will people continue working in traditional jobs (for one company, with assigned responsibilities, hours, and pay)? Or will they transition to something more fluid, a portfolio of tasks that combine many different income sources?

For instance, "alternative work arrangements" like free-lancing, contracting, part-time work, and the on-demand economy have grown dramatically in the last 10 years. This non-traditional work, contingent on short-term projects and or facilitation by digital platforms, provides less schedule certainty, but potentially more flexibility, than traditional 9-5 jobs.

Shift Commission members consider uncertainties about the future at Detroit meeting.

Growth in Contingent Workforce

Source: Katz and Krueger, 2016

As for automation, why are we so focused on this now? (It's a worry that seems to come up every few decades.) One reason: technologists see a meaningful acceleration in the pace of one key technology — artificial intelligence — that could make less work available for people in a wide range of jobs. Many technologists now believe that AI adoption will follow an accelerating growth path and that we're at the knee of the curve right now.

A series of breakthroughs have suddenly made it cheap to accurately classify images, text, and audio, opening up new industries to computers and accelerating existing trends in blue-and-white collar automation. Today, AI systems can be trained to spot patterns in data without much hand-holding by a person; next, the computers will learn how to spot patterns entirely on their own. Software advances allow computers to understand how their actions relate to the world, which suggests that the long-promised robot revolution may be upon us. (Though it'll be years before we get Rosie from *The Jetsons*.) Together these developments have lowered the cost of experimenting with and deploying AI systems.

In other words, machines are getting smarter because of steady improvements in their ability to think, read, and write, not to mention see and hear. Advances in fields ranging from computer vision, to reinforcement learning, to generative models, to transfer learning are all combining to let us create machines that can do useful work in the real world. That useful work will go beyond past decades' automation of routine physical work; it will also transform work in information industries, service industries, and elsewhere.

Today's accelerating progress demands we start planning now for a future where machines are as capable as humans and that we ensure the machines are safe and their benefits will be shared. This will require everyone to participate — from technologists, to economists, to politicians, to sociologists.

Jack Clark
OpenAI

We believe today's progress in AI is consequential enough to prompt careful consideration of whether this time *is* different. (We asked our members this question, and 58% agree this time is different.)

Shift Commission members consider how AI will impact jobs in the future at Detroit meeting.

Four Future Scenarios

We considered two uncertainties — whether there would be more or less work in the future and whether work would remain as mostly jobs or shift to more task-based work (everything from short-term full-time contracts, to projects, to "gig economy" roles). Pairing each uncertainty (more or less work, mostly jobs, or mostly tasks) results in four possible scenarios.

In our sessions, members named scenarios after science fiction movies, books, countries, old family sayings — and we want to capture the full range of their imagined societies. Each of these scenarios is a vision of future work — a new setup for the game of life.

What follows are descriptions of each scenario, a story of one person's experience (and not necessarily a representative person's), and a comparison of all four.

Shift commission members vote on "if this time is different" at Detroit meeting.

The whole concept of a 9 to 5 job for life was a historical quirk. In 1900, 45 percent of people in the United States were self-employed. Today, with the rise of new employment and wealth-generation platforms such as Uber, TaskRabbit, and Airbnb, it looks like we're returning to that. Because of this there's "rising discontent," so policy makers will need to help people adjust to this new world through labor market and education reforms.

Susan Lund
McKinsey & Company and McKinsey Global Institute

An empowered independent worker can create powerful cultural shift. And cultural shifts have the potential to reach a broader set of people than political shifts. Yet, if independent workers are not taught to advocate for themselves then we're left with a culture that is at the whim of capitalistic structures with no counterbalance.

Vinitha Watson
Zoo Labs

Rock-Paper-Scissors Economy

Less work, mostly tasks.

Rock-Paper-Scissors is a game played with hands only, with fast, one-off choices, dependent on others.

DESCRIPTION: A community-based, local, and sustainable economy that prioritizes work in person-to-person interactions. Advancing automation, in combination with a slowing of the overall economy due to rapidly aging population and a declining birth rate, leads to the elimination of many full-time jobs. Available work has been reconfigured to a task-based format; many people piece together their

income — and, if they can, benefits — through a series of temporary gigs, identified by digital platforms and facilitated by smartphones. The winners are those who provide an experiential service based on a human interaction, activity, or skill, like cooking coaches, gardeners, and eldercare providers. Losers are those whose identities were so wed to a particular job that they opt out of the labor market instead of adapting. Of those open to entrepreneurial activities, many join the maker economy and produce organic goods in and for their neighborhoods; more people derive a sense of purpose from contributing to their families, their "contingent families" of friends, and their communities than from their jobs. Free time, once scarce in an economy that pushed people to work ever-harder to sustain high levels of consumerism, becomes a marker of status in an economy in which people work less.

DAY-IN-THE-LIFE: Task day. You check your profile image on your phone, then watch the clock tick toward 8:00 am, when bidding opens. The clock turns and you page through projects, putting together a list of interaction-based, human-touch tasks. There aren't many today. You move the virtual screen to the "Jobs" section of the listing. Many of the postings have been there for months, because it's only the really obscure, specific roles for which people are still hired full-time. You don't have the right set of skills and aren't willing to go through the lengthy retraining program for a job you may not like and probably won't get. But you've got a consistent income selling organic, hand-roasted peanuts in local farmer's markets and are just completing a "bedside manner" short course on how to interview older Americans and record their memories — of WWII, suburban highway expansion in the 1950s, the Vietnam protests. You're hoping to market yourself as an eldercare companion who can also document history, one person at a time.

King of the Castle Economy

Less work, mostly jobs.

King of the Castle is a game in which a dominant "king" pushes down all the other kids as they try to climb to the top of the hill to take over the castle.

DESCRIPTION: A corporate-centered economy in which economic life is organized around large, profitable companies and those they employ. Increased automation keeps corporate productivity levels high but employment levels low, dampening consumer demand. This leads to less dynamism in the economy and decreased innovation overall as people become worried that leaving a full-time job means they won't find a new one. Lower employment levels generate lower tax revenues and corporate philanthropies take over former city and state functions in the places they operate. Geographic and political tensions rise, and society splits into three clear social classes: those who work in high-tech jobs at large, profitable companies (and successfully defend their jobs, and generous benefit packages, from qualified outsiders); those who have full-time jobs protecting the people and assets in the corporate class, who struggle to assemble health-care and retirement benefits; and those who perform on-demand work when it's available.

DAY-IN-THE-LIFE: You wake and don't want to remember but can't help yourself: you are unemployed. And not fruitfully. You were laid off from a supply chain manager position a couple months ago following the arrival of an automated technician. Now you start each day watching the job boards. There are fewer jobs these days, with the machines doing a larger proportion of the really dumb and really smart stuff. Glancing at the jobs listed, you're intimidated by how specialized they sound. You'd need a minimum of two years experience just to understand the blurb: "AI psychological dispute consultant. Requirements: *knowledge of credit-assignment in intra-AI interaction scenarios, neural net diagnosis competency, familiarity with differentiable memory stores a plus.* Your head spins. You put on your running shoes and head to the office of your friend, the self-styled "dentist to the executives." When you arrive, there's a woman just coming out of the office rubbing her jaw. You breeze past the robo-receptionist. "*Do you have an appointment?*" it asks. You ignore it and head into his office. "I'm going stir-crazy," you say. "I need a job."

Jump Rope Economy

More work, mostly tasks.

Jump Rope varies with an individual's choices about speed or jumping pattern, but requires the jumper to be in perpetual motion.

DESCRIPTION: A portfolio approach to work in which people build reputational rankings with each task they complete, combining multiple income streams to allow for a career that's self-driven, entrepreneurial, and constantly changing. An aging workforce that stays engaged, combined with millennials seeking flexibility as they reach their peak parenting years and high consumer demand as a result of full employment, pushes the market into more discrete, task-based jobs. Technology assists in efficiently cataloging the different tasks that need doing and helps people develop and monetize their skills, which are always shared on social networks — every keystroke is public. The economy is buzzing, so people can be selective about what they do and can replace traditional corporate-provided benefits. As a result, most people do what they enjoy most of the time and are always on the lookout for the next opportunity.

DAY-IN-THE-LIFE: You stand in front of your SmartMirror and brush your teeth, reading a list of available tasks as they scroll across the glass, each one already filtered for your background. The listings scroll by: Creative Chef: exclusive executive dinner party: 4 hours, in-person, fully equipped kitchen and china provided. Corporate Contracts Architect: specification design for multigenerational housing neighborhood: 60 mins, in-person; self-driving transit offered. The next one catches your attention: Philanthropic Adviser: Non-Profit: requires excellent presentation and organizational skills: 45 minutes, recurring weekly, on-site, geolocation proximity: high. "Bid aggressively," you say, dribbling toothpaste. You enjoy analyzing policy trends, and, since bots are getting better each day at prediction and analytics, you're able to complete tasks faster and more accurately. Your surrogate AI starts bidding on the contract, while stressing your qualifications to the HR Bot. Eventually the machines decide that you're not the best laborer for the task and inform you that you're out of the running. "No!" you say. But at least you didn't get a flashing red "qualification theft possible" warning to slow down the process. You examine your endorsements data for the last task you completed, send out a private broadcast on one of your social networks, and wait for the morale-boosting (and rep-enhancing) responses to come in. Ten minutes later, five new options arrive on the screen.

Throughout time, every new advancement in technology — from the printing press to the first computers — led to changes in existing jobs and roles in the economy but ultimately created far more jobs than the ones eliminated. The past has taught us that the future is not about technology vs. human capital, but the creative combination of the two. If we transition our collective energy to think about how advanced technologies work together to make humans more efficient, it will not only expand known industries that today are artificially constrained because of a talent shortage but also create fields that we can't even imagine.

Aaron Levie
Box

Go Economy

More work, mostly jobs.

Go is an immersive and creative game in which each choice builds on the choices before it and that has nearly infinite possibilities.

DESCRIPTION: A technology-driven economy in which people embrace connectivity in every area of their lives and look for ways that machines can extend their capabilities through data-platforms, electronic devices, and virtual reality. Automation takes over almost all routine, data-processing jobs, freeing workers to focus on creative, strategic thinking. As people realize the ways in which AI can help them, they increasingly take risks in their jobs which results in more innovation. Benefits become progressively more generous over time, and eldercare becomes as standard a company benefit as childcare. Online retailers hire and train lots of warehouse robot monitors, lawyers take on many more cases as AI takes over the paperwork of discovery, and scientists and intellectuals use AI to file and monitor patent applications. Jobs multiply as new and novel platforms are invented on which to build new ideas.

DAY-IN-THE-LIFE: You try to clear your head and meditate, shutting out thoughts about work, or friends, or vacations. You stay there for a few minutes, breathing in and out, and when you are truly calm you open your eyes and say "Good morning!" Instantly the room buzzes with motion from the screens that light up every wall surface. Information floods in: your portfolio is up, an overnight algorithm has made progress on part of your cryogenics experiment, and your AI has synthesized the key concepts of 15 academic papers that pertain to your work and uploaded it to your connected memory. Your screens dial into a teleconference for you. Your head fills with biophysics and the delicate balance between cold and heat as you study cryogenic literature. Occasionally you dip into the call, offering a positive comment here, a negative one there. After half an hour of juggling your team, spread across 16 countries in 12 timezones, you say good-bye to people as they sign out, then continue your work. Tomorrow your team is waking up a subject from cryosleep: the first human to spend more than a year in an icebox. If the subject emerges without health problems, it'll be the sign of a changing world. If not, you'll just have to work harder.

Shift Commission members imagine a world with more work, mostly jobs at Detroit meeting.

Four Scenarios

Rock-Paper-Scissors Economy

Less work. Mostly tasks.

DRIVING FACTORS:
Comprehensive automation and fewer jobs

HYPOTHETICAL SIGNATURE TECHNOLOGY:
Cryptocurrency system or apps allowing people to earn or trade credits for any work performed—a task, care at home, volunteering in the community, or national service.

EARLY SIGNS:

- Decreasing percentage of total income earned via W-2 wages
- Decreasing labor participation rate, particularly among challenged groups
- Reversion to handmade, local, and organic products
- Increase in low-wage, low-skilled or care-based tasks
- Possible regulatory change to make contingent work more attractive for employers or talent

MACHINE WORK: Comprehensive automation, from transportation to shopping to 3D manufacturing. Retail landscape has been reconfigured by a combination of delivery drones, automated warehouses, and robust analytics.

HUMAN WORK: The majority of available work consists: of caring for the elderly, sick, or young; providing emotional support to those in the remaining professional jobs; or creating cultural experiences, organic products, and art. "Real-life" experiences are remunerated well. There's a rebirth of "artisanal" products. However, these products tend to be relatively inexpensive due to the huge supply of people making them.

...EXAMPLE OF A FAST-GROWING OCCUPATION: Aging Coach, called on to allow older people to "age in place."

EDUCATION: Traditional education is intensely competitive, with little room for career dabbling, as a large number of motivated people vie for the small number of stable jobs. Micro-degrees and certifications proliferate as people upskill in a variety of task-based employment markets.

FAMILY: With less consistently and predictably available work, more people derive identity from care and integrate work and family responsibilities.

GEOGRAPHY: Those without skills or full-time jobs work in dense, urban areas so they can derive income from the task economy. This leads to paradoxically high rents despite a general low level of income.

CHALLENGES THIS SCENARIO CREATES:

- Anxiety for workers around stability of income, work, benefits; questions around how workers find pride in their work
- Decrease in social mobility, as traditional means of rising via professional jobs have been reduced
- New types of automation render certain types of labor unnecessary, and the task-based economy rapidly recalibrates, stranding people
- Sky-high rents in urban areas

King of the Castle Economy

Less work. Mostly jobs.

DRIVING FACTORS:
Scarcity, competition, and centralization of opportunities

HYPOTHETICAL SIGNATURE TECHNOLOGY:
Sophisticated screening algorithms that profile individuals down to genetic code, eating habits, financial activity, and networks to determine who gets an interview/job.

EARLY SIGNS:

- Percentage of total income earned via W-2 stays constant, but longer stints between jobs
- Decreasing labor participation rate
- Job-preserving regulations enacted by state and federal governments make employment a costly and inflexible proposition for employers

MACHINE WORK: Automation and AI have successfully mastered the sorts of casual, on-demand employment that were once thought to be exclusively human. Autonomous vehicles, drones, and robots perform many delivery, retail, and manufacturing roles; some advanced robot systems serve as caregivers and teachers and doctors and nurses.

HUMAN WORK: AI technologies have led to the broad elimination of professional classes and most retail and service industry jobs. Employment is predominantly for those developing the next generation of technology, monitoring the AI systems, or serving the ultra-rich and their scions. It is highly competitive; older workers struggle most.

...EXAMPLE OF A FAST-GROWING OCCUPATION: Work Distributor: maximizing employment, particularly in government-backed organizations, through making jobs modular, then dividing them to increase employment.

EDUCATION: Education has split into two strands, with most people picking up casual qualifications or attending local colleges to gain the skills to perform a few tasks. Others, rich or intellectually gifted, compete to cultivate specific technical skills as they pursue the few available jobs.

FAMILY: With fewer jobs, families divide and conquer, with a focused earner and a focused "caregiver."

GEOGRAPHY: Government policies lead to jobs, many infrastructure-related, spread out across a multitude of cities, leading to lower rents in expensive coastal regions and a revitalization of Midwestern and Rust Belt cities.

CHALLENGES THIS SCENARIO CREATES:

- Dependence on companies—for benefits, training, source of identity
- Anxiety for workers around stability of income, work; questions around how workers find pride in their work
- Decrease in social mobility as traditional means of climbing via jobs become more rare; more entrenched class hierarchy; those with jobs see the jobless as "moochers"
- Growth of black market if official economy fails to provide opportunities; shrinking tax base

Jump Rope Economy

More work. Mostly tasks.

DRIVING FACTORS:
Rise of contingent workers

HYPOTHETICAL SIGNATURE TECHNOLOGY:
TaskRank: algorithms to track and rank all of your tasks and your performance of them.

EARLY SIGNS:

- Increasing labor participation rate
- Growth in number of Americans self-employed
- Standardization and professionalization of short-term, skills-based education
- Percentage of total income earned via W-2 falls

MACHINE WORK: Most aspects of work, from food, garment, electronic and automotive manufacturing, natural resource maintenance, and medical analysis have been automated through a combination of robots, drones, and sensors connected to large AI systems.

HUMAN WORK: Task specializations proliferate, extending capabilities of machines or providing new educational services (one-on-one and continuous education become valuable in upskilling for new tasks and a "rating system becomes a training system"). The market for artisanal products grows as people prioritize "work done by human hands." Some older workers adapt; others struggle to transition.

...EXAMPLE OF A FAST-GROWING OCCUPATION:
On-demand Consultant, who evaluates a person's sellable talents, assists in connecting to task-sorting technology.

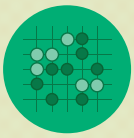
EDUCATION: Options balloon as mini-degrees, certifications, and short courses let people rapidly learn highly specific skills; people pair on-task experience with targeted training; traditional degrees fall out of favor.

FAMILY: Growth creates opportunities for families to brainstorm income-earning options together; older children may take on task-based projects to build skills, working alongside their grandparents.

GEOGRAPHY: Tech platforms allow people to live and work anywhere; formerly large cities (e.g., Detroit, St. Louis) reinvigorate due to low rents and housing prices.

CHALLENGES THIS SCENARIO CREATES:

- Dependence on companies—benefits, training, source of identity, retirement
- Reliability of social safety net
- Anxiety for workers around stability of income, work; questions around how workers find pride in their work; constant need to search for next opportunity; pervasive sense of exhaustion resulting from always scoping for the next thing; need for new education structure even more acute.



Go Economy

More work. Mostly jobs.

DRIVING FACTORS:
Integration of AI into work in a way that facilitates problem-solving and expands opportunities

HYPOTHETICAL SIGNATURE TECHNOLOGY:
Brain chip that allows you to connect to search, memory, computational, social network, and purchasing.

EARLY SIGNS:

- Increasing labor participation rate
- Increasing rate of new firm formation
- Percentage of total income earned via W-2 stays constant
- Increase in demographic and geographic diversity in STEM professions

MACHINE WORK: Voice specialists decipher commands for people with accents, 3D specialists design and manipulate the materials we can use for base printing, etc. Personal home robots for all—a combination of vacuum, maid, and cook—free people from drudgery.

HUMAN WORK: Human coaches and psychologists employed at big companies that use connected systems to augment robot capabilities—leadership coaches who analyze bosses' interactions with their staffers, writing coaches who predict and improve social media influence, etc., at full-time jobs; chefs, masseuses and others who use data to increase colleagues' productivity.

...EXAMPLE OF A FAST-GROWING OCCUPATION:
Augmentor, who assists in inserting a data-analyzing microchip into an individual's head.

EDUCATION: Much more technology-specific, specialized, and career-oriented. Almost no one pursues a liberal arts education just for the sake of learning.

FAMILY: Families use data to monitor one another's education, geolocation, percentage of time spent on various activities.

GEOGRAPHY: Primarily coastal and centered around the headquarters of large companies, but hubs of innovation at city and regional levels throughout the country.

CHALLENGES THIS SCENARIO CREATES:

- Dependence on companies—benefits, training, source of identity, retirement
- Reliability of social safety net
- Anxiety for workers around stability of income, work; questions around how workers find pride in their work.
- How to separate human and machine functions; how to "turnoff" and go to sleep; how to have unfiltered human connection; privacy and monitoring issues

HOW MIGHT THESE SCENARIOS BE RECEIVED BY WORKERS?

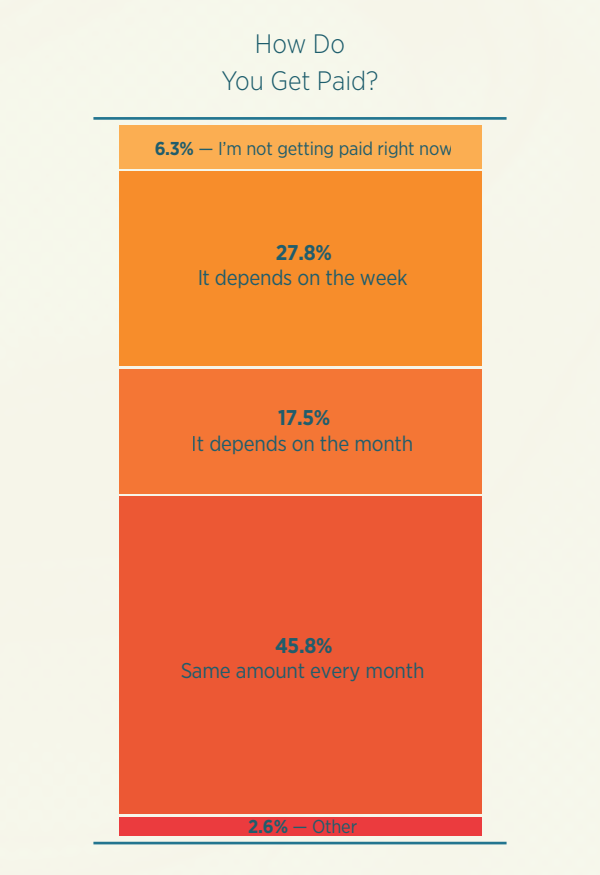
Commission members frequently wondered how different groups in the American public — older Americans or people in various socioeconomic strata — might feel about these scenarios.

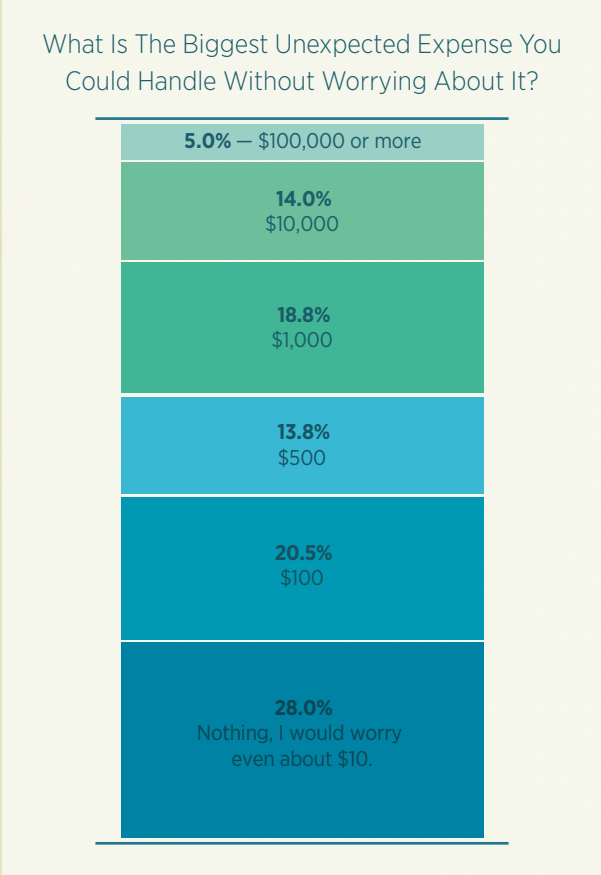
A conversation about the future of work among leaders fails to provide a full picture; leaders are often those who have reaped the rewards of taking risks.

We conducted original research that confirmed that most Americans put a premium on stability — and we learned just how deep that desire runs.

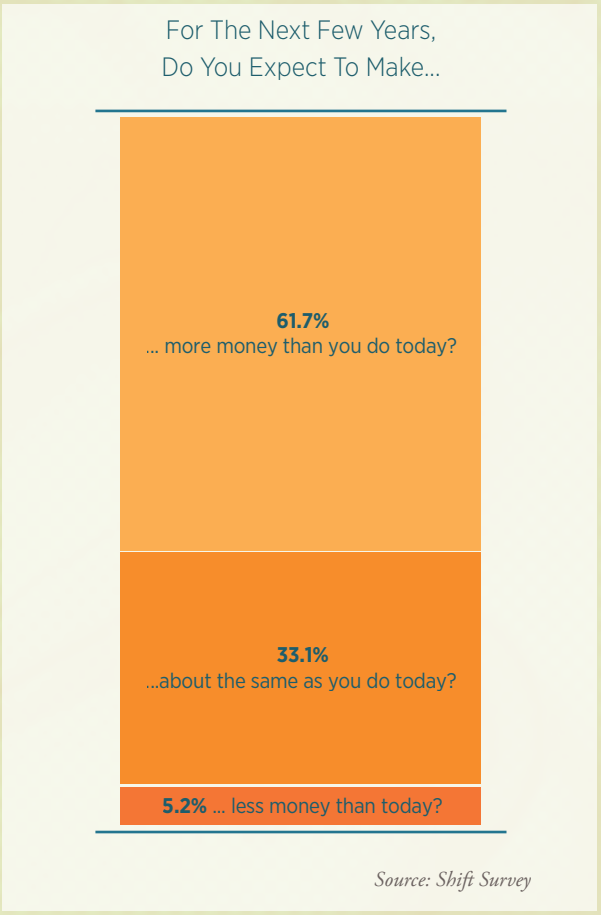
Many Americans report frequently changing incomes, drawn from more than one source: 53% of Americans make varying amounts (or no) money per month, and more than a quarter must cope with income that varies by the week. In the last month, 36% reported receiving income from more than one source.

To highlight that instability, 48% of respondents claimed they could not handle and expense of more than $100 without worrying about it. Twenty-eight percent would worry about any unexpected monthly expenses, even as little as $10. The overwhelming majority (81%) would be unable to handle an expense of more than $1,000, confirming recent findings by others. When polls around the country indicate frustration with the current economic situation, it's easy to see why: fear of the unexpected.





Source for both: Shift Survey



Source: Shift Survey

Our nationally representative survey respondents — when asked what they value in their work — cited stability of income as more important than how much money they make.

While many conversations in Commission meetings were about the purpose of work, it turns out that only people who make $150,000 a year or more valued "doing things I feel are important" more than "earning as stable and secure an income as possible." For everyone else, it was the reverse.

Those in the prime earning years of 25-44 cared most about stability, while younger and older workers valued doing things they enjoy more highly. Women tended to care about stability slightly more than doing work they enjoy, with men it was the reverse. Only those with graduate degrees cared most of all about doing things they felt were important.

Anyone who's spent time with middle- or working-class families wouldn't be surprised at how much importance American workers place on "stability." As a conservative, I'm sometimes startled by the Right's focus on businesspeople and entrepreneurs, even as most Americans just want a good job that allows them to provide for their families

J.D. Vance
Author of *Hillbilly Elegy*

This begs the question of what motivates people and where they find emotional satisfaction and pride. How can work occur within supportive communities that increase happiness levels and foster stronger sense of connections across communities?

Sharon Greenberger
YMCA of Greater New York

At the same time, the Americans we surveyed show optimism — 73% expect their kids to make more than they do, a finding that contrasts markedly with recent findings suggesting that most American children will earn less than their parents.

What Matters Most To You About Work?

by annual household income

Rank	Less than $50,000	$50,000 to $74,999 (includes median household)	$75,000 to $149,999	$150,000 or more
1st	Doing things I enjoy	Earning as stable and secure an income as possible	Doing things I enjoy	Doing things I enjoy
2nd	Earning as stable and secure an income as possible	Doing things I enjoy	Earning as stable and secure an income as possible	Doing things I feel are important
3rd	Doing things I feel are important	Doing things I feel are important	Doing things I feel are important	Earning as stable and secure an income as possible
4th	Making more money	Working with other people I like or respect	Working with other people I like or respect	Working with other people I like or respect
5th	Working with other people I like or respect	Making more money	Making more money	The respect I get from others because of what I do
6th	The respect I get from others because of what I do	The respect I get from others because of what I do	The respect I get from others because of what I do	Making more money

Source: Shift Survey

In addition, the survey does suggest that people in alternative work arrangements (e.g., contracting instead of working a more permanent job) are happier with this arrangement, citing that they value "doing things I enjoy" more than earning a stable income.

We also wanted to get past the numbers and invite into the conversation the voices of those most directly affected. We hosted focus groups with two populations: truck drivers (the biggest occupation for men, and one at risk of automation), and working people who provide care for an elderly relative (since this will become more and more common with time).

Troubled by layoffs and reduced union leverage, truckers wanted to earn a consistent paycheck they can count on for the longterm. Caregivers faced a daily barrage of challenges, from fluctuating schedules and lack of support in their caregiving roles to reduced income as a result of cutting back hours to care for their relatives. Neither group was well-informed about the technological advances that could impact their jobs (technologies like Google Calendar were at the forefront of new tools they'd introduced into their lives).

No group felt that they had much agency in any part of their lives: jobs and whether they retain them or not, what kinds of benefits or hours they could expect from their jobs, whether or not they advanced at work, choices in picking doctors or treatment plans for their relatives, who they voted for, etc. There was a palpable feeling of hopelessness throughout all our focus groups — and especially a lack of control over schedule.

POLL METHODOLOGY

The online survey methodology fielded in early 2017 was conducted by Survata, an independent research firm in San Francisco. We surveyed more than 1,000 Americans between February 14 and 16 who represented the full range of income, demographic, and geographic backgrounds of working Americans. Respondents received no cash compensation for their participation. More information on Survata's methodology can be found at survata.com/methodology. Bloomberg Beta is an investor in Survata.

FOCUS GROUP METHODOLOGY

Kelton Global, a research and strategy consultancy, conducted four focus groups of eight members each (for a total of 32 participants) in Columbus, Ohio, on November 13-14, 2016.

> *From Kevin:* "Everybody I know, everyone is pretty much blue-collar workers. [The Presidential election] doesn't affect us. I don't think it affects us as much as people actually think. It doesn't matter. They're not making me more money."

Focus group participants wanted benefits — paid time off, medical leave, health-care and retirement plans — to be tied to the person rather than the job. "If I had portable benefits, I wouldn't have to worry about working so much just to make ends meet," said one (Lydia). Several suggested, unprompted, that they objected to "Obamacare" not because they were required to have it — but because it didn't go far enough, it isn't free and single-payer. One woman (Myra) exclaimed, to nods of agreement in the group, "If you're in Canada, you have free health care. If you're in Europe, you have free health care. But we're the richest country in the world, and we're poor."

The transition to autonomous vehicles will happen more rapidly than people are expecting, creating profound economic challenges for people that drive for a living.

Robin Chase
co-founder of Zipcar

From Jim: "Yeah, I would choose truck driving again, you know — it's just like going to college. You go to college to make good money, so — you know — I have to ask myself where else can I go to make this kind of money...Sometimes you make more money than people [who attended college] do."

Focus group participants didn't anticipate much change in the industry over the next generation, unless it was to create more demand and more jobs. After watching a video of an automated truck driving on the highway, they continued to resist the idea of a world of completely autonomous vehicles. They believe human drivers and automated systems will work in partnership (working around, for example, regulations limiting the number of hours a driver can stay at the wheel).

From Brian: "I think technology will assist in our jobs; I don't think technology will take over our jobs."

From Prentiss: "I know at least in my lifetime, I'm gonna — the truck's going to be on the road. Long as — long as I keep my hand straight — the truck's gonna be on the road. At least for the next 40 years."

From Kevin: "The technology that I've experienced will not work in certain situations. Where like, for an on- and off- ramp where the lines aren't painted correctly — there's snow, or anything blocking the line — or anything like that in the way. Even where they tarred the roads for construction — that technology doesn't work. I don't see that being able to go without the driver."

From Ardelle: "It does get into your income, because you aren't able to work full-time, because of the care that you have to give.

WHY FOCUS ON TRUCKERS?

We selected trucking because it's a linchpin in commerce and American life. It's one of the most common occupations in the country, and one of most stable and lucrative for men without college degrees. According to the American Trucking Association, the industry moves 10.5 billion tons of freight each year, with 3.5 million truck drivers, and accounts for almost 70 percent of the freight shipped within the United States. An entry-level truck driver can make around $40,000 and larger companies sometimes provide upfront pay for a driver to attend driving school. After three years, a driver can earn up to $80,000, plus bonuses. While, today, there is a shortage of truckers, automation might disrupt the stability and growth of the trucking industry.

WHY FOCUS ON ELDERCARE?

There are about 40 million senior citizens today, and that will more than double by 2050. A large chunk of the workforce will exit (despite the workforce aging) and the impacts of care responsibilities will land on many of those still in the workforce. More than 65 million people provide care for an elderly, disabled, or chronically ill family member. Caregivers (usually women) spend an average of 20 hours per week caring for their loved one. The value of the "free" care services provided in this country is estimated to be $375 billion per year, almost double the amount actually spent on homecare and nursing services.

Further compounding the problem, many baby boomers lack adequate savings to provide retirement income or health care and so are even more dependent on relatives to provide care. In a recent study, 30% of respondents 55 and over claimed to have zero retirement savings and 26% had less than $50,000.

> *From Kris:* "My mother-in-law doesn't have a retirement. She never worked anywhere long enough to gather a retirement. And so, even with the help that she gets, it's not enough for everything we have to cover. Part of our budget includes her stuff — like groceries for her house, food for her house, helping with medicine that Medicaid or Medicare doesn't cover."

Our imagined scenarios of the future, ironically, provided clarity about the issues we already face today: the instability in the work lives of modern Americans, an older workforce, the widening gap between rich and poor places and within them, the risk to Americans' daily lives of linking the social safety net to traditional employment. Job loss and anxiety feel pervasive — rampant opioid usage and the falling life expectancy for low-wage white Americans underline that risk. Many Americans no longer believe they can play our society's game by the rules and provide an ordinary life for their families.

While many discussions veered toward the dystopian, our members often saw reasons to be optimistic even under dire conditions. No scenario was inherently good or bad; all were made better or worse depending on the response; therefore, taking action matters.

These scenarios could create new political alignments. If technological advances lead to a decrease in labor demand, one response could be a turn towards stay-at-home parenting and eldercare, which could be a boon to culturally conservative families and communities. Work effort that is now devoted to market production could instead be devoted to revitalizing civic and religious life. If new technologies instead spur labor demand, perhaps it will be met not just by domestic workers but by foreigners working remotely, through the use of telepresence and drones. In the medium term, at least, the advent of remote intelligence might prove more consequential than that of artificial intelligence. Such a development would likely transform debates over immigration and offshoring. **Reihan Salam**, *National Review*

Responses to These Scenarios

Traditionally, the biggest schism in the labor market was between occupations that required high levels of formal education and those that did not. However, when thinking about occupations that will flourish in the economy of the future, the defining dimension is no longer education; it's now the degree to which it is routine. As a result, plenty of jobs that require advanced degrees, such as accountants, will be lost since their routine tasks can be more efficiently performed by machines. Conversely, non-routine jobs from across the educational spectrum, from plumbers to graphic designers, will flourish as they are not only not replaced by machines, but also see demand for their (highly income-elastic) services increase as overall wealth rises.

Marco Zappacosta
Thumbtack

A traditional commission on a wide-ranging social issue usually assumes that the solutions to society's problems come from government (either by expanding or contracting the government's role). We rejected that assumption.

Shift believes that, while government responses at all levels — from cities on up — are essential, the changes provoked by technology demand a response from other sectors of society. We considered civil society, academia, business, technology, culture, and individual responsibility — and strove to be as broad as possible. Technology leaders can no longer just tweet about automation, policy makers can no longer bemoan it, and workers can no longer ignore it.

Inspired by Albert Einstein's observation, "if I had an hour to solve a problem, I'd spend 55 minutes thinking about the problem and five minutes thinking about solutions," we focused on describing the problems that we might face — and already face today — rather than on proposing, justifying, or advocating specific solutions. We believe leaders in America need a common understanding of the problem, and shared language for discussing it, before landing on specific new policies. As a result, the responses cited here are those we identified as most deserving of further study, rather than policy prescriptions.

Tom Perez, Former U.S. Secretary of Labor

It is increasingly plausible that automation will reduce the demand for low-skill labor. One policy consequence of this assumption that has received insufficient attention is that it provides further impetus for immigration reform, with a strong bias toward high-skill immigrants. Such policies are already in place in countries such as Singapore, New Zealand, Australia, and Canada.

Stephen Hsu
Michigan State University

Responses Discussed by Shift Commission Members

	Individual benefits	Individual capacity-building	Investment in institutions
Applies to every scenario	Financial benefits, including savings, income-smoothing, paid time off, retirement contributions, tax withholding Social benefits, including universal health care and modernization of public education PK-12 Tax credit for un- and underpaid care work Wage subsidies for socially necessary, underpaid work (e.g., eldercare)	1 Continuous professional education — university subscriptions, short courses, upskilling Better and more specific identification of growth opportunities, future jobs, and resources to connect to job openings Entrepreneurship training and/or targeted job training Community, cultural, and worker organizing and advocacy Incentives for or technological facilitation of long-distance moves	2 Expansion of the purpose of corporations beyond shareholder value creation Increased focus on the nature of work in popular culture — more portrayals of honorable low-wage work and/or alternative work arrangements in film, television, music, etc. Public and private investment in smaller cities Mandatory national service Expanded government collection of income data to understand income more often than annually to understand alternative work
Applies to some scenarios more than others	Modern collective bargaining Universal basic income New sources of social interaction and identity — expanded neighborhood gatherings, online communities, and sources of human connection besides the workplace	Reduced occupational licensing A cross-industry way to certify skills beyond a college degree; education credentials tied more specifically to jobs or tasks Multigenerational housing	Increased university and/or federal research investment in artificial intelligence Increased federal investment in physical and broadband infrastructure.

1

Current approaches of teaching rigorous technical content rely heavily on sequences of courses in which each course builds on the material in earlier courses. All of the scenarios expect people to be able to learn new skills throughout their lives. I don't think we know how to do this well yet (note the lack of success in for-profit higher learning institutions, getting their graduates into good-paying jobs). Also the need to be able to do this exists today so we should be working on it now.

Maria Klawe
Harvey Mudd College

Natalie Foster of New America facilitates scenario planning session at Detroit meeting.

2

The government could retain an economic interest in technology created by government-funded research. This is a concrete step we can take now with regard to upcoming tech investments, so that in 10 or 20 years we don't have to wish we had. If artificial-intelligence technologies take on economic relevance quickly and displace work to a significant extent, the return on our investment will also be significant and can help fund our response.

Jeff Vockrodt
YMCA of Greater New York, formerly U.S. Department of Labor

Leaders in every sector might pick up where we left off, considering questions we raised:

As artificial intelligence progresses, our fine motor skills may be more of an advantage over machines than cognitive abilities. If so, what are the implications when good hand-eye coordination becomes more valuable than IQ? How would people, labor markets, and society need to change? What could we do now to prepare for this potential future?

Zia Khan
The Rockefeller Foundation

BUSINESS: What responsibility do employers have to prepare their workers for a technologically advanced (and uncertain) future? Can businesses help workers manage the tension between wanting stability and rewarding risk-taking? In a world where fewer employees have the traditional "full-time job" relationship with their employer, what benefits should businesses provide? In a world where productivity levels increase and employment levels do not, should we begin to consider an expanded role for business philanthropy in supporting communities?

WORKERS: Americans want stability, and they're willing to work hard for it — so what should workers do if the growth professions of the future reward "entrepreneurs of one" who take risks? How should workers overcome the many obstacles to providing for an ordinary life — debt, access to education, the need constantly to acquire new skills? How should they organize their personal lives — including child- and eldercare — to complement the way they will work?

Government is obsessed with trying to shape society around the idea that everyone has to have a job. What if government was building society around the idea that not everyone has to have a job, what would that world look like?

Albert Wenger
Union Square Ventures

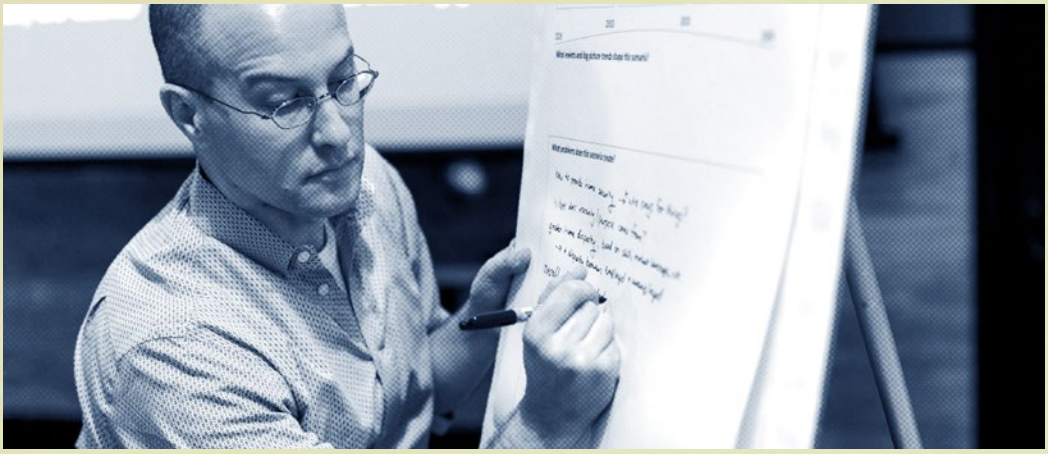
POLICY MAKERS: How does government empower Americans to seek these futures? What floor is the reasonable minimum for participating in our future society? How does our society provide for basic goods like health care and education? How should we support families' ability to provide and care for each other? How should we fund the scientific research that supports innovation, the education that propagates it, and the cities whose networks fuel it? How can we make government at every level — city, state, and federal — more nimble and responsive to sudden change?

EDUCATIONAL INSTITUTIONS: What preparation does a modern American need? How do we prepare learners if the future rewards personal independence and entrepreneurship as opposed to competent implementation? What skills should one seek in a world where the goal line is constantly moving?

We will not be able to create a new narrative of American identity unless schools play a critical role in its writing. I believe educators from K through college and even graduate school will need to pay close attention to the language they use (because language creates reality) with their students as well as the values they convey through their behavior and the cultural norms they create. Business schools should probably be at the top of that list.

Carole Robin
Stanford University

CULTURE, MEDIA, AND CIVIL SOCIETY: How can the media keep the conversation about work's challenges front and center? What stories should we tell about how we work? What should we value about work, leisure, and family life? How do we imagine these futures in ways that call us to act? What successes should we trumpet? And how do we ensure that the stories told reflect the demographic, cultural, and socioeconomic diversity of our country?



Jed Kolko of Indeed facilitates responses session at New Orleans meeting.

Conclusion

Shift has completed its formal work, though much remains to be done. We need additional research about specific industries and in communities with leaders who want to examine how our scenarios would apply to their citizens. We plan to use our lens — e.g., "will it be King of the Castle or Go" — to frame public discussions about the future of work. And we hope our members will continue to build on the relationships they have kindled, so leaders in different sectors will work hand in hand to address the issues we see coming — and, as important, the ones we already face.

We also hope to flesh out more hypotheses of specific futures we could build toward. We distilled our four scenarios from 44 colorful, detailed versions. With scribbles, Post-its, and pictures, our members let their imaginations run, guided mainly by our two-by-two matrix. Here are three possibilities we could embrace.

Imagine a future world, maybe in the task-based Rock-Paper-Scissors or Jump Rope economies with "Everyone a Coach." Sports coaches, of course. Vocal coaches, rock climbing coaches, gardening coaches, tech coaches, coaches for any activity in which continuous improvement is possible and desired. School coaches. Work coaches. Career coaches. Life coaches. Streams of data, about our own performance and that of others, will measure progress in just about everything we want to do. Teachers are one and done. Coaches are forever. Coaches care.

Anne-Marie Slaughter, New America

Or consider, in any scenario, the idea of a "Tear-Down Squad." What happens to strip malls when e-commerce takes over for goods and personal services can come to us? (Except for our favorite salons, which might be concentrated in renewed but much smaller downtowns.) What of all those office buildings, in a world where people hot-desk and work out of coffee shops? One of our members described the buildings and old infrastructure that need to be torn down in Atlanta alone. Tearing down the old means making way for the new, even if the new is a park, garden, or affordable housing. It is all part of the circular economy, which is another potential source of many jobs we cannot envisage today.

Imagine, in the Go economy, "MasterCraft." Craft beer is exploding, led by Master Brewers, and it may just be the beginning. Etsy has expanded far beyond unusual holiday gifts to a marketplace for human creativity — arts and crafts. Now imagine a world in which Master Bakers, Master Builders, Master Masons, Master Carpenters and many others come back, plying their trades in high-end and highly local versions, often aided by 3D printing or connected to jobs via Thumbtack. The White House has announced its desire to see apprenticeships expand from 500,000 to 5 million. That many apprentices will need masters. As mass production makes room for customized

production in food, shelter, and clothing — three of humans' most basic needs — and as higher education becomes something that happens in workplaces as well as schools, we could see the emergence of a 21st-century guild system.

The care economy, the circular economy, and the craft economy are all possible, but so are much bleaker futures. Any of the four scenarios we outlined can come in a positive or a negative version. But we cannot just wait for one of them to emerge.

The future of work is not a self-solving problem. None of our members said, "If we do nothing, everything will be fine."

We know that massive change is coming. The early signs are already here: jobs at every level and of every kind beginning to give way to machines that can learn the way the human brain does. Now is the time to discuss these issues, while we still have the chance to shape our responses to a future we can imagine, even if we cannot precisely predict its scale and scope. Unemployment, underemployment, and even serial uncertain employment create deep stress, which, in turn, spawns rage and resentment. That is not a society that we want to live in. It is also the antithesis of the American dream, the promise of opportunity and possibility for anyone willing to work hard enough to seize it. If you cannot find work no matter how hard you try, or you work three jobs but cannot get ahead, hope will turn to hate; the drive to create will turn into the drive to destroy.

We have choices, as employers, employees, and citizens. We can decide what kinds of businesses we want to run, the education we want to get, and the policies we want to vote for and enact. We must come together and face the questions posed by the future of work as a nation and find answers together. This report pushes beyond the seemingly endless debate between techno-utopians and doomsayers by combining data, diversity, and imagination. It is only the beginning, but we hope it will provide the framework for a realistic and productive national conversation. Now is the time to have it.

Shift Commission members scenario plan at New York City meeting.

Appendix 1

Commission Members

denotes core planning group

Anne-Marie Slaughter, New America — Co-chair

Roy Bahat, Bloomberg Beta — Co-chair

Kristin Sharp, New America — Executive Director

Helen Adeosun, CareAcademy

Joaquin Alvarado, The Center for Investigative Reporting

Joseph Aoun, Northeastern University

Philip Auerswald, Global Entrepreneurship Research Network

Byron Auguste, Opportunity@Work, New America

Jeff Berman, Whalerock Industries

Marcus Brauchli, North Base Media

Rob Brown, JUST Capital

James Cham, Bloomberg Beta

Robin Chase, co-founder of Zipcar

Jack Clark, OpenAI

Elliot Cohen, PillPack

Josh Cohen, Apple University; University of California, Berkeley; *Boston Review*

Raphael Crawford-Marks, Bonusly

Andy Crouch, John Templeton Foundation

Kim-Mai Cutler, Initialized Capital

Kimberly Dowdell, Century Partners

Lee Drutman, New America

Fouad ElNaggar, Sapho

Althea Erickson, Etsy

Diana Farrell, JPMorgan Chase Institute

Natalie Foster, The Aspen Institute; New America

Megan Garcia, New America

Garlin Gilchrist II, City of Detroit

Sean Glass, Advantia Health

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Appendix 2

Methodology

We chose scenario planning to sidestep the usual debates ("robots are taking over! no, tech will solve everything!") about predicting what will happen and to connect different communities to think constructively about solutions.

Shift brought together technologists, business leaders, social advocates, and cultural thinkers to describe specific visions of what our work and our society might look like 10-20 years from now. We attempted to have the groups represent America's leadership in as many dimensions as possible: professional, personal, ideological, and otherwise.

That said, given the limits on scope and timing, we were unable to discuss in enough detail the implications of our scenarios for many critical issues, including but not limited to the global economy, or for the many communities that make up America.

Before we began, we gathered a small planning group to consider many uncertainties about work's future. From an initial list of 16 driving factors, we selected four possible economic futures on which to focus.

We then hosted Shift's meetings throughout the country: in New York City, Washington, D.C., Detroit, New Orleans, and Oakland. Each city hosted a different group of members.

Commission sessions started with data on current economic and technology developments, a consistent set of questions about each possible future, and a view that we can compare and contrast possible futures using a small number of essential differences about type and amount of work available in the America of 10-20 years from now. Shift members then fleshed out the details of several possible futures, named them, described what work and life could look like under each, and created options for responding to them.

Inevitably, when people imagine the future, they speak from personal experience. The Commission members are all leaders, so they are accomplished, highly educated, and clustered in a handful of occupations and locations. The Commission was unrepresentative of the American workforce, and, moreover, the members are the types of people most likely to be personally successful regardless of how work's future evolves.

To correct for this bias, we:

1. Assigned each Commission member a new persona, described by a set of demographic facts (e.g., "I am a female, 25-year-old Asian American/Pacific Islander living in Quincy, MA. I have a high school degree plus some college and work in accounting."). We encouraged members to embellish their personas and imagine how this persona might fare in different scenarios. We selected the personas to represent a cross-section of American working-age adults randomly selected from the Current Population Survey conducted by the U.S. Census Bureau and the Bureau of Labor Statistics.
2. Conducted focus groups to include the voices of workers themselves.
3. Surveyed a representative sample of Americans on their attitudes toward work.

Finally, we created possible responses to these future scenarios.

In total, Shift facilitated five scenario-planning sessions, each with two or three dozen participants, for a total of 118 members and 44 individual imagined versions of the four core scenarios.

Shift Commission member with persona card at New Orleans meeting.

Appendix 3

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