



**Comprehensive
U.S. Labor Force &
Employment
Report:**

Q1 2018

28 April 2018

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Jobenomics Comprehensive U.S. Labor Force & Employment Report: Q1 2018

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28 April 2018

Introduction & Table of Contents

While highly-advertised statistics (e.g., the stock market, official unemployment rate, and consumer confidence index) suggest that the U.S. economy is booming, underlying small business, labor force and wage statistics are not doing nearly as well. Two comprehensive Jobenomics quarterly reports discuss this dichotomy that take a deep dive into economic, community, business and workforce statistics, characteristics, challenges, and trends.

This 260-page quarterly Jobenomics Comprehensive U.S. Labor Force & Employment Report: Q1 2018 focuses on current U.S. labor force and employment statistics, fastest growing industries and occupations, business and job creation, economic growth, income opportunity, contingent workers, education and training, workfare, and Jobenomics' dozen city and state initiatives.

The top three conclusions of this report are:

1. Near-term labor force and employment outlook is positive.
2. Mid-term labor force and employment outlook is troublesome.
3. Long-term challenges to economic and labor force growth include stemming voluntary workforce departures, dealing with contingent workforce expansion, improving GDP growth, adjusting the population/workforce imbalance, providing better income opportunity and wages, and increasing the number of startups, self-employed, micro and small businesses.

The 125-page Jobenomics U.S. Labor Force & Unemployment Report: Q1 2018 focuses on the current U.S. unemployment and underemployment situation, labor force losses, economic sustainability, income inequality, voluntary workforce departures and the non-working population, welfare, and the small business creation solution.



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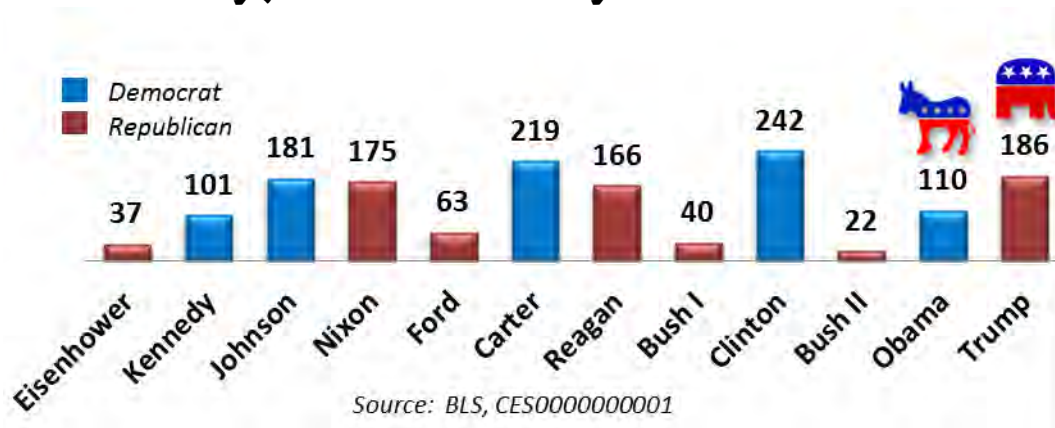
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Executive Summary

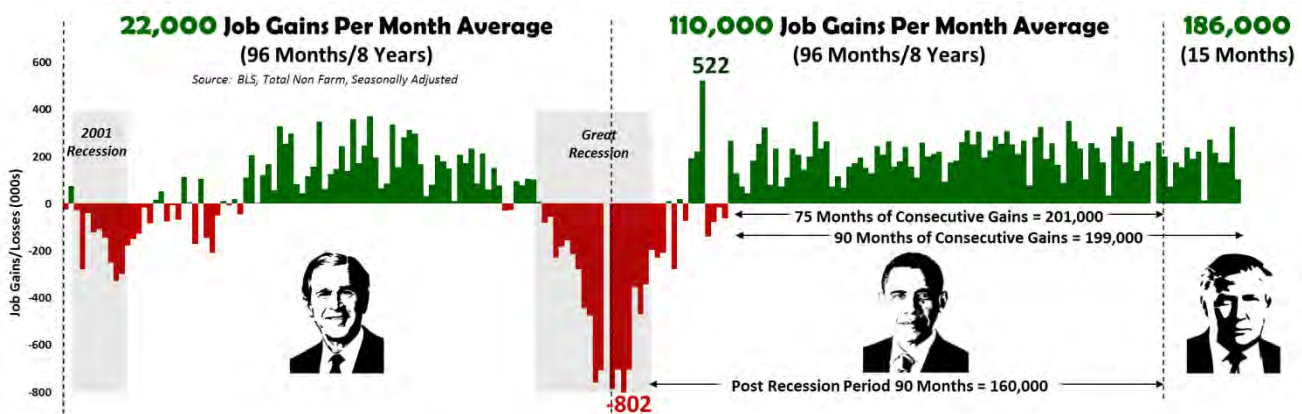
As reported by the U.S. Bureau of Labor Statistics, the last three Administrations are not generating enough new jobs to grow the economy to the degree needed to mitigate a future downturn and restore the middle class. As reported by the U.S. Bureau of Economic Analysis, quarterly GDP growth declined to 2.9% in Q4 2017 from a high of 3.2% in the previous quarter. For Q1 2018, the Federal Reserve currently predicts 2.0% GDP growth. Consequently, the U.S. economy is not yet gaining sufficient momentum to achieve President Trump's goal of creating 25 million new jobs and sustained 4% GDP growth over the next decade. To accomplish this worthy goal, the Administration must spend more time on small, micro and startup business creation, with emphasis on the emerging digital economy.

Monthly Job Creation Rate By President Since WWII



In today's highly-charged political environment, what people often want to know is how today's president is performing against past presidents. As color-coded by political party, of the twelve presidents since WWII, President Trump's average monthly job creation rate is 186,000, which puts him in third-place following President's Clinton and Carter.

Job Creation Scoreboard Since 2001



Since 2001, the monthly job creation high water mark was 522,000 new jobs in May 2010, and the low water mark for jobs losses was 802,000 in March 2009. From January 2001 through April 2018, the United States averaged an abysmal 75,000 new jobs per month (not shown).

The Trump Administration is averaging 186,000 job gains per month, which is good but roughly equal to the 199,000 monthly average of the consecutive 90-month job creation run. Unfortunately, 186,000 per month is insufficient for the Trump Administration to achieve the President's 25 million new job goal over the next decade (120 months). To accomplish this goal, the Administration needs to generate an average of 212,000 new jobs per month for the remaining 105 months in the decade since President Trump was elected.

To fully understand net labor force gains and losses, Jobenomics uses two primary sources of U.S. labor force data:

- 1) The monthly U.S. Bureau of Labor Statistics (BLS) Employment Situation Summary,¹ a monthly summary of all U.S. government and private sector employment, and
- 2) The ADP National Employment Report,² a monthly survey of workers in 400,000 U.S. private sector businesses by the ADP Research Institute in collaboration with Moody's Analytics.

Jobenomics Analysis of the BLS Employment Data.

From a Jobenomics standpoint, employment statistics are essential measures of economic growth, but **only as a prelude to net labor force gains and losses.**

The U.S. labor force consists of approximately 250 million citizens (called the civilian noninstitutional population) enrolled in one of three Bureau of Labor Statistics categories: Employed, Unemployed and Not-in-Labor-Force. From a Jobenomics viewpoint, it is vitally important to evaluate the give-and-take between each of these categories as opposed to emphasizing each individually. For example, increasing the labor force by 25 million new jobs (Trump's plan) makes little economic sense if 25 million people voluntarily leave the workforce for welfare and alternative lifestyles as has happened in the recent past.

Since the beginning of the 21st Century (1 January 2000), 17.4 million people entered the workforce as opposed to 26.7 million voluntary workforce departures of Americans capable of working—not including population growth of 45 million additional Americans (282 million in 2000 versus 327 million today). **If these trends continue, the U.S. economy will eventually collapse due to the financial burden of the non-working population.** Fortunately, current trends are positive, but a financial downturn could easily reverse our economic situation.

Before and during the Great Recession, the Non-Working Population (unemployed citizens looking for work and citizens capable of working but not looking for work) was growing at a rate that it almost reached the level of the private sector Working (Employed) Population in 2009. Fortunately, the spread between the Working Population and Non-Working Population is now widening, which is a good sign for the U.S. economy and labor force.

¹ U.S. Bureau of Labor Statistics, Employment Situation Summary, <https://www.bls.gov/news.release/empsit.nr0.htm>

² ADP Research Institute, April 2018: ADP Employment Reports, <https://www.adpemploymentreport.com/>

The private sector produces the vast majority of goods and services that drive economic growth. Since the turn of the 21st Century, the U.S. private sector's Working (Employed) population rose by 14% compared to a 37% rise in the Non-Working Population. The Non-Working Population includes the Not-in-Labor-Force that rose by 39%, and the Officially U3 Unemployed, which is still 16% higher today than it was in the year 2000.

U.S. Labor Force Gains and Losses Since 2000 as of 1 April 2018

	Working Population Employment Gain/Loss	Non-Working Population		Net Labor Force Gains- Losses
		Not-in-Labor Force Gain/Loss	Unemployed (U3) Gain/Loss	
Last Month (March 2018)	103,000	323,000	(121,000)	(99,000)
Trump Era (Jan 2017-Present)	2,793,000	329,000	(917,000)	3,381,000
Post Recession (Jan 2010-Present)	18,449,000	11,522,000	(8,513,000)	15,440,000
Obama Era (2009-2016)	10,595,000	14,626,000	(3,784,000)	(247,000)
Bush II Era (2001-2008)	2,115,000	9,892,000	5,652,000	(13,429,000)
Since Year 2000	17,441,000	26,680,000	932,000	(10,171,000)
	<i>BLS CES Report (CES0000000001) Table B-1 Seasonally Adjusted</i>	<i>BLS Not-in-Labor- Force Report (LNS15000000) Seasonally Adjusted</i>	<i>BLS Unemployed Report (LNS13000000) Table A-10</i>	

The 6 April 2018 BLS Employment Situation Summary reported that the U.S. economy generated 103,000 new jobs in March 2018. For the sixth straight month, the official unemployment rate (U3 rate) remained unchanged at 4.1% even though the unemployment rolls shrank slightly by 121,000. Most importantly, and least reported by the media, is that the Not-in-Labor-Force cadre of sidelined citizens increased by 323,000. The combined effect of a weak employment boost, a sizable increase in sidelined Not-in-Labor-Force cadre and a minor decrease in the number of unemployed yielded a net labor force loss of 99,000 citizens.

During the first 15-months of the **Trump Administration**, employment gains amounted to 2,793,000 workers, for an average of 186,200 per month. Correspondingly, the U3 Unemployment category decreased by 917,000 personnel, and the Not-in-Labor-Force category grew by 329,000 citizens. Consequently, the overall Trump Administration **net labor force gain** was 3,381,000 citizens. In comparison, during the 8-years/96-months of the Obama Administration, the net labor force loss was 247,000 citizens. During the 8-years/96-months in GW Bush Administration, the net labor force loss was 13,429,000 citizens.

Since the **end of the Great Recession**, from 1 January 2010 to 1 April 2018, the U.S. labor force net gain was 15,440,000 workers. 18,449,000 new workers entered the labor force. 8,513,000 fewer workers are officially unemployed, but the number of work-capable people in Not-in-Labor-Force swelled by 11,522,000 citizens.

During the 8-years/96-months of the **Obama Era** (1 January 2009 through 31 December 2016), the U.S. labor force lost a net 247,000 jobs, with 10,595,000 entering the labor force, 14,626,000 voluntarily departing, and 3,784,000 fewer people recorded as officially unemployed. It is important to remember that the first 21-months of President Obama's first term in office, the Administration dealt with the Great Recession and post-recession recovery operations. Obama's next 75-months in

office produced the longest run of consecutive labor gains since WWII when BLS record keeping began. This 75-month run exceeded the previous record of 48-months that occurred in the July 1986 to June 1990.

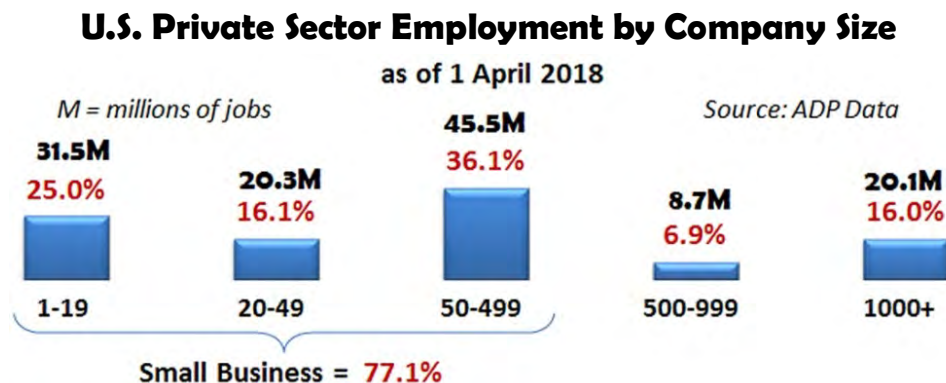
During the 8-years/96-months of the **Bush II Era** (1 January 2001 through 31 December 2008), the U.S. labor force suffered a devastating net loss of 13,429,000 jobs (2,115,000 new jobs, 9,892,000 voluntary workforce departures, and 5,652,000 newly unemployed). To a large extent, President Bush endured the perfect storm of labor force calamities:

- 8-months of the 2001 Recession (March 2001 through November 2001),
- 13-months of Great Recession (December 2007 through December 2008),
- the aftermath of the 9/11 attacks and the ensuing global war on terrorism, and
- nine major Hurricanes (Katrina, Ike, Rita, Wilma, Ivan, Charley, Frances, Jeanne, and Allison) that collectively caused over \$275 billion in damage.

From the **beginning of the 21st Century** (1 January 2000 to 1 April 2018), the American labor force is still **weaker by a net 10,171,000 workers** (highlighted in light red). This weakness is exacerbated by a population growth of 45 million additional American citizens present today compared to 2000 (282 million versus 327 million) plus the impact of a rapid rise of contingent part-time workers with a commensurate decrease in traditional full-time workers.

To summarize, while recent trends are slowly reversing America's descent from an economic quagmire, the U.S. economy is not yet sustainable without the continued strengthening of the U.S. private sector labor force. The private sector workforce consists of 125,904,000 workers, which represents only 38% of the total U.S. population of 327,450,761 as of 1 April 2018. Of this workforce, approximately 60% are traditional full-time workers, and 40% are contingent workers (part-timers, freelancers, independent contractors, etc.) who earn far less income than conventional workers and often receive little or no benefits. Policy-makers and decision-leaders must concentrate on small business creation and sustainment to achieve economic and labor force growth.

Jobenomics Analysis of the ADP National Employment Report Data.

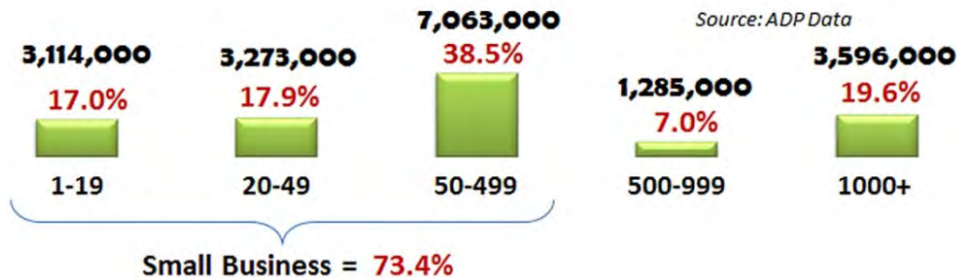


As reported by ADP, small businesses are undeniably the dominant employer in the United States. Small companies with less than 500 employees employ 77.1% of all private sector Americans with a

total of 97,166,014 employees—over 3.4-times the number of enterprises with more than 500 employees that have 28,795,066 employees. Micro-businesses with 1-19 employees employ 1.6-times the number of giant corporations with over 1,000 employees (31,450,943 versus 20,136,146).

U.S. Private Sector Jobs Created This Decade by Company Size

1 January 2010 to 1 April 2018 (99 Months)

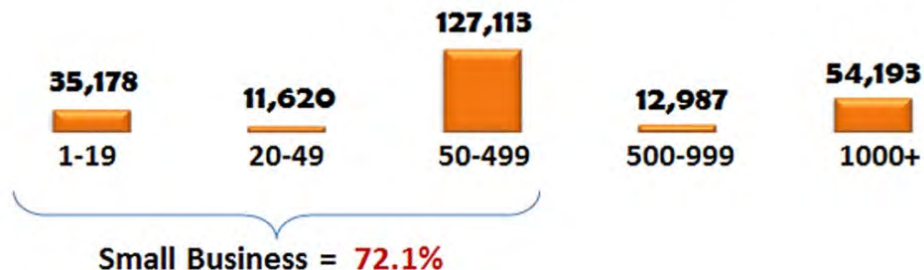


Since the beginning of this decade, small businesses created 73.4% of all new jobs in the United States. Small businesses with less than 500 employees created 2.8-times more jobs as enterprises with 500+ employees, or 13,455,699 versus 4,881,380 new jobs respectively. Micro and self-employed firms with 1-19 employees produced 87% as many jobs as large-scale corporations with over 1,000 employees (3,113,740 versus 3,595,904).

U.S. Private Sector Jobs Created Last Month by Company Size

March 2018

Source: ADP Data



Last month (March 2018), U.S. small business (1-499 employees) created 72.1% of all new jobs. This percentage compares favorably with previous months during the Trump Administration: 68.7% February, 65.4% January 2018, 78.6% December, 82.0% November, 47.1% October, 17.9% September, 35.8% August, 68.5% July, 69.2% June, 76.9% May, 94.0% April, 93.7% March, 75.1% February, and 72.8% January 2017.

Since the beginning of this decade, small businesses created around three-quarters of all new jobs in the United States. While impressive, the small business job creation engine is losing power.

During the depth of the Great Recession in February 2009, small businesses laid off 624,000 people in a single month, which is indicative of the hazards of a stalled small business engine. Twenty months later, the small business engine was hitting on all cylinders and generated a peak of 323,000 jobs in October 2010.

As shown below, since this post-recession peak of 323,000 new jobs in October 2010, small business job creation dropped 46% to 174,000 in March 2018, a difference of 149,000 jobs. Consequently, over a 120-month period, a deficit of 149,000 jobs equates to 18 million fewer jobs per decade. The Trump Administration could use these lost jobs to fulfill the President's vision of 25 million new jobs over the next decade.

U.S. Small Business (1-499) Job Creation Engine Is Faltering



If the small business engine had heart, it would be a micro-business. Most micro-businesses are self-employed firms (one-person incorporated or unincorporated), family businesses (mom-and-pops) or partnerships. Micro-businesses are also the heart the U.S. economy. Mom-and-pop stores are essential to local communities. They are the type of enterprises that hire the unemployed and give part-time jobs to high schoolers and other entry-level individuals who want to work. Continued deterioration and denigration of micro-businesses can only lead to economic stagnation.

Sadly, the U.S. micro-business heart is suffering from a form of atherosclerosis (narrowing or blockage of the arteries) as indicated by a 60% decline since the post-recession peak. The average micro-business job creation over the Trump Administration was 27,000 jobs per month, which is a meager number considering the relative strength of the U.S. economy. The 3-year average before the Great Recession was 44,000 new jobs per month as shown.

The vast majority (95%) of small and micro-businesses are “pass-through” businesses (sole proprietorships, partnerships, and S-Corporations that pay taxes based the owner's income tax returns). Consequently, the recent Tax Cuts and Jobs Act (TCJA) pass-through businesses tax reduction from 39.6% to 20% for qualified business income should have a positive economic and labor force impact in 2018. The primary intent of TCJA's pass-through business legislation was to boost mom-and-pop business growth and employment.

Unfortunately, most of the earnings generated by pass-through entities are not by mom-and-pop businesses but by high net-worth individuals (e.g., hedge fund managers, management consultants, and real estate executives) who self-incorporate as an LLC or S-Corp to reduce their tax burden. While the TCJA includes “anti-abuse measures” to ensure that only owners of “bona fide” businesses

claim the 20% rate, abuse is likely to grow now that a new “territorial system” exempts foreign profits by U.S. business. A shrewd Wall Street hedge fund manager or real estate broker can start a pass-through business on a Caribbean island to reduce their tax burden and deduct business expenses while enjoying Mai Tais on the beach.

While the Jobenomics outlook for small and self-employed business is positive throughout 2018, it is less bright than it could be. Washington and corporate America need to place significantly more attention on small business development and sustainment. Tax cuts will help but are not the solution to the problems facing small businesses.

America needs to rejuvenate the small business entrepreneurial spirit and create a worldview that small and micro-businesses are a viable alternative to the decreasing number of high-paying full-time jobs. Women-owned and minority-owned businesses are deserving of far more attention than they receive today. Additionally, digitally-savvy Screenagers (Generation Z) are suited for starting micro-businesses tailored to meet the needs of the emerging digital economy and contingent labor force. If the 29.6 million American small businesses created or hired only one net new employee over the next several years, Trump’s 25 million new jobs goal could happen in a much shorter timeframe than he currently envisions.

The rate of small business startups is also dropping precipitously. Business startups are the seed corn of the U.S. economy. Without the planting and fertilization of these seedlings, the fields of American commerce will be fallow.

Of the estimated three million startups over the last decade, tens of thousands of ultra-high growth businesses (called unicorns and gazelles) have generated millions of net new jobs for America.

According to the Kauffman Foundation, these fleet-footed startups account for 50% of all new jobs created.³ Uber, Lyft, Airbnb, SpaceX, WeWork, and Pinterest are recent examples of unicorns—a startup company that rapidly achieves a stock market valuation of \$1 billion or more. A gazelle is a high-growth company that increases revenues by over 20% per year for four-plus years. The top-10 U.S. gazelles include Natural Health Trends, Paycom Software, Lending Tree, ABIOMED, MiMedx Group, Facebook, NetEase, Ellie Mae, Amazon.com and Arista Networks, according to Fortune magazine.⁴

Regarding new starts (firms less than 1-year old), the Census Bureau’s Business Dynamic Statistics indicate that the United States is now creating startup businesses at historically low rates, down from 16.5% of all firms to 8% in 2014 (latest data).⁵ Based on a Wall Street Journal (WSJ) analysis of this

³ Kauffman Foundation, Understanding the Economic Impact of High-Growth Firms, 6 June 2016, <http://www.kauffman.org/newsroom/2016/06/understanding-the-economic>

⁴ Fortune, <http://fortune.com/100-fastest-growing-companies/list/>

⁵ U.S. Census Bureau, Business Dynamics Statistics, Firm Characteristics Data Tables, Firm Age, https://www.census.gov/ces/dataproducts/bds/data_firm.html

Census Bureau data, “If the U.S. were creating new firms at the same rate as in the 1980s...more than **200,000 companies and 1.8 million jobs a year**” would have been created.⁶

During the heydays of the 1970s, Bill Gates and Steve Jobs started Microsoft and Apple, two of the world’s most celebrated companies with a market capitalization (the value of the total number of shares multiplied by the present share price) of \$741 billion and \$911 billion respectively. One has to wonder if these companies would have started in America’s current austere startup environment?

According to a Census Bureau’s Business Dynamic Statistics press release on 20 September 2017, in 2015, 414,000 U.S. startup firms created 2.5 million new jobs, which is well below the pre-Great Recession average of 524,000 startup firms and 3.3 million new jobs per year for the period 2002-2006.⁷ In 2015, job creation minus job destruction equaled **net** job creation of 3.1 million, which supports the Jobenomics hypothesis that net job creation is a more critical statistic for policy-makers than just focusing on only new jobs. Other tidbits of the 2017 Business Dynamic Statistics press release include:

- 5 million U.S. small businesses (1-499 employees) created 45% (1,400,711) of all net new jobs compared to 20 thousand large enterprises (500+ employees) that produced 55% (1,690,591) net new jobs.
- 4.5 million micro-businesses (1-19 employees) net job creation equated to 14% (434,203) of all net new jobs.
- Net job creation in urban areas was over twice the rate of rural communities, or 2.7% versus 1.2% respectively.

According to another Kauffman Foundation analysis of the Census Bureau’s Business Dynamic Statistics, most **city and state government policies that look to big business for job creation are doomed to failure** because they are based on unrealistic employment growth models. “It’s not just net job creation that startups dominate. While older firms lose more jobs than they create, those gross flows decline as firm’s age. On average, one-year-old firms create nearly 1,000,000 jobs, while ten-year-old firms generate 300,000. The notion that firms bulk up as they age is, in the aggregate, not supported by data.”⁸

Jobenomics agrees with both the WSJ and Kauffman analyses. Moreover, the Jobenomics 20-part series, entitled President Trump’s New Economy Challenge⁹ provides a detailed analysis why **the Trump Administration’s bold economic (4% GDP) and job creation (25 million new jobs) vision is**

⁶ Wall Street Journal, Sputtering Startups Weigh on U.S. Economic Growth, 23 October 2016, <http://www.wsj.com/articles/sputtering-startups-weigh-on-u-s-economic-growth-1477235874?mod=djem10point>

⁷ U.S. Census Bureau, Startup Firms Created Over 2 Million Jobs in 2015, <https://www.census.gov/newsroom/press-releases/2017/business-dynamics.html>

⁸ Kauffman Foundation, The Importance of Startups in Job Creation and Job Destruction, Last Paragraph, 9 Sep 2010, <http://www.kauffman.org/what-we-do/research/firm-formation-and-growth-series/the-importance-of-startups-in-job-creation-and-job-destruction>

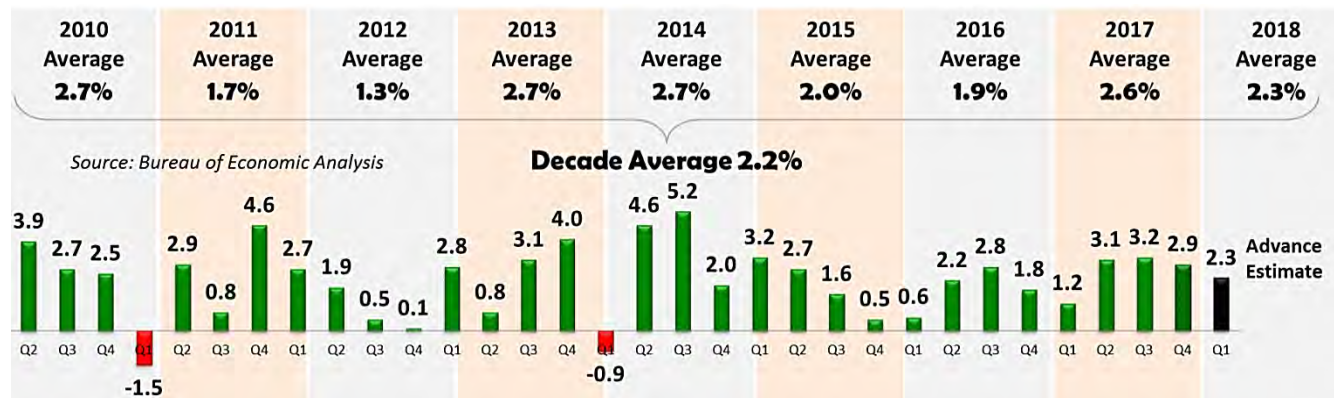
⁹ Jobenomics, President Trump’s New Economy Challenge, <https://jobenomicsblog.com/wp-content/uploads/2011/11/President-Trumps-New-Economy-Challenge-Series-6-February-%E2%80%93-4-April-2017.pdf>

likely to fall short due to its concentration on big business rather than small business creation and sustainment. Small business is not only critical to net job creation; it is the primary determinant for GDP growth given the fact that big firms are increasingly looking at automation and outsourcing (to foreign workers or domestic contingency workers) to replace the conventional full-time labor force.

Jobenomics Gross Domestic Product (GDP) Analysis.

The ideal rate for U.S. GDP growth is around 3%. Any GDP growth below 2% is sclerotic, which makes the U.S. economy vulnerable to financial downturns.

Real GDP Quarterly Percent Change This Decade



According to the U.S. Bureau of Economic Analysis (BEA), during the post-recession recovery period from 2010 through 2017, U.S. GDP averaged 2.2%. In 2015 and 2016, U.S. GDP grew by subpar rates of 2.0% and 1.9% respectively. During the 8-years of the Obama Administration, GDP averaged 1.8%. During the first year of the Trump Administration, GDP averaged 2.6%. BEA's advance estimate for Q1 2018 is a disappointing 2.3%.¹⁰

For Q1 2018, the Federal Reserve Bank of Atlanta's GDPNow forecast is 2.0% as of 26 April 2018, which is down from a high of 5.4% on 1 February 2018 and up from a low of 1.8% on 15 March 2018. The GDP Now's "Blue Chip consensus" survey of leading business economists forecast that Q1 2018 growth will be 2.1% with a low estimate of 1.6% and a high estimate of 2.6%.¹¹

While GDP growth does not ensure employment growth, sclerotic GDP growth discourages business hiring, consumer spending and labor force expansion. Sclerotic GDP growth also discourages lower rates of unemployment and voluntary workforce departures. Negative GDP growth creates recessions and depressions depending on the severity and longevity of the contracting economy.

The period of sclerotic GDP growth from 2000, has dramatically impacted the American middle-class and the U.S. labor force that is weaker by 11 million workers today than at the beginning of the 21st

¹⁰ U.S. Bureau of Economic Analysis, Table 1.1.1, Percent Change From Preceding Period in Real Gross Domestic Product, <https://www.bea.gov/iTable/iTable.cfm?reqid=19&step=2&reqid=19&step=2&isuri=1&1921=survey>

¹¹ Federal Reserve Bank of Atlanta, GDPNow Forecast for Q1 2018, 17 April 2018, <https://www.frbatlanta.org/-/media/documents/cqer/researchcq/gdpnow/RealGDPTrackingSlides.pdf>

Century. Even though wages have improved in recent years, for most American workers, real salaries (purchasing power) have not increased significantly for decades. America's aggregate household income has shifted from middle-income to upper-income households, causing many middle-class workers to leave the workforce altogether. The solution to building a robust middle-class is to accelerate GDP growth, which requires the creation of more productive private sector jobs, which, in turn, can only be generated by a massive expansion of the small business sector.

Concluding Thoughts.

President Trump's vision of a "dynamic and booming economy" is one that can produce a GDP growth rate of "4% over the next decade." This vision ultimately depends on mass-producing business, especially small business, in sufficient quantities to create 25 million net new jobs. Sclerotic (0% to 2%) or recessive (negative) GDP rates depreciate a government's legitimacy. Robust GDP growth of over 3% will have the opposite effect.

According to the nonpartisan Congressional Budget Office's 2017 to 2027 Budget and Economic Outlook report,¹² "over the next five years, the monthly increase in nonfarm payroll employment, which is estimated to average 160,000 jobs in the first half of 2017, is projected to settle down to an average of 64,000 jobs." If this CBO forecast is correct, the next decade is likely to produce only 9 million American jobs, which is far short of President Trump's projection of 25 million new jobs. Note: last year's BLS Employment Projections: 2016-27 Summary report forecasts that the United States will produce only 11.5 million new jobs over the next decade.¹³

Jobenomics tends to agree with these rather gloomy CBO and BLS forecasts for the reasons discussed in the Jobenomics 20-part series entitled President Trump's New Economy Challenge.¹⁴ However, the Trump Plan can be amended to change CBO and BLS labor force projections from negative to positive.

With proper leadership, the Administration can lift tens of millions of Americans out of poverty, or near poverty, by making the following four structural changes to President Trump's economic and job creation plan:

- Balancing the traditional standard industrial economy with the newly emerging nonstandard digital economy,
- Mitigating the mass-exodus of capable workers who are voluntarily departing the U.S. labor force for lives of dependency and alternative (often illicit) lifestyles,
- Addressing the challenge of the ever-growing contingency workforce that will soon be the dominant form of labor in the United States, and

¹² Congressional Budget Office, The Budget and Economic Outlook: 2017 to 2027, January 2017, <https://www.cbo.gov/sites/default/files/115th-congress-2017-2018/reports/52370-outlookonecolumn.pdf>

¹³ U.S. Bureau of Labor Statistics, Employment Projections and Occupational Outlook Handbook, Employment Projections: 2016-26 Summary <https://www.bls.gov/news.release/ecopro.toc.htm>

¹⁴ Jobenomics, President Trump's New Economy Challenge, <https://jobenomicsblog.com/president-trumps-new-economy-challenge/>

- Mass-producing small and self-employed businesses—the engine of the U.S. economy—and the employer of the vast majority of Americans.

If the Trump Administration can achieve 4% GDP growth in a stable global economy, the U.S. economy will boom, and Americans will be euphoric. This feat will not be easy. The last time that the United States reached 4% in a single year was 2001. The last time that the United States achieved 4% in ten consecutive years over the previous 5-decades was never (3.5% was the highest from 1976 to 1985). Notwithstanding, if the Trump Administration can tie the 3.5% record over the next decade, they will be vindicated and worthy of much praise.

**Jobenomics Comprehensive
U.S. Labor Force
& Employment Report:
Q1 2018**

**Detailed
Discussion**

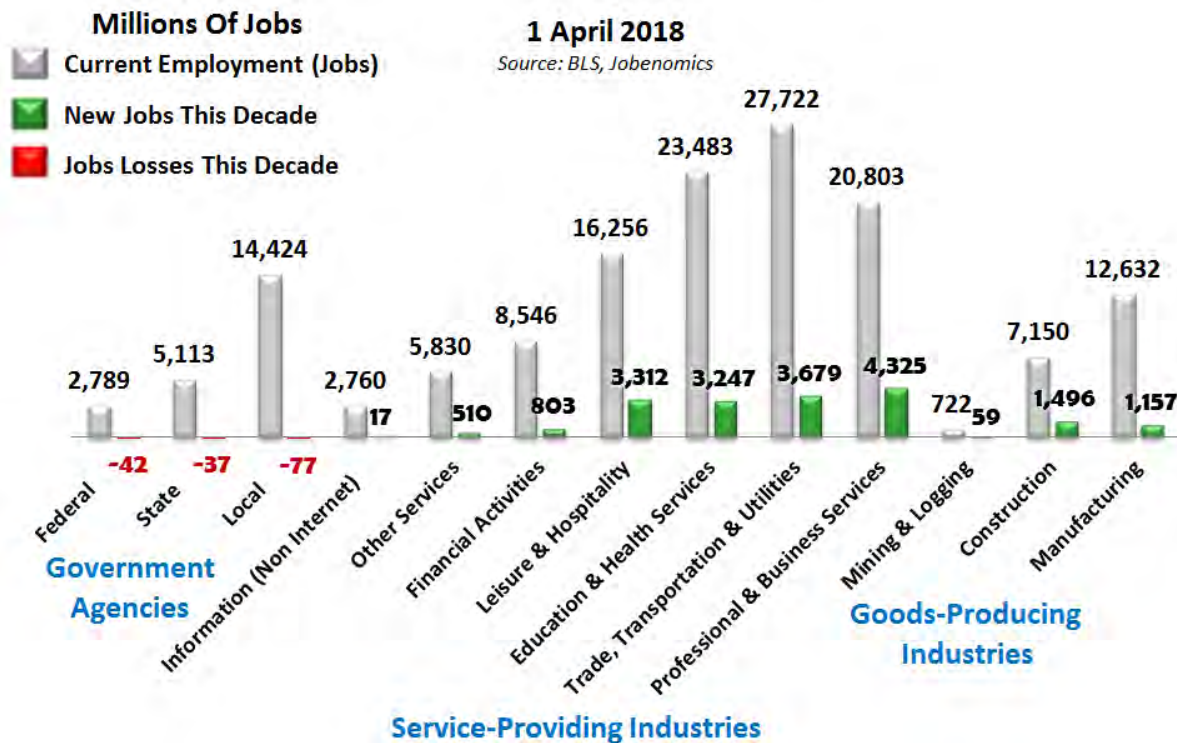
State of the U.S. Labor Force

To fully understand net labor force gains and losses, Jobenomics uses two primary sources of U.S. labor force data:

- (1) the monthly U.S. Bureau of Labor Statistics (BLS) Employment Situation Summary¹⁵, a monthly summary of all U.S. government and private sector employment, and
- (2) the ADP National Employment Report¹⁶, a monthly survey of 400,000 U.S. private sector businesses by the ADP Research Institute in collaboration with Moody's Analytics.

Dozens of other accredited government and private sector resources are also incorporated and footnoted. For the express purpose of guiding readers and helping formulate their conclusions, this report includes approximately 300 footnotes with links to officially recognized experts and institutions.

Current U.S. Nonfarm Employment, Job Gains/Losses



This chart is a snapshot of the current state of the U.S. labor force. The gray-shade columns show the number currently employed in the thirteen BLS “industries”. New positions created this decade are shown in green and job losses in red.

¹⁵ BLS, Employment Situation Summary, 6 October 2017, <https://www.bls.gov/news.release/empsit.nr0.htm>

¹⁶ ADP, <http://www.adpemploymentreport.com/>

In general terms, the U.S. labor force is in a much better position today than it was in during the Great Recession. Seven private sector service-providing industries employ 71% of all U.S. workers (105,400,000) jobs, followed by federal, state and local governments that engage 15% of the workforce (22,326,000), and by three private sector goods-producing industries that support 14% of the workforce (20,504,000). Job gains occurred in all ten private sector industries this decade. Job losses occurred at all three levels of government (federal, state and local) this decade.

Positive Labor Force Trends. Employment and economic data were positive over the last quarter. Three noteworthy areas are net labor force gains and losses, private sector industry growth, and continued positive (but weakening) small business employment contributions.

U.S. Labor Force Gains and Losses Since 2000

as of 1 April 2018				
	Working Population	Non-Working Population		Net Labor Force Gains-Losses
	Employment Gain/Loss	Not-in-Labor Force Gain/Loss	Unemployed (U3) Gain/Loss	
Last Month (March 2018)	103,000	323,000	(121,000)	(99,000)
Post Recession (Jan 2010-Present)	18,449,000	11,522,000	(8,513,000)	15,440,000
Since Year 2000	17,441,000	26,680,000	932,000	(10,171,000)
	BLS CES Report (CES0000000001) Table B-1 Seasonally Adjusted	BLS Not-in-Labor- Force Report (LNS15000000) Seasonally Adjusted	BLS Unemployed Report (LNS13000000) Table A-10	

- **Labor Force Gains and Losses.** While the United States has made steady workforce gains during the post-recession recovery era, the U.S. labor force is still 10,171,000 workers weaker today as compared to the year 2000. This weakness is exacerbated by population growth of 45 million additional Americans today compared to 2000 (282 million versus 327 million).¹⁷
- **Private Sector Industry Growth.** Private sector Service-Providing industry employment continues to grow. The seven service-providing industries created 86.6% of all new jobs this decade. The four leading service-providing sectors (Professional and Business Services; Education and Health Services; Trade, Transportation and Utilities; and Leisure and Hospitality) generated 78.3% of all new jobs. Manufacturing and Construction contributed 6.2% and 8.0%, respectively. The three Government sectors lost 156,000 jobs this decade.¹⁸
- **Small Business Labor Force Contributions.** Small business is the engine of the U.S. economy—a fact that is underappreciated by American policy-makers and the public. 77.1% of all Americans are now employed by small businesses that created 73.4% of all new jobs this decade. So far this decade (Q1 2010 through Q1 2018), small business (less than 500 employees as defined by the Small Business Association) created 2.8-times as many jobs as large enterprises (500+ employees). During the same period, so-called “mom and pop” micro-businesses (less than 20 employees) created almost (87%) as many jobs as multinational corporations with over 1,000 employees.¹⁹

¹⁷ BLS, Employment Situation Summary, 6 October 2017, <https://www.bls.gov/news.release/empst.nr0.htm>

¹⁸ BLS, Employment Situation Summary, 6 October 2017, <https://www.bls.gov/news.release/empst.nr0.htm>

¹⁹ ADP, <http://www.adpemploymentreport.com/>

Negative Labor Force Trends. Six negative trends offset positive labor force trends and threaten to upend current economic and workforce expansion. These trends include voluntary workforce departures, contingent workforce expansion, sclerotic GDP growth, population/workforce imbalance, low wages/income and declining business startups.

- **Faltering Startups and Scaleups.** While small business is the engine of the U.S. economy, the rate of startup businesses and small business job creation is dropping rapidly. Small business job creation deteriorated 46% since its peak in October 2010. Micro-business job creation also declined by 60% since the post-recession peak in April 2011.

The BLS reports that the United States is now creating startup businesses (firms less than 1-year old) at historically low rates, down from 16.5% in the 1980s of all firms to 8% today.²⁰

Based on a Wall Street Journal (WSJ) analysis of this BLS data, “If the U.S. were creating new firms at the same rate as in the 1980s that would be the equivalent of more than **200,000 companies and 1.8 million jobs a year.**”²¹ The WSJ also reports that the share of employment at firms less than 1-year old has slipped from nearly 4% to about 2% of private-sector jobs from the 1980s to today. Business startups are the seed corn of the U.S. economy. Without the planting and fertilization of these seedlings, the fields of American commerce would remain fallow.

Many startups turn into high-growth scaleups. A scaleup is a development-stage business that grows rapidly in market access, revenues, and employees. In the 1980s, 16% of all startups scaled up to 50 employees in 10-years. Today, only 11% of startups scale up to 50 employees in 10-years according to the Kauffman Foundation.²² This differential equates to almost a one-third decline in job creation by the most powerful labor force generator in the U.S. economy. Imagine if one of the three biggest U.S. companies (e.g., Apple, Amazon, Alphabet) failed to make the jump from startup to scaleup?

Kauffman Foundation’s 2018 State of Entrepreneurship report states that American entrepreneurs are “very optimistic” about their businesses and the potential for future growth. On the other hand, entrepreneurs reported that they underestimated the “struggles” associated with the technical aspects of starting their businesses. Moreover, they were frustrated by a lack of support from public and established private sector institutions. According to the report, “These entrepreneurs say the government isn’t supporting them as they seek to open or grow their businesses. The government resources that are available to them aren’t the ones they need, and many feel that the government supports established businesses over their own.” 79% of surveyed startup owners felt that they had little government support to start their business. 92%

²⁰ BLS, Business Employment Dynamics Summary, 27 January 2016, Table 8, Private sector establishment births and deaths, seasonally adjusted, <http://www.bls.gov/news.release/cewbd.t08.htm>

²¹ Wall Street Journal, Sputtering Startups Weigh on U.S. Economic Growth, 23 October 2016, <http://www.wsj.com/articles/sputtering-startups-weigh-on-u-s-economic-growth-1477235874?mod=djem10point>

²² Kauffman, Kauffman Currents, 2017 Year in Review: By the Numbers, <http://www.kauffman.org/blogs/currents/2017/12/by-the-numbers>

felt that President Trump and Congress should spend more time working to help startup businesses.²³

- **Voluntary Workforce Departures.** As shown on the U.S. Labor Force Gains and Losses chart, since the year 2000, 26,680,000 adult workers voluntarily departed the U.S. labor force. Able-bodied (capable of working) adults who have no job and are no longer looking for a job are accounted by the BLS in the Not-in-Labor-Force category. From 2000, the Not-in-Labor-Force cadre grew from 68,655,000 to 95,335,000, a 39% increase equates to tens of millions more citizens who are often dependent on public/familial assistance.²⁴

Today, citizens in the Not-in-Labor-Force exceed those enrolled in the Total Unemployed (U6) category by 7.4-times and 14.4-times the number in the “Officially” Unemployment (U3) category. This great disparity is rarely addressed by policy-makers, analyzed by decision-makers or mentioned by the media’s talking-heads, all of whom focus almost entirely on the Official U3 Unemployment Rate that is now at a post-recession low of 4.1%.

- **Contingent Workforce Expansion.** Contingent workers are defined by the U.S. government as “nonstandard” workers who work part-time by necessity (temporary and day workers) or by choice (freelancers, independent contractors and the self-employed). Today, the contingent workforce is approximately 60,000,000 employed Americans or 40% of the total employed workforce. By 2030, this number will grow to 90,000,000 or 50% of the U.S. employed workforce—a trend that is largely unknown to U.S. policy-makers and the American public.²⁵
- **Sclerotic GDP Growth.** Most economists believe that economic growth depends on employment and GDP growth. Any GDP growth below 2% is considered sclerotic growth that makes the U.S. economy vulnerable to financial downturns. According to the U.S. Bureau of Economic Analysis (BEA), during the post-recession recovery period from 2010 through 2017, U.S. GDP averaged 2.2%. In 2015 and 2016, U.S. GDP grew by subpar rates of 2.0% and 1.9% respectively. During the first year of the Trump Administration, GDP averaged 2.6%.²⁶ The Federal Reserve Bank estimates that Q1 2018 growth at 2.0% as of this writing.²⁷
- **Population/Workforce Imbalance.** As of 1 April 2018, out of a U.S. population of 327 million, 123 million private sector workers support 32 million government workers and contractors, 95 million able-bodied people who can work but chose not to work, 64 million who cannot work, and 13 million unemployed and underemployed. The U.S. economy is not sustainable with only 38% supporting an overhead of 62%. The growing contingent labor force, which consists of mostly lower-paid wage earners, makes the overhead burden even more precarious. More people

²³ Kauffman Foundation, 2018 State of Entrepreneurship, Breaking Barriers: The Voice of Entrepreneurs, 28 February 2018, https://www.kauffman.org/what-we-do/entrepreneurship/state-of-entrepreneurship-2018?utm_source=eAlert&utm_medium=email&utm_campaign=soe2018

²⁴ BLS, Employment Situation Summary, 6 October 2017, <https://www.bls.gov/news.release/empisit.nr0.htm>

²⁵ BLS, Employment Situation Summary, 6 October 2017, <https://www.bls.gov/news.release/empisit.nr0.htm>

²⁶ U.S. Bureau of Economic Analysis, Table 1.1.1, Percent Change From Preceding Period in Real Gross Domestic Product, <https://www.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey>

²⁷ Federal Reserve Bank of Atlanta, GDPNow Forecast for Q1 2018, 17 April 2018, <https://www.frbatlanta.org/-/media/documents/cqer/researchcq/gdpnow/RealGDPTrackingSlides.pdf>

earning livable wages and having greater discretionary income must be productively engaged in the labor force for the U.S. economy to flourish.

- **Low Wages/Income.** According to the U.S. Census Bureau, Current Population Survey, 2017 Annual Social and Economic (ASEC) Supplement, out of a total of 165 million American workers 15-years old and over with earnings, 72% (119 million) were below mean income and 28% (46 million) were above mean income of \$59,817 for full-time workers. If the 160 million citizens with no reported income were included, an astounding 86% of Americans make below average (mean) income. This imbalance is much larger than most people currently perceive and a major contributor to the social unrest being exhibited today.²⁸
- **Debts and Deficits.** Over the last five decades, total U.S. debt (government, business, financial and individual) has grown from a luxury for a few to an addiction to all. Compared to the current GDP of \$19.8 trillion, total public and private debt have now reached an all-time high of \$68.6 trillion, up from \$4 trillion in 1967 and \$27 trillion in 2000, as reported by the U.S. Federal Reserve System of St. Louis.²⁹ U.S. federal government debt equals about one-third of total American debt whereas private debt is responsible for the remaining two-thirds. Most of the private debt is due to excessive consumption.³⁰

U.S. national debt increased from \$0.9 trillion when President Reagan took office to \$21.1 trillion by the end of Q1 2018. The Treasury is now on pace to issue \$1.2+ trillion of debt in 2018—almost double the increase in 2017.

Presidents Reagan, Bush Sr. and Clinton's debt increases were relatively minor, totaling \$1.7T, \$1.5T (over 4 years) and \$1.6T respectively. During President G.W. Bush's tenure, the national debt growth increased by \$5.0T. During President Obama tenure, national debt skyrocketed to \$9.3T. During the first 15-months of the Trump Administration., national debt has grown by approximately \$1.1T Trump Administration.

President Trump entered office with a FY2018 Budget plan to cut the rate of debt growth of President Obama's FY2017 Budget in half. The lavish Tax Cuts and Jobs Act of December 2017 abandoned fiscal conservatism and any notion of a balanced budget. Accordingly, the U.S. Congressional Budget Office's Budget and Economic Outlook: 2018 to 2028 report forecasts that in FY2028 the U.S. national debt will reach an astonishing \$33.9 trillion.³¹

²⁸ U.S. Census Bureau, Current Population Survey (CPS) 2017 Annual Social and Economic (ASEC) Supplement, PINC-05. Work Experience-People 15 Years Old and Over, by Total Money Earnings, Age, Race, Hispanic Origin, Sex, and Disability Status, Personal Income in 2016, Both Sexes 15 Years and Over, <https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-pinc/pinc-05.html>

²⁹ \$67 trillion is calculated from Fed tables: Total Debt Securities (ASTDSL), Total Loans (ASTLL) and GDP (GDP) that can be found at <https://fred.stlouisfed.org/series/ASTDSL>, <https://fred.stlouisfed.org/series/ASTLL>, and <https://fred.stlouisfed.org/series/GDP>

³⁰ U.S. Bureau of Economic Analysis, Real Gross Domestic Product [GDPC1], retrieved from FRED, Federal Reserve Bank of St. Louis, 9 October 2016, <https://fred.stlouisfed.org/series/GDPC1>, July 9, 2016

³¹ U.S. Congressional Budget Office, The Budget and Economic Outlook: 2018 to 2028, April 2018, <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/53651-outlook.pdf>

Household debt is on the rise again after a brief respite in the aftermath of the Great Recession. While rising consumer debt indicates optimism for the future, the vast majority of the debt increase is mainly due to increased student debt—up 152% in the last decade—in pursuit of good-paying jobs that may not materialize commensurate with debt burden. Student loans (\$1.4 trillion) now exceed auto loans and are second only to mortgage loans.³²

On average, federal spending deficits and trade deficits amount to about \$1 trillion per year. U.S. trade deficits amount to about \$500 billion per year. \$500 billion is the equivalent of 5,000,000 jobs per year calculated at \$100,000 per job (wages, benefits, overhead). In 2017, the net (imports versus exports) equated to a negative \$571.6 billion of which \$375.2 billion (67%) was due to China. In January 2018, China's trade deficit was \$36.0 billion—the highest single month since January 1985. With a Chinese trade deficit of \$29 billion, February 2018 repeated this highest in history trend exceeding the February 2017 deficit by over \$6 billion.^{33 34}

³² Federal Reserve Bank of New York, Center for Microeconomic Data, Reports and Data, 2017 Q4 (latest), <https://www.newyorkfed.org/microeconomics/hhdc/background.html>

³³ U.S. Bureau of Economic Analysis, National Data, Table 1.1.5 Gross Domestic Product, <https://www.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey&1903=5>

³⁴ U.S. Census Bureau, Foreign Trade, Trade in Goods with China, retrieved April 2018, <https://www.census.gov/foreign-trade/balance/c5700.html>

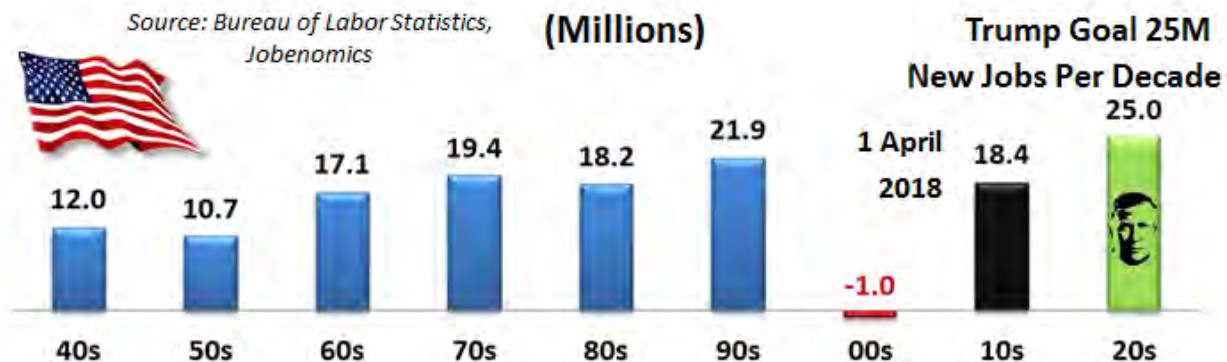
Jobenomics Outlook

Jobenomics deals with the economics of business and job creation. The Jobenomics National Grassroots Movement's goal is to facilitate an environment that will create 20 million new middle-class U.S. jobs within a decade. The Movement has a following of an estimated 20 million people via media, social media, lectures and the website/blog. Jobenomics reports include this quarterly employment analysis, a quarterly unemployment analysis, and special reports on the U.S. labor force and emerging business trends and economic security.

While Jobenomics addresses big business and government employment trends, its principal focus is on highly-scalable small and self-employed businesses that employ the vast majority of Americans. Jobenomics has a dozen state and city initiatives that are led by local leaders to mass-produce highly-scalable small businesses and jobs in their respective communities. To accelerate small business creation, Jobenomics is working with community leaders to identify local community initiatives and the implementation of community-based business generators to mass-produce microbusinesses and to provide workforce skills-based training and certification programs.

While recent labor force gains have been positive, negative employment trends, coupled with the next financial downturn, threaten the U.S. economy and its labor force. From a Jobenomics perspective, job creation is the number one issue facing the U.S. in regard to economic growth, sustainment, and prosperity. Jobs do not create jobs, businesses do, especially small businesses. Unfortunately, America is focused on big business and government employment solutions that have not been very effective growing the U.S. labor force.

Jobenomics Supports President Trump's Goal Of 25 Million New Jobs



The United States consistently produced tens of millions of new jobs for six consecutive decades from the 1940s through the 1990s. The bottom fell out in the decade of the 2000s with a net loss of one million jobs. Consequently, it is critical that a significant number of new jobs are created for the U.S. economy to prosper.

20 million net new jobs per decade is a goal that has been historically achieved. It is also the number needed to accommodate new labor force entrants, a growing population, and maintaining an unemployment rate of 5%, which is considered a normal rate of "full" employment.

U.S. employment increased by 18.4 million so far this decade and Jobenomics forecasts that at the current rate total U.S. job creation should reach 21.3 million by the end of the decade, assuming no financial downturns or a major global crisis. Notwithstanding, 21.3 million is still short of the Trump Administration's goal of 25 million new jobs.

The United States has been very fortunate that this decade has not experienced a financial crisis or recession this decade, but this fortuitousness is not likely to last indefinitely. Measured against a 250,000 new jobs per month standard, the U.S. labor force is 25% short in the number of new jobs needed. Since the beginning of this decade, the United States has produced 181,354 jobs per month. In comparison, the Trump Administration's generated 186,200 new positions per month over the last 15-months. Hopefully, recently instituted tax cuts and trade policies will rev up the U.S. job creation engine in the near future.

Jobenomics is a strong advocate of big business and believes that a robust industrial base is paramount to American prosperity and security. Big business, the anchor tenant of the U.S. economy, is on an opposing track regarding job creation and is unlikely to create a significant amount of net new jobs in the foreseeable future due to automation of routine manual and cognitive tasks, foreign outsourcing and increased usage of domestic contingent workers.

The government can play a significant support role in small business creation, if they underwrite the mass-production of highly-scalable startups in the same way they supported the homebuilding and mortgage industries over the last fifty years via government-sponsored enterprises like Fannie Mae, Ginnie Mae, and Freddie Mac.

Small business creation is unquestionably the best way to create tens of millions of new jobs. Not only is this true during today's post-Great Recession recovery period, but during the Great Recession. Unfortunately, as a percentage of total job creation, small business job production has been dropping not only over the decades but in the last six months.

The U.S. economy is not sustainable if 123 million (38%) private sector workers have to support an ever-growing overhead of 204 million (62%) government, under/unemployed and jobless citizens. More people must be productively engaged in the labor force for the U.S. economy to flourish. A vibrant labor force depends on a well-trained, disciplined, and engaged labor force. The antidote to unemployment and voluntary workforce departures is employment and meaningful career opportunities.

New small, emerging and self-employed businesses could create 20 million new jobs within a decade if incentivized and supported. Three prominent areas of focus are: filling the six million unfilled U.S. job openings and exploiting the 10s of millions of new jobs generated by Energy Technology and Network Technology Revolutions. If Jobenomics can help create thousands of highly-scalable small businesses, America writ-large can facilitate the creation of millions of small businesses that would transform our economy.

If American policy-makers and decision-leaders are serious about revitalizing the economy and reversing the eroding middle-class, they must aggressively grow the labor force, reduce voluntary



workforce departures, and address contingent workforce and below mean income issues. As discussed herein, Jobenomics believes that the place to start is with demographics with the greatest need and potential (i.e., women, minorities, new workforce entrants and the growing cadre of poor white males). Jobenomics suggests that policy-makers, in both parties, should make solutions to these labor force challenges their top priority.

To understand the strategic relationship between jobs and economics (Jobenomics), one must consider:

- the balance between the working and non-working populations,
- labor force gains versus labor force losses,
- the decaying workforce,
- the criticality of small business on job creation,
- the nexus between jobs, consumption and GDP,
- the impact of debt and deficits on GDP and the labor force, and
- the impact of trade deficits and intellectual property theft.

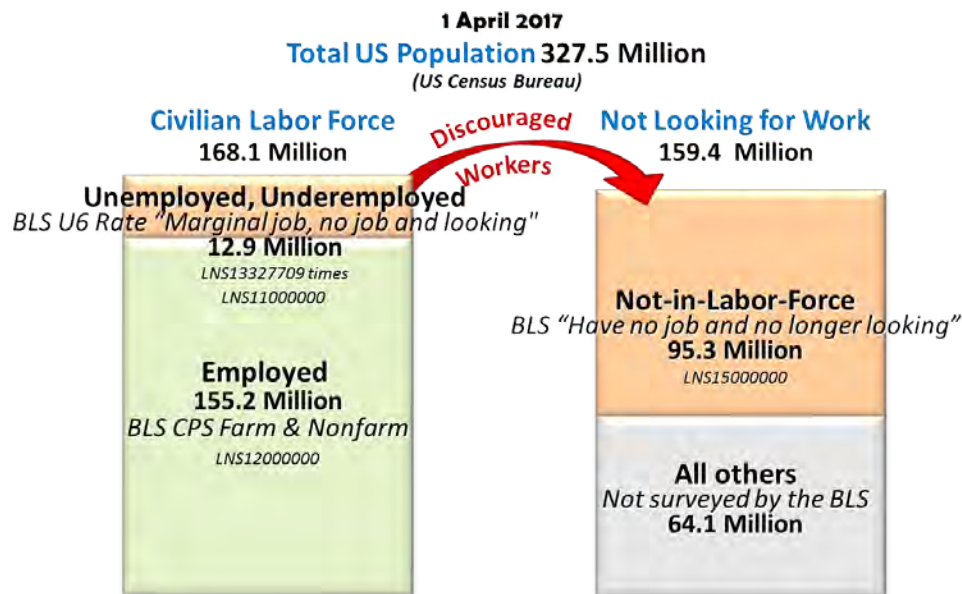
The next segments of this report addresses of each of these six considerations.

The Balance Between The Working And Non-Working Populations

Knowing how the BLS defines labor force and accounts for the different labor force categories is essential to understanding labor force statistics and interpreting fact from fiction. The basic concepts involving employment and unemployment are straightforward.³⁵

- People with jobs are **Employed**.
- People are **Unemployed** if they do not have a job, have actively looked for work in the prior four weeks, and are currently available for work. Marginally employed and underemployed personnel, who are actively looking for work, are reported as a subset of the unemployed category, and include part-time workers who work less than 35 hours per week.
- People who have no job and are no longer looking for a job are classified by the BLS as “not in the labor force” or **Not-in-Labor-Force**.

U.S. Labor Force Overview



Therefore, as shown:

- **Civilian Labor Force = Employed + Underemployed + Unemployed = 168.1 million.**
- **Not Looking for Work = Not-in-Labor-Force + All Others = 159.4 million.**

The **Civilian Labor Force** includes citizens, who are either employed or unemployed looking for a job, are at least 16 years old, are not serving in the U.S. armed forces and are not institutionalized.

- **Employed.** The U.S. labor force consists of 155.2 million people in the thirteen BLS-defined “nonfarm” industries (148.2 million, three goods-producing, ten service-providing, and three government sectors) and “farm” sector. The farm sector includes agricultural workers, self-employed workers whose businesses are unincorporated, unpaid family workers, and private

³⁵ BLS, How the Government Measures Unemployment, http://www.bls.gov/cps/cps_htgm.htm#unemployed

household workers.³⁶ The Department of Agriculture estimates that there are 2.6 million direct on-farm employees and 1.0 million direct forestry/fishing employees³⁷.

To derive the number of Employed citizens, the BLS uses two monthly surveys that measure employment levels and trends: the Current Population Survey (CPS), also known as the household survey, and the Current Employment Statistics (CES) survey, known as the payroll or establishment survey. CPS and CES estimates have distinct employment definitions and methods. Generally speaking, the CES estimates approximately seven million fewer employees than the CPS since CES data excludes agriculture and related employment, the unincorporated self-employed, unpaid family and private household workers and workers absent without pay from their jobs. Both surveys include only civilian employees in Government employment and exclude uniformed members of the armed services.

- **Unemployed.** There are 12.9 million unemployed and underemployed people who are looking for work. The BLS reports on six “alternative measures of labor underutilization” categories ranging from U1 to U6 unemployed.³⁸

The lowest rate of labor underutilization, U1, is the most restrictive, and consists only of the subset of the unemployed who were jobless for at least 15 weeks. U2 includes only that portion of the unemployed who lost their last job but excludes people who left their last job voluntarily or who were new entrants or reentrants to the labor force. U3 is the “official rate of unemployment” and the metric most typically cited by politicians and the media. U4 and U5 both add selected not-in-labor-force categories. U4 includes discouraged workers who want a job but have given up the search for work due the perceived lack of available jobs. U5 includes marginally attached workers who want a job and are available to work now. The broadest measure of labor underutilization, called U6, includes the unemployed, the marginally attached, and persons who are actually employed but who work fewer hours than they would like (aka as the underemployed).

The **Not Looking for Work** cadre includes **Not-in-Labor-Force** and **All Others** in the U.S. population.

- **Not-in-Labor-Force** includes people (over 16 years old) such as the ill or disabled, retired, going to school, home responsibilities and other reasons. There are 95.3 million in the BLS’ Not-in-Labor-Force category that has grown substantially in the last 17-years.

The labor force is made up of the employed and the unemployed. The remainder—those who have no job and are not looking for one—are counted as *not in the labor force*. To be included in the Not-in-Labor-Force category, survey respondents must answer “no” to one of

³⁶ BLS, Employment Situation Technical Note, <https://www.bls.gov/news.release/empsit.tn.htm>

³⁷ United States Department of Agriculture, Economic Research Service, Ag and Food Sectors and the Economy, <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy.aspx>

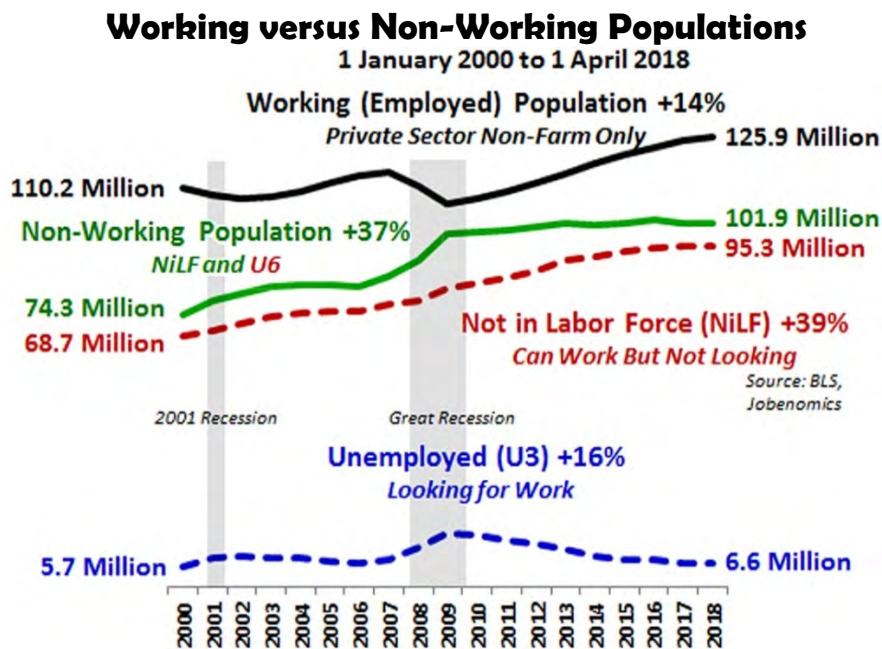
³⁸ BLS, Alternative measures of labor underutilization, Table A-15, <https://www.bls.gov/news.release/empsit.t15.htm>

the following BLS survey questions (the bolded words are emphasized when read by the interviewers):

- (1) Do you currently want a job, either full or part time?
- (2) What is the main reason you were not looking for work during the **last 4 weeks**?
- (3) Did you look for work at any time during the last 12 months?
- (4) **Last week**, could you have started a job **if** one had been offered?

The BLS reports that 95% of people in the Not-in-Labor-Force category “do not want a job now” even if one was available.

- **All Others.** Remaining 64.1 million citizens are classified as All Others by Jobenomics. The BLS does not survey or report this “All Others” category that covers children, elderly, disabled, and the institutionalized. The institutionalized group consists of approximately 4 million citizens in correctional institutions, mental institutions, detention facilities, skilled nursing facilities, hospice facilities and other long-term care living arrangements. It also include 1.3 million on active duty citizens serving in the U.S. armed forces.



To get a strategic snapshot of the state of the U.S. labor force, one must compare the Working Population (Employed) against the Non-Working Population (Unemployed and Not-in-Labor-Force).

From 2000, the Working (Employed) population rose by 14% compared to the Non-Working Population rise of 37%. Jobenomics defines the Non-Working Population as Not-in-Labor-Force (that rose by 39%) and the U3 Officially Unemployed (which is still 16% higher today than the year 2000).

Jobenomics predicts that the U.S. Non-Working Population could easily equal the Employed population if the United States suffers a financial downturn or crises that have occurred regularly in previous decades. Expansion of small business is the best antidote for mitigating any future financial

crisis, as well as providing the biggest bang for the buck in strengthening the U.S. labor force, growing the economy and stemming the erosion of the American middle-class.

As shown below, 38% of all Americans financially support the rest of the country. As of 1 April 2018, out of a total U.S. population of 327 million, 123 million private sector workers support 32 million government workers and government contractors, 95 million able-bodied people who can work but chose not to work, 64 million who cannot work, and 13 million unemployed and underemployed.



The ever-growing contingent labor force, which consists of mainly lower-paid wage earners, makes the overhead burden of the private sector labor force even more precarious. More people with livable wages and greater discretionary income must be productively engaged in the private sector labor force for the U.S. economy to flourish. The recent tax cuts put more discretionary income into the pockets of average Americans. Now is the time to focus on sustainable living wages by mass-producing startup businesses and jobs.

Jobenomics estimates the contingent workers (part-time, self-employed, independent contractors, temporary workers, on-call and day laborers with “alternative” or “nonstandard” work agreements) to be 60,000,000 employed Americans or 40% of the total workforce (private sector and government). By 2030, this percentage will rise to over 50% in the so-called Gig/Contingent Workforce Economy.

The Gig/Contingent Workforce Economy is an economy in which temporary positions are common and organizations contract with independent workers for short-term engagements. The trend toward a gig/contingent workforce economy is well underway. America’s labor force is in a state of transition from a standard full-time workforce to a contingent workforce that consists of part-time, temporary, contract labor, independent contractors, consultants, and freelancers.

U.S. economic growth is difficult if only 38% of the working population has to support an overhead of 62% of government workers, the unemployed and underemployed, the able-bodied adult non-working population, and citizens who cannot work. To make matters even more tenuous, 40% of the

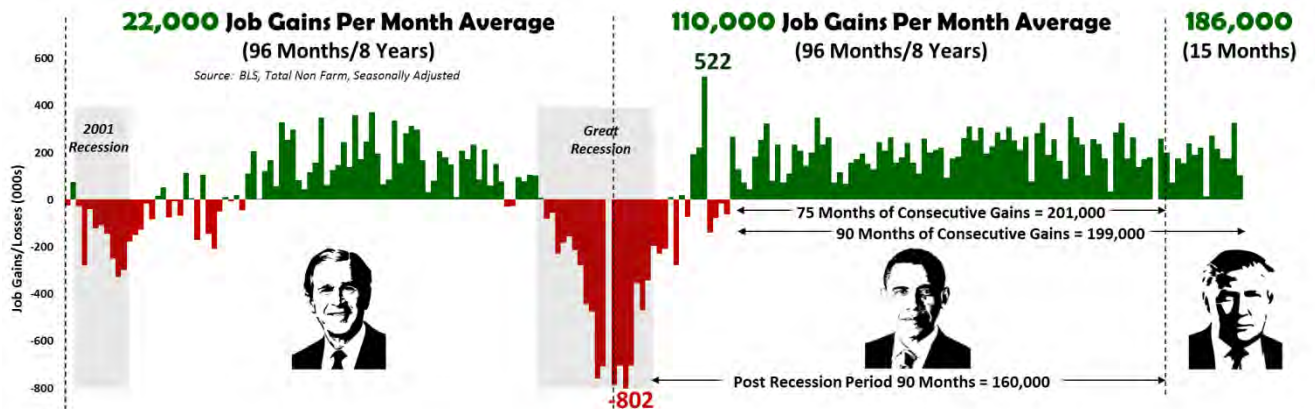


workforce is part of the growing contingent labor force that is replete with lower-paid wage earners with benefits associated with standard work agreements. More people with livable wages and greater discretionary income must be productively engaged in the private sector labor force for the U.S. economy to flourish.

Labor Force Gains Versus Labor Force Losses

From January 2000 through April 2018, the United States averaged an abysmal 75,000 new jobs per month, which is only one-third of the number of jobs needed. This lackluster job creation was primarily the result of the Great Recession. However, lackadaisical government attention afforded to micro- business startups and small business sustainability is another explanation for weak performance. As will be discussed in detail later in this report, small business is the engine of the U.S. economy but is now producing about half the number of new jobs as it did several decades ago.

Jobs Gains/Losses Since 2001



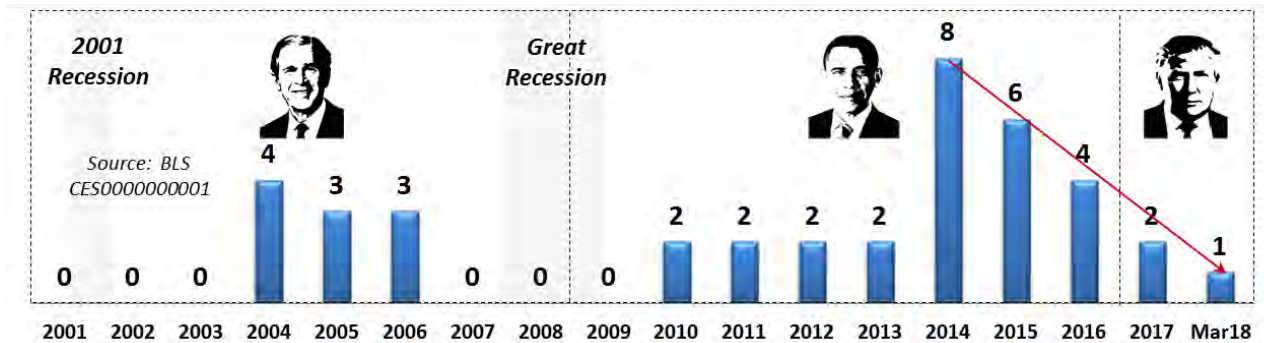
Since 2001, the monthly job creation high water mark was 522,000 new jobs in May 2010, and the low water mark for jobs losses was 802,000 in March 2009. From an Administration standpoint,

- The Bush Administration (2001 to 2008) created an average of only 22,000 new jobs per month, due to the onslaught of two major recessions, the calamity of 9/11 and the United States' expensive mobilization for the global war on terrorism.
- The Obama Administration (2009 to 2016) created an average 110,000 job gains per month. Subtracting the six months of the Great Recession that Obama "inherited" from the previous administration, the average job creation rate during the 90-month post-recession period yielded an average of 160,000 new jobs per month. Perhaps, the most important legacy of the Obama Administration is 75-months of consecutive job gains averaging 201,000 jobs per month.
- The Trump Administration continued the positive job creation trend with 15 consecutive months of job gains and extended the continuous job creation run to 90 months—the longest span of labor force gains since the Bureau of Labor Statistics began record keeping in February 1939.

As of this writing, the Trump Administration is averaging 186,200 job gains per month, which is good but roughly equal to the 199,000 monthly average of the 90-month job creation run. Unfortunately, a 186,200 monthly job creation rate is insufficient for the Trump Administration to achieve the President's 25 million new job goal over the next decade (120 months). To accomplish this goal, the Administration needs to generate an average of 211,495 new jobs per month for the remaining 105 months in the decade since President Trump was elected.

A 250,000 threshold is a reasonable job creation standard to robustly grow the economy and provide a hedge against future downturns. During the recent 90-month run of consecutive job gains, the United States exceeded the 250,000 job threshold 22-times or nearly one out of every four months. Unfortunately, the number of mega (250K+) monthly employment gains is on the decline as shown. Hopefully, the Administration's tax cuts will motivate near-term hiring.

Mega (250K+) Monthly Employment Gains Since 2001



It is important to note that the BLS employment statistics reported above are “seasonally adjusted” figures. Seasonal adjustment is a statistical technique that attempts to measure and remove the influences of predictable seasonal patterns to reveal how employment and unemployment change from month to month.

Seasonally Adjusted Versus Not Seasonally Adjusted

Millions	Establishment Survey (CES) 2017 Total Non-Farm Employment												2018			15 Month Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
	Not Seasonally Adjusted	Not Seasonally Adjusted	Not Seasonally Adjusted	Not Seasonally Adjusted	Not Seasonally Adjusted	Not Seasonally Adjusted	Not Seasonally Adjusted	Not Seasonally Adjusted	Not Seasonally Adjusted	Not Seasonally Adjusted	Not Seasonally Adjusted	Not Seasonally Adjusted	Seasonally Adjusted	Seasonally Adjusted	Seasonally Adjusted	
	143.4	144.4	145.1	146.1	146.9	147.6	146.5	146.8	147.2	148.2	148.8	148.5	145.4	146.7	147.3	2,199
	145.7	145.9	146.0	146.1	146.3	146.5	146.7	146.9	147.0	147.2	147.5	147.6	147.8	148.1	148.2	2,204
	-2.3	-1.5	-0.9	0.0	0.6	1.0	-0.2	-0.1	0.2	1.0	1.3	0.9	-2.4	-1.5	-0.9	
	-4.7			0.0									-4.7			

This Seasonally Adjusted Versus Not Seasonally Adjusted chart shows the wide gap between adjusted and actual numbers. In 2017, the gap between Seasonally Adjusted and Not Seasonally Adjusted numbers reconciled the differences by the end of the year. For the first three months in 2018, Seasonally Adjusted figures are 4.7 million higher than the Not Seasonally Adjusted numbers. The same seasonal disparities occurred in previous years (2017, 4.7 million higher, and 2016, 4.5 million). Consequently, it likely that the wintertime employment boost generated early in Q1 2018 could dissipate later in the calendar year as it did in previous years.

Jobenomics predicts that the number of new jobs (Employed) will increase but not to the degree currently envisioned by the Administration. By chopping the corporate tax rate from 35% to 21% on incorporated small business and reduces the tax rate from 39.6% to 20% for unincorporated “pass-

through” firms³⁹, the Tax Cuts and Jobs Act (TCJA) will undoubtedly help promote business and job creation, but only to a limited degree. An analysis of the TCJA by the Tax Foundation, leading independent tax policy nonprofit, estimates an average of 975,000 additional new jobs over the next ten years (between 339,000 full-time equivalent jobs and 1.6 million if fully implemented).⁴⁰ House Speaker Paul Ryan estimates that our reforms will create 890,000 full-time jobs over a decade.⁴¹ One million new jobs per decade is an inadequate number of workers to effectively grow the U.S. economy.

The Administration’s trade and regulation-cutting policies will also stimulate economic, business and workforce development. However, Administration and Congressional policy-making emphasizes large corporations, manufacturing and the standard workforce rather than small business and the contingent workforce. While big large corporations, goods-producing industries, and the standard workforce are the anchor tenants of the U.S. economy, they are the least likely to mass-produce the number of new jobs needed to increase consumption (70% of U.S. GDP) and produce a middle-class and labor force renaissance.

29.6 million U.S. small businesses employed the majority (77.1%) of all Americans and created the majority (73.4%) of all new U.S. jobs this decade. **If Washington supported each of these 29.6 million small businesses to generate or hire only one (1) net new employee over the next several years, Trump’s 25 million new jobs goal would materialize in a much shorter timeframe than currently envisioned.**

³⁹ Pass-through businesses include sole proprietorships, partnerships, and S-Corporations that pay taxes based the owner’s personal income tax returns.

⁴⁰ Tax Foundation, Preliminary Details and Analysis of the Tax Cuts and Jobs Act, 19 December 2017, <https://taxfoundation.org/final-tax-cuts-and-jobs-act-details-analysis/>

⁴¹ Speaker Paul Ryan, See How Many Jobs Tax Reform Will Create in Your State, 4 November 2017, <https://www.speaker.gov/general/see-how-many-jobs-tax-reform-will-create-your-state>

Net Labor Force Gains And Losses

From a Jobenomics standpoint, job creation statistics are valuable, but they are only a prelude to a broader issue involving **net labor force gains and losses (i.e., jobs versus joblessness)**. America gains little by creating 25 million new jobs if in the process of doing so 25 million citizens voluntarily depart the labor force for lives of dependency on public assistance or alternative lifestyles.

As will be discussed in detail in this report, the U.S. labor force consists of approximately 250 million citizens (called the civilian noninstitutional population) who are working, unemployed, and citizens who can work but choose not to work. The BLS defines these three categories as Employed, Unemployed and Not-in-Labor-Force.

Net Labor Force Gains and Losses

as of 1 April 2018

	Working Population Employment Gain/Loss	Non-Working Population		Net Labor Force Gains- Losses
		Not-in-Labor Force Gain/Loss	Unemployed (U3) Gain/Loss	
Last Month (March 2018)	103,000	323,000	(121,000)	(99,000)
Trump Era (Jan 2017-Present)	2,793,000	329,000	(917,000)	3,381,000
Post Recession (Jan 2010-Present)	18,449,000	11,522,000	(8,513,000)	15,440,000
Obama Era (2009-2016)	10,595,000	14,626,000	(3,784,000)	(247,000)
Bush II Era (2001-2008)	2,115,000	9,892,000	5,652,000	(13,429,000)
Since Year 2000	17,441,000	26,680,000	932,000	(10,171,000)
	<i>BLS CES Report (CES0000000001) Table B-1 Seasonally Adjusted</i>	<i>BLS Not-in-Labor- Force Report (LNS15000000) Seasonally Adjusted</i>	<i>BLS Unemployed Report (LNS13000000) Table A-10</i>	

The 6 April 2018 BLS Employment Situation Summary reported that the U.S. economy generated 103,000 new jobs in March 2017. For the sixth straight month, the official unemployment rate (U3 rate) remained unchanged at 4.1% even though the unemployment rolls shrank slightly by 121,000. Most importantly, and least reported by the media, is that the Not-in-Labor-Force cadre of sidelined workers increased by an additional 323,000 citizens. The combined effect of a weak employment boost, a sizable increase in sidelined Not-in-Labor-Force individuals and a minor decrease in the number of unemployed yielded a net labor force loss of 99,000 citizens.

During the first 15-months of the **Trump Administration**, employment gains amounted to 2,793,000 workers, for an average of 186,200 per month. Correspondingly, the U3 Unemployment category decreased by 917,000 personnel, and the Not-in-Labor-Force category grew by 329,000 citizens. Consequently, the overall Trump Administration net labor force **gain** was 3,381,000 citizens. In comparison, during the 8-years/96-months of the Obama Administration, the net labor force **loss** was 247,000 citizens. During the 8-years/96-months of the GW Bush Administration, the net labor force **loss** was 13,429,000 citizens.

Since the **end of the Great Recession**, from 1 January 2010 to 1 April 2018, 18,449,000 new workers entered the labor force, 8,516,000 fewer workers are officially unemployed, and the number of work-

capable people in Not-in-Labor-Force increased by a mind-boggling 11,522,000 citizens. Consequently, the net U.S. labor force gain was only 15,440,000 Americans.

The combination of the Employed, Unemployed and Not-in-Labor-Force is called the Civilian Noninstitutional Population by the BLS. On 1 January 2010, the U.S. Civilian Noninstitutional Population was 235,801,000 of which 65.4% (154,142,000) were Employed. As of 1 April 2018 the U.S. Civilian Noninstitutional Population was 257,272,000 of which 62.8% (161,527,000) are Employed—a decrease of 2.6%. ⁴² While this does not seem like a large percentage decrease, the **ramifications could be profound** for an economy dependent on consumption growth.

Since the end of the Great Recession, U.S. stock market capitalization⁴³ has skyrocketed from \$7.6 trillion to \$30.0 trillion, a growth of 295% —the largest creation of stock market wealth in history of mankind. From a Jobenomics standpoint, a workforce decrease of 2.6% compared to a stock market increase of 295% is a profoundly serious issue if one considers that it is labor force spending that underpins consumption (70% of U.S. GDP). **This enormous disparity has led to unprecedented income inequality, stagnation of the middle-class, and disenchantment of the masses.** Per Census Bureau and BLS data, **86%** of all Americans earn below average income or no reportable income. Of the 164.6 million Americans that took a wage last year, **72%** earn below average (median) wages. Most shockingly, **50% of all American wage earners now make an hourly wage less than \$15**, which is considered by many to be the minimum “livable” wage.

During the 8-years/96-months of the **Obama Era** (1 January 2009 through 31 December 2016), the U.S. labor force lost a net 247,000 jobs, with 10,595,000 entering the labor force, 14,626,000 voluntarily departing, and 3,784,000 fewer people recorded as officially unemployed. It is important to remember that the first 21-months of President Obama’s first term in office, the Administration dealt with the Great Recession and post-recession recovery operations. Obama’s next 75-months in office produced the longest run of consecutive labor gains since WWII when BLS record keeping began. This 75-month run exceeded the previous record of 48-months that occurred in the July 1986 to June 1990.

During the 8-years/96-months of the **Bush II Era** (1 January 2001 through 31 December 2008), the U.S. labor force suffered a devastating net loss of 13,429,000 jobs (2,115,000 new jobs, 9,892,000 voluntary workforce departures, and 5,652,000 newly unemployed). To a large extent, President Bush endured the perfect storm of labor force calamities:

- 8-months of the 2001 Recession (March 2001 through November 2001),
- 13-months of Great Recession (December 2007 through December 2008),
- the aftermath of the 9/11 attacks and the ensuing global war on terrorism, and
- nine major Hurricanes (Katrina, Ike, Rita, Wilma, Ivan, Charley, Frances, Jeanne, and Allison) that collectively caused over \$275 billion in damage.

⁴² BLS, Household Data, Historical, A-1. Employment status of the civilian noninstitutional population 16 years and over, 1983 to date, <https://www.bls.gov/web/empsit/cpseea01.htm>

⁴³ As calculated by the Russell 3,000 that contains roughly 98.5% of US stock market capitalization

From the **beginning of the 21st Century** (1 January 2000 to 1 April 2018), the American labor force is still **weaker by a net 10,171,000 workers**. This weakness is exacerbated by a population growth of 45 million additional American citizens present today compared to 2000 (282 million versus 327 million) plus the impact of a rapid rise of contingent part-time workers with a commensurate decrease in traditional full-time workers.

While recent trends are slowly reversing America's descent from the economic quagmire caused by the Great Recession, the U.S. economy will remain fragile without the continued strengthening of the U.S. private sector labor force.

The private sector workforce now consists of 125,904,000 workers, which represents only 38% of the total U.S. population of 327,450,761. Of this workforce, approximately 60% are traditional full-time workers, and 40% are contingent workers (part-timers, freelancers, independent contractors, etc.) who earn far less income than conventional workers and often receive little or no benefits. On the opposite side of the labor force ledger, 95,335,000 citizens who are capable of working are not working, and 95% of these individuals tell BLS surveyors that they are not "looking for a job now". In addition to these 95 million categorized as Not-in-Labor-Force by the BLS, the United States has a total of 12,941,040 citizens that are either unemployed or underemployed who are looking for meaningful employment opportunities.

To sum up, net labor force gains and losses (as calculated by the sum of the number people in the BLS Employed, Unemployed and Not-in-Labor-Force categories) should be the metric that the American public needs to know. Any politician, from either major political party, that touts only monthly employment gains and the official unemployment rate is being disingenuous with the electorate.

Decaying U.S. Workforce

Contrary to all the political grandiosity coming out of Washington since the turn of the 21st Century, the U.S. workforce is decidedly weaker than the last two decades in the 20th Century.

Decaying U.S. Labor Force

Source: U.S. Bureau of Labor Statistics, U.S. Census Bureau Data

Source: BLS, Census Bureau

As of: 1 April 2018	1980s	1990s	2000s	2010-Q1 2018
U.S. Population At Period End	246,819,230	272,690,813	307,006,550	327,450,761
Population Growth #	21,763,743	25,871,583	34,315,737	20,444,211
Population Growth %	10%	10%	13%	7%
Total Employed At Period End	88,673,000	127,608,000	134,842,000	148,230,000
Employment Growth #	17,433,000	20,702,000	7,234,000	13,388,000
Employment Growth %	24%	44%	6%	16%
Percentage Of Employment Growth Compared To Population Growth	15%	33%	-7%	10%
	Strengthening Workforce		Decaying Workforce	
Months in Recession	22	8	26	0

The 1980s and 1990s were decades of robust job creation and a strengthening workforce. In these two decades before the turn of the 21st Century, the employment growth rate **increased** significantly faster than population growth rate.

- 1980-1989: Employment Growth Rate was 24% versus a Population Growth Rate of 10% for a relative growth rate of 15%. Raw numbers-wise, the 1980s generated 17.4 million new jobs that nearly matched a population increase of 21.7 million total citizens, of whom about 60% were working-age adults aged 18 to 65 years old. This achievement is amplified by the fact that the United States suffered 22 months of recession in the 1980s.
- 1990-1999: Employment Growth Rate of a huge 44% versus a Population Growth Rate for a relative growth rate of 33%. In other words, employment grew one-third faster than the population and prosperity soared in the “roaring 90s.” The 1990s generated 20.7 million new jobs that nearly matched a population increase of 25.9 million. This feat was accomplished despite the fact the 1990s included eight months of recession.

As a result, the 1980s and 1990s produced 38.1 million net new jobs in a population that was respectively 81 and 55 million people smaller than today. Equally important is the fact that these jobs were produced during two decades that suffered 30 months of recession.

The 18-year period from 2000 to today is an era of weak job creation and a decaying workforce.

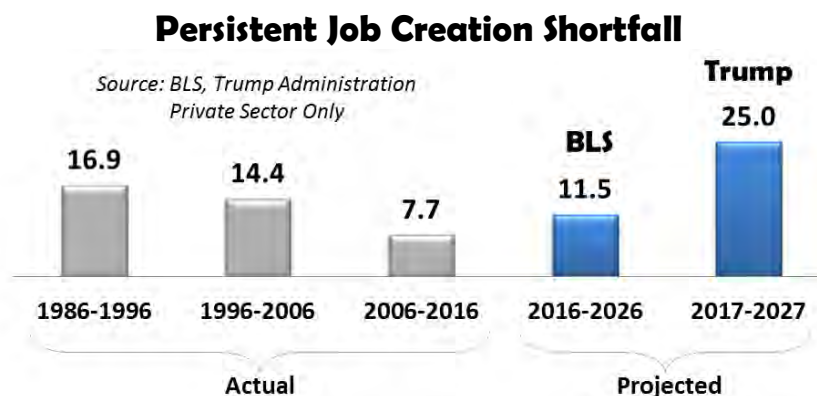
- 2000-2009: Employment Growth Rate was 6% versus a Population Growth Rate of 13% for a relative growth rate of a negative -7%. This negative disparity was caused mainly by 26 months of recession, 18 of which occurred during the Great Recession. In terms of raw numbers, the 2000s generated 7.2 million new jobs compared to a population increase of 34.3 million.

- 2010-Q12018: Employment Growth Rate of 16% versus a Population Growth Rate of 7% for a relative growth rate of 10%. In terms of raw numbers, the 2010s generated 13.4 million new jobs, a population increase of 20.4 million in a recession-free era.

As a result, the 2000s and 2010s produced a total of 20.6 million net new jobs and a population growth of 54.8 million. Consequently, U.S. population grew 2.7 times faster than new jobs during the first 18-years in the 21st Century.

Regrettably, the BLS outlook for future labor force is bleak compared to President Trump's vision for robust workforce growth. (Note: as discussed herein, Jobenomics asserts that the President's vision is achievable if he places greater emphasis on small business and the emerging digital economy.)

U.S. Bureau of Labor Statistics does not foresee robust labor force growth by 2026. The U.S. Bureau of Labor Statistics Employment Projections: 2016-26 Summary published on 24 October 2017—ten months into the Trump Administration—projects that the next decade will produce only 11.5 million new jobs. 11.5 million is a shortfall of 13.5 million jobs when measured against the Trump Administration goal of 25 million jobs. It is also below the gains experienced in the two prior ten year periods covering 1986-1996 (16.9 million) and 1996-2006 (14.4 million).⁴⁴



a loss of 219,500 jobs in Goods-Producing Industries supersector group with gains of 864,700 jobs in Construction and 90,800 in Mining and Logging (including oil and gas extraction, and exploration and support services) supersectors, and massive loss of 736,400 jobs in the Manufacturing supersector.

The Service-Providing Industries supersector group is projected to gain 10,526,500 jobs with the most substantial growth in employment occurring in Health Care and Social Assistance (3,998,300), Professional and Business Services (2,159,700) and Leisure and Hospitality (1,319,000) supersectors. The vast majority of employment gains in the service-providing supersector will be lower wage jobs in the contingent workforce.

For Agriculture/forestry/fishing industries, the BLS Summary projects a net loss of 6,100 jobs. Small self-employed farmers will suffer a loss of 23,000 while larger corporate farms will increase by 17,000 wage earners. According to the Department of Agriculture, the number of American farms decreased by two-thirds (6.8 million to 2.1 million) since its peak in 1935, while the size of farms tripled (440

⁴⁴ U.S. Bureau of Labor Statistics, Employment Projections: 2016-26 Summary, 24 October 2017. Employment by major industry sector, https://www.bls.gov/emp/ep_table_201.htm

acres verse 155 acres).⁴⁵ With the exception of indoor controlled agriculture (e.g., hydroponics, aquaponics, vertical farming, and cannabis), the era of small American farms is at its nadir.

The Federal government is expected to downsize by 55,800 while State and Local governments should increase by 788,700 workers, per the BLS Employment Projections: 2016-26 Summary.

U.S. Labor Force Gains/Losses per Decade



According to BLS Employment Situation Summary data, over the last four decades, the United States suffered a serious reversal in the number of job gains compared to job losses as shown.

- In the 1980s and 1990s, by a factor of almost 5:1, more workers entered the U.S. labor force than voluntarily departed.
- In the first decade of the 21st Century (2000 to 2010), the U.S. labor force not only shrank by 1.0 million workers but 15.2 million adults who were capable of working voluntarily departed the labor force, for a net total loss of 16.2 million workers. This drastic loss of workers can be largely attributed to the 2001 Recession (caused by the collapse of the dot-com bubble) and the 2007-2009 Great Recession (precipitated by the sub-prime mortgage crisis) that sidelined 8.7 million workers and encouraged a 37% increase of 5.7 million new college enrollments.
- From 2010 through Q1 2018, labor force gains and losses were 18.4 million employment gains and 11.5 million voluntary departures to the Not-in-Labor-Force. If a major domestic financial crisis or recession does not transpire by 2020, Jobenomics projects 21.3 million new workforce entrants versus 12.7 voluntary departures based on the latest trends. Assuming that these trends continue, the net labor force gain would be 9.8 (21.3 minus 11.5) million. Admittedly, this is somewhat fuzzy math, but this net meager labor force gain will not grow the economy, reverse the decline in the American middle-class and achieve President Trump's bold economic and labor force vision. More business and job creation is needed to build a strong labor force, mitigate voluntary workforce departures, and to adequately condition the American populace for the next financial crisis.

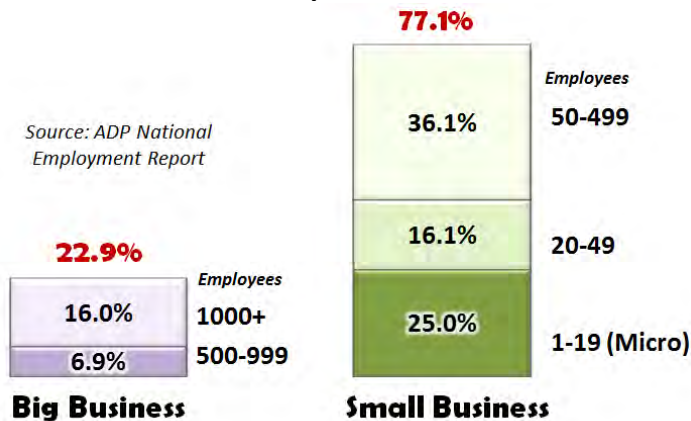
⁴⁵ U.S. Department of Agriculture, Farming and Farm Income, <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/farming-and-farm-income/>

Workforce Growth Depends On Small Business Growth

Jobs do not create jobs, businesses do, especially small businesses. Private sector businesses employ three-quarters of all U.S. workers. Of the private sector businesses, the vast majority of U.S. workers are employed by small and micro businesses over the last three decades, even during periods of recession.

Employment Percentages by Company Size

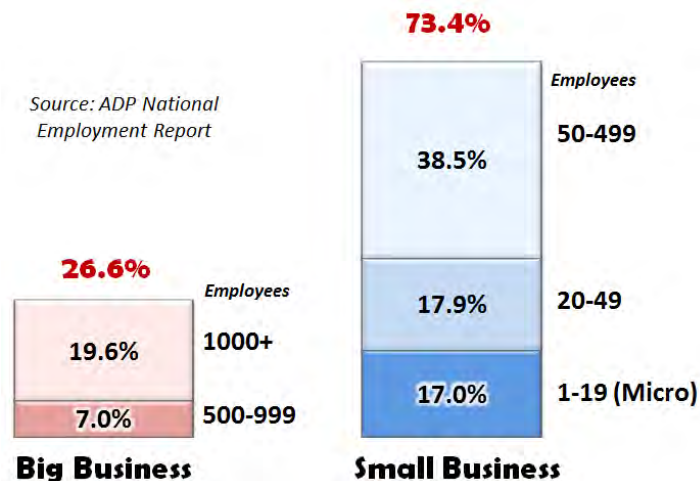
1 April 2018



Today, U.S. private sector small businesses employ 77.1% of all Americans. Small businesses (less than 499 employees) employ **3.4-times** as many citizens as large businesses (500+ employees), or 97,166,014 versus 28,795,066 jobs respectively. Micro-businesses (less than 20 employees) employ **1.6-times** more than very large institutions (over 1,000 employees), or 31,450,943 versus 20,136,146 jobs respectively.

Percent of New U.S. Jobs Created This Decade

1 January 2010 to 1 April 2018



This decade, small businesses created 73.4% of all new jobs in the United States. Small businesses (less than 499 employees) created **2.8-times** more jobs as large businesses (500+ employees), or 13,455,699 versus 4,881,380 new jobs respectively. Micro-businesses (less than 20 employees)

created **0.9-times (87%)** the amount of jobs of very large institutions (1,000+ employees), or 3,113,740 versus 3,595,904 new jobs respectively.

Without a viable small business creation and sustainment strategy, the U.S. economy is unlikely to prosper as it did in the 20th Century. Small business creation is unquestionably the best way to create tens of millions of new jobs. Not only is this true during today's post-Great Recession recovery period, but during the Great Recession of 2007-2009.

A strong small business sector is of paramount importance in supporting big business as well as government. The more people small businesses can employ relieves big business and government from focusing on personnel issues and increases their focus on more strategic matters like industrial recapitalization and national security.

Small business creation is essential from a long-term unemployed and part-time worker point-of-view. Small businesses tend to hire the unemployed and underemployed at a far greater rate than large businesses that are choosy about whom they hire. To a large extent, big businesses do not hire the unemployed. Instead, they tend to hire proven personnel from competitors and outsource more mundane work to subcontractors, contingent workers, and foreign corporations.

Federal, state and local governments can also create jobs, but the likelihood of increased government employment is limited considering the current political and fiscal environment. Even with profligate government spending after the Great Recession, net government jobs dropped by several hundred thousand employees. Spending on government-sponsored infrastructure projects (such as roads, bridges, etc.) is popular political rhetoric regarding job creation. However, government-sponsored infrastructure projects are limited by budget constraints, and the jobs they produce (mainly construction) are often temporary, costly and politically-driven.

Notwithstanding, the government can play a large role in business creation by the policies and incentives they promote. From a Jobenomics perspective, policy-makers should focus on the two emerging technology revolutions (Energy and Network) that could create 20 million net new American jobs if properly managed and supported. For example,

- In the Energy Technology Revolution, America's electrical grid requires approximately \$2 trillion to modernize and protect. Rather than restoring a 50-year old electrical infrastructure, government could empower businesses to create a new distributed and dispersed point-of-use power generation system that could create tens of millions of local, middle-class jobs via emerging renewable (such as solar, wind, geothermal and high-head hydro) and cleaner fossil fuel (such as natural gas) technologies.⁴⁶
- The Network Technology Revolution is facilitating an explosion in the emerging digital economy. The McKinsey Global Institute (MGI) lists twelve disruptive NTR technologies that will affect billions of consumers, and inject a hundred trillion dollars' worth of economic

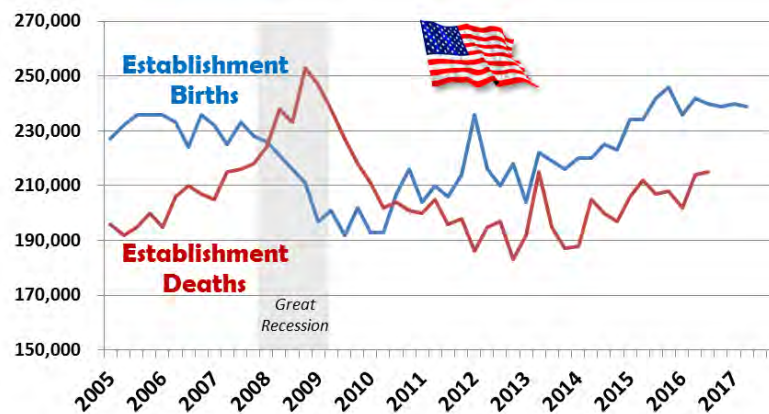
⁴⁶ Jobenomics, Energy Technology Revolution report, 18 June 2015, <http://jobenomicsblog.com/energy-technology-revolution/>

activity into the global digital economy by 2025.⁴⁷ If MGI predictions are realized, the global economic impact of these disruptive technologies will amount to \$124 trillion, which would be greater than the entire global nominal GDP of \$86 trillion GDP as calculated by the International Monetary Fund's 2016 World Economic Outlook Database.⁴⁸

The solution to growing America's economy involves putting our small business engine into over-drive. Energizing existing small businesses and creating new small and self-employed businesses could easily create 20 million net new jobs within a decade. To prove the validity of this assertion, Jobenomics is working with a dozen cities to implement community-based business generators to mass produce startup businesses. The objective of a Jobenomics Community-Based Business Generator is to increase "birth rates" of startup businesses, extend the "lifespan" of fledgling businesses, and increase the number of employees per business.

Quarterly U.S. Business Birth/Death History: Q1 2005 through Q3 2016

Source: Bureau of Labor Statistics⁴⁹



As shown, the U.S. establishment business birth/death history since 2005 has been relatively consistent ranging from lows around 197,000 (during the Great Recession) to highs of 246,000 (Q4 2016) births/deaths per quarter. The BLS defines establishments as a physical location of a certain economic activity—for example, a factory, mine, store or office.

- Regarding births/deaths per quarter, over the last decade, births exceeded deaths in 38 quarters (out of a total of 47 quarters). The nine quarters where deaths exceeded establishment births occurred during and shortly after the Great Recession.

The average number of new business establishment births per year was 888,640 whereas the average number of establishment deaths per year was 830,138, for a net gain of 58,512 new businesses per year.

⁴⁷ McKinsey Global Institute, Disruptive technologies: Advances that will transform life, business, and the global economy, May 2013, file:///C:/Users/CHUCK/Downloads/MGI_Disruptive_technologies_Full_report_May2013.pdf

⁴⁸ International Monetary Fund, World Economic Outlook, April 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>

⁴⁹ Bureau of Labor Statistics, Economic News Release, Table 8, Private sector establishment births and deaths, seasonally adjusted, retrieved 20 July 2017, <http://www.bls.gov/news.release/cewbd.t08.htm>

- Regarding employment, the average number of new hires per year was 3,428,080 whereas the average number of layoffs per year was 3,077,227, for a net gain of 350,803 new jobs per year.

It is important to note that each new company employed approximately 6.0 workers, which means that micro-businesses and micro-organizations (in larger businesses) make up the vast majority of new enterprises.

Startups are the seed corn of the economy. Without the planting and fertilization of these seedlings, our economic fields would remain fallow. Regarding new starts (firms less than 1-year old), the BLS reports that the United States is now creating startup businesses at historically low rates, down from 16.5% in 1977 of all firms to 8% in 2014 (latest available data on new starts). Quoting the Wall Street Journal, if the U.S. were creating new firms at the same rate as in the 1980s, it would equate to more than “200,000 companies and 1.8 million jobs a year.”⁵⁰

According to the September 2017 Census Bureau press release, in 2015 (latest data) the United States created 414,000 startup firms created 2.5 million new jobs as opposed to an average of 3.3 million new jobs from an average of 524,000 startups for the pre-Great Recession period 2002-2006.⁵¹

In sharp contrast to U.S. policy-maker indifference, China’s leadership is aggressively mass-producing startup business to create jobs, increase domestic consumption and grow their economy. In a March 2016 address to the National People’s Congress, Chinese Premier Li Keqiang boasted that in 2015 12,000 new companies were founded each day (4,380,000 per year or over 10-times the amount produced by the United States in 2015), an increase of 21.6% over the previous year.⁵²

Much more can be done to extend the lifespan of fledgling businesses. Per the U.S. Small Business Administration, 50% of all startups remain in business for 5-years and 25% last 10-years.

Startup Business Success Rate over Time

Source: Entrepreneur, Statistic Brain⁵³



⁵⁰ Wall Street Journal, Sputtering Startups Weigh on U.S. Economic Growth, 23 October 2016, <http://www.wsj.com/articles/sputtering-startups-weigh-on-u-s-economic-growth-1477235874?mod=djem10point>

⁵¹ U.S. Census Bureau, Press Release CB17-TPS.68, Startup Firms Created Over 2 Million Jobs in 2015, 20 September 2017, <https://www.census.gov/newsroom/press-releases/2017/business-dynamics.html>

⁵² The State Council of The People’s Republic of China, Full Text: Report on the Work of the Government (2016), 17 March 2017, <https://www.census.gov/newsroom/press-releases/2017/business-dynamics.html>

⁵³ Entrepreneur Magazine, Why Some Startups Succeed (and Why Most Fail), 18 February 2017, <https://www.entrepreneur.com/article/288769>, and Statistic Brain, Startup Business Failure Rate By Industry, January 2016, <http://www.statisticbrain.com/startup-failure-by-industry>

Research by Entrepreneur Magazine and Statistic Brain tends to agree with the SBA's lifespan predictions with 50% surviving through Year-4 and 29% through year-10. However, some industries are harder on startups than other industries. For example, information industry startup success rates through Year-4 are 37%, whereas finance, insurance, real estate, education, health and agriculture success rates are in the 56% to 58% range as shown below.

Startup Business Success by Industry

Source: Entrepreneur, Statistic Brain

Startup Success by Industry	% Operating After 4-Years
Finance Insurance and Real Estate	58%
Education and Health	56%
Agriculture	56%
Services	55%
Wholesale	54%
Mining	51%
Manufacturing	49%
Construction	47%
Retail	47%
Transportation, Communication and Utilities	45%
Information	37%

Startups fail for a host of reasons but in general, most fail due to incompetence and lack of experience—both of which can be mitigated by the proper mentoring and lifelong learning programs.

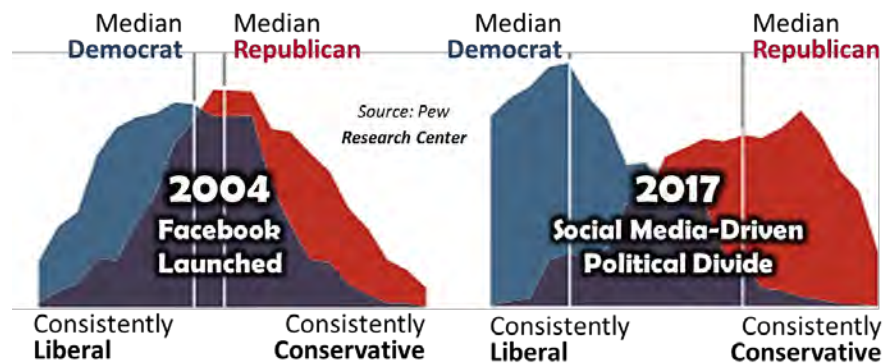
Both government and big business must play a much greater role in small business sustainment. Contrary to popular misconception, startups are more resilient than most people believe. Half of all new starts survive 5-years and one-quarter lasts 10-years. Unfortunately, American decision-makers and opinion-leaders talk a lot about the importance of small businesses and startups, but their approach to small business creation is both laissez-faire and misdirected. Virtually every government workforce development agency looks to academic and social enterprises as opposed to small business for jobs creation. As a result, many citizens pursue degrees, certifications, social skills training and well-written resumes that yield little success in landing a job because simply not enough jobs are available.

Government can play a significant support role in small business creation, especially if they underwrite the development and mass-production of highly-scalable startups, and nurture the health and productivity of small businesses in the same way government underwrites homebuilders and homeowner industries over the last fifty years via a number of government-sponsored enterprises like Fannie Mae, Ginnie Mae and Freddie Mac. The government should also reduce regulatory and tax burdens/exemptions on small business startups until they mature. By giving small business a 5 to 10-year window to get established and grow, both the U.S. labor force and the economy will benefit in the long-term. In addition, pro-small business incentives would attract more people to start a business.

Big business can play even a much greater role in small business development, especially in the emerging digital economy, which is ideally suited for startup businesses. America is blessed to be the home of network and information technology giants like Apple, HP, Facebook, Google, CISCO, Amazon, Microsoft, eBay and dozens of other network and digital platform giants. While these platform giants produce amazing technological advancements, foreign countries in Asia and Europe are applying these advancements to develop small businesses, labor forces and economies to a much greater degree than in the United States that is preoccupied with social media and entertainment.

Social Media-Driven Divisiveness

Source: Pew Research Center⁵⁴



American advancements in social media transformed the world both positively and negatively depending on the ideology of its users. A recent political poll by the Pew Research Center, a Washington DC-based nonpartisan “fact tank” and opinion-polling institute, states that Republicans and Democrats are now much further apart ideologically than they were when social media made its debut in 2004.

Today’s partisan political divide is largely social media-driven. This phenomenon is not unique to America. Social media was used to ignite the 2011 Arab Spring sending the Middle East into chaos. In order to avoid a “global tech-lash”⁵⁵, America’s platform giants need to invest more time, talent and money on mitigating the divisiveness of social media, managing network abuse (negative political advertising, foreign manipulation, hate speech, blocking, net neutrality, privacy, tax evasion, dark web, etc.), and advancing socially-responsible programs to help those in most in need.

As corporate citizens, leading American companies must assume a greater role in developing small businesses that are capable of competing and prospering in the emerging digital and today’s traditional economies. From a Jobenomics perspective, CEOs should take the lead (i.e., the responsibility) for creating a minimum of 10 million net new U.S. jobs within the next decade via the creation of millions of small, micro and self-employed American businesses.

⁵⁴ Pew Research Center, U.S. Politics & Policy, The Partisan Divide on Political Values Grows Even Wider, 5 October 2017, <http://www.people-press.org/2017/10/05/1-partisan-divides-over-political-values-widen/>

⁵⁵ The Economist, Chaining Giants, Internet firms face a global techlash, 10 August 2017, <https://www.economist.com/news/international/21726072-though-big-tech-firms-are-thriving-they-are-facing-more-scrutiny-ever-internet-firms>

The 10 million job goal is, in reality, a very meager objective compared to the efforts of major platform companies in China. For example, founder and former CEO Jack Ma committed Alibaba to create 100 million global micro-entrepreneur jobs in China this decade in the emerging digital economy. Alibaba is now investing \$2 billion of their profits in training locals, providing free computers, arranging startup financing, and establishing a logistical supply chain to connect 100,000 cities and villages to its e-commerce platform by 2018. Alibaba's Ant Financial loan division is providing low interest micro business loans to over 100 million Chinese microbusinesses, with emphasis on impoverished rural communities.^{56 57 58}

In summary, from a strategic perspective regarding economic and workforce development, the United States needs to place more attention on (1) elevating the vital importance of the private sector labor force, (2) improving the balance between working and non-working populations, (3) enhancing labor force gains and mitigating labor force losses, (4) increasing the effect of jobs on GDP, and (5) reinforcing the paramount importance of U.S. small business and job creation.

⁵⁶ NING, 100millionjobscrisis, Video, 23 November 2009, <http://yunusasia.ning.com/video/100millionjobscrisis-1>

⁵⁷ Cheung Kong Graduate School of Business Knowledge Center (Beijing), Will Ant Financial Become Wildly Successful Like Taobao?, 24 May 2016, http://knowledge.ckgsb.edu.cn/2016/05/24/internet-finance/will-ant-financial-become-wildly-successful-like-taobao/?utm_campaign=shareaholic&utm_medium=email_this&utm_source=email

⁵⁸ For more information on China's quest for network and digital economy dominance, see: <http://jobenomicsblog.com/chinas-digital-economy-quest/>

Nexus Between Jobs, Consumption And GDP

Gross domestic product (GDP) is currently the best way to measure a country's economy. Per the U.S. Bureau of Economic Analysis, GDP “is the value of the goods and services produced by the nation’s economy less the value of the goods and services used up in production. GDP is also equal to the sum of personal consumption expenditures, gross private domestic investment, net exports of goods and services, and government consumption expenditures and gross investment.”⁵⁹

Personal Consumption/Expenditures as a Percent of U.S. GDP

Source: BEA, NIPA Tables, Table 1.1.5. Gross Domestic Product⁶⁰

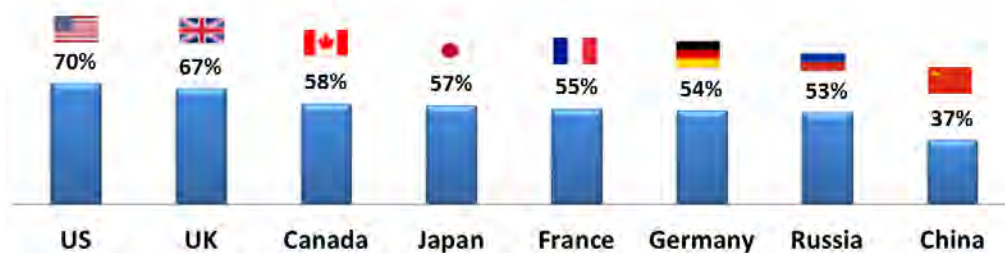
Major Components	2007		2018 Q1	
	\$ Trillion	%	\$ Trillion	%
Personal consumption/expenditures	9.8	67%	13.8	69%
Government consumption/expenditures	2.8	19%	3.4	17%
Private domestic investments	2.6	18%	3.2	16%
Net U.S. imports/exports	-0.7	-5%	-0.6	-3%
Total U.S. Gross Domestic Product	14.5	100%	20.0	99%

As shown, the U.S. Federal Reserve (U.S. central bank in charge of U.S. monetary policy) provides an excellent historical snapshot of the four major components of U.S. GDP. Personal consumption and expenditures (PCE) account for 69% of domestic final spending, and thus it is the primary engine that drives future economic growth. PCE shows how much of the income earned by households is being spent/purchased by people on current consumption as opposed to how much is being saved for future consumption.

PCE is dependent on a growing labor force that produces goods and services, and the wages that the workforce earns. If labor and wages stop growing, then GDP stops growing. For every monthly percentage point change of GDP growth approximately 125,000 jobs are gained or lost. Thus, over the course of a year 1.5 million jobs are at stake. During the Great Recession, America’s consumption-driven GDP dropped 5.5% year-over-year (from +2.7% in 2006 to -2.8 in 2009) resulting in the loss of 8.7 million jobs.

International Comparison of Consumption as a Percent of GDP

Source: World Bank (Selected Countries) Household final consumption expenditure, etc. (% of GDP)



⁵⁹ U.S. Bureau of Economic Analysis, <https://bea.gov/newsreleases/national/gdp/gdpnewsrelease.htm>

⁶⁰ U.S. Bureau of Economic Analysis, NIPA, Tables, Table 1.1.5, Gross Domestic Product, retrieved 20 April 2018, <https://www.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=3&isuri=1&1921=survey&1903=5>

According to The World Bank⁶¹, the United States is the largest and most conspicuous consumption-based economy in the world. As shown, the U.S. leads the world with 70% consumption as a percent of GDP. Other Western economies average about 60%. Emerging economies average around 35%.

In America's pre-consumer era, the US economy was based on agriculture and cottage industries where citizens produced what they needed and traded the rest. Non-essential consumption was largely the privilege of an elite few. Over the last century, consumerism was introduced to the masses as part of the American economic equation. Today, consumption is no longer a privilege but a necessity. Increased consumption is necessary to keep the economy growing.

Modern-day Americans are programmed to be good consumers. It is estimated⁶² that an average American child watches 20,000 TV commercials per year. By age 65, the average American watches 2 million commercials. We are programmed for mega-consumption for special occasions, like Christmas that evokes \$80 billion worth of gift-giving. When an event, like 9/11 or the Great Recession of 2008-09, happens the federal government steps in to encourage consumption. The Monday following the 9/11 Trade Tower attacks, the White House encouraged American's to continue shopping due to fears that Wall Street would falter if consumer confidence plummeted. To combat the negative effects of the Great Recession, the federal government implemented \$17 trillion worth of bailouts, buyouts, and stimuli to keep financial institutions and corporations afloat in order to stimulate our consumption-based economy.

Without ever-growing consumption, the economy would falter. If U.S. consumption fell over time to the level of our nearest neighbor Canada (58%), the consumption component of U.S. GDP would drop by 12-percentage points. If government expenditures, private sector investment, and import components remained the same, a 12% reduction would place 18 million jobs at risk. In many ways, this is transpiring now in America largely due to automation and ever greater amounts of work being done by part-time workers—both of which are rapidly replacing higher-paid full-time workers with benefits. Fewer workers and lower wages directly equate to lower consumption.

According to the International Monetary Fund (IMF), an organization of 189 countries working to promote high employment and sustainable economic growth, states that GDP growth underpins economic, employment and income growth essential to promoting social progress.⁶³ While GDP has become an "everyday shorthand for economic performance" with today's pundits and politicians, it is an "imperfect measure of economic welfare, with well-known drawbacks" such as greatly underestimating the impact of the emerging digital and network economy.

⁶¹ World Bank, Household final consumption expenditure, etc. (% of GDP), <http://data.worldbank.org/indicator/NE.CON.PETC.ZS>

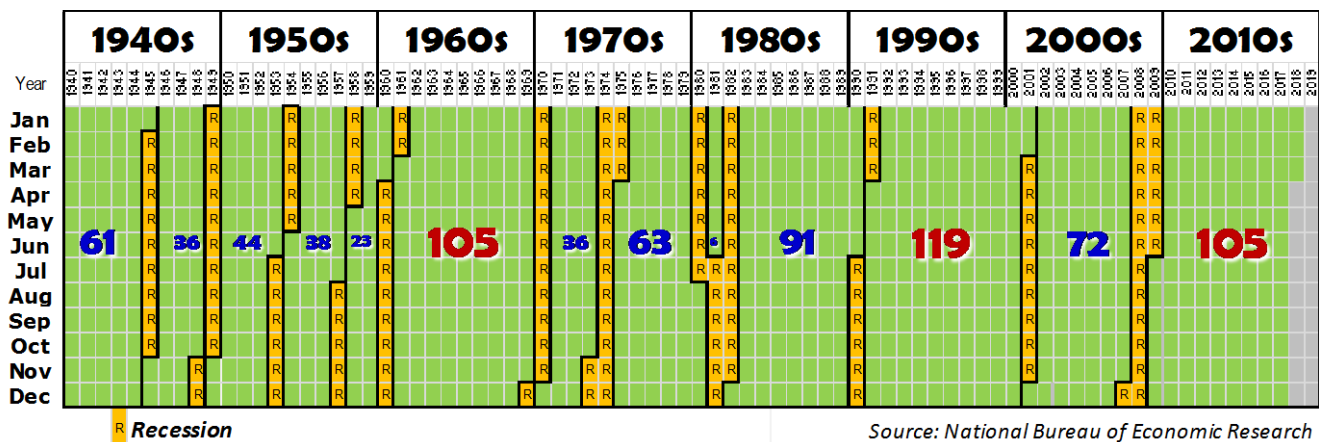
⁶² The Sourcebook for Teaching Science – Strategies, Activities, and Instructional Resources, Television Statistics, IV, Commercialism, <http://www.csun.edu/science/health/docs/tv&health.html>

⁶³ International Monetary Fund, Rethinking GDP, March 2017, <http://www.imf.org/external/pubs/ft/fandd/2017/03/coyle.htm>

the U.S. entering a recession in the next 12 months.⁶⁷ In October 2016, Wall Street Journal's survey of economists placed a 60% likelihood of a U.S. recession within four years.⁶⁸ In June 2017, Goldman Sachs gives the United States a 25% chance of a recession within two years.⁶⁹ In December 2017, according to the 9th annual New Year's Resolution Survey from Allianz Life, 36% of Americans believe that a major recession could happen in 2018.⁷⁰ On the other hand, fourteen Wall Street banks surveyed by Bloomberg expect that 2018 will be recession-free based due to tax cuts and continued strength in the global economy.⁷¹

While these projections are only guesstimates, the theme is relatively consistent that sclerotic GDP growth begets recessions. So far the Trump Administration has proven these negative prognostications wrong with two-quarters of 3%+ growth and positive job growth. However, a sprint does not equate to a marathon. Hopefully, the Administration has strong legs to keep the economy and labor force running smoothly.

Longest Running Post-Recession Recoveries (Months)



Since the end of the Great Recession to 1 April 2018, the United States economy has run 105 straight months of GDP growth, which puts this long-run in a tie for 2nd place over the last eight decades. The 1990s had the longest run of 119 months, followed by 105 recession-free months in the 1960s. Hypothetically, if the current economic expansion matches the historical record of 119 months, the next recession could occur in 14 months or in June 2019—a little more than halfway through President Trump's first term in office. While there is little evidence that economic expansions are

⁶⁷ Fortune, Deutsche Bank Says the U.S. Is Likely Headed for a Recession, 6 July 2016, <http://fortune.com/2016/07/06/deutsche-bank-recession/>

⁶⁸ Forbes, Recession Likely In The Next Four Years, 18 October 2016, <http://www.forbes.com/sites/billconerly/2016/10/18/recession-likely-in-the-next-four-years/#d0de627536a2>

⁶⁹ The Street, A U.S. Recession Has a 25% Chance of Happening Within Two Years, Goldman Sachs Believes, 25 June 2017, <https://www.thestreet.com/story/14194762/1/a-u-s-recession-has-a-25-chance-of-happening-within-two-years-goldman-sachs-believes.html>

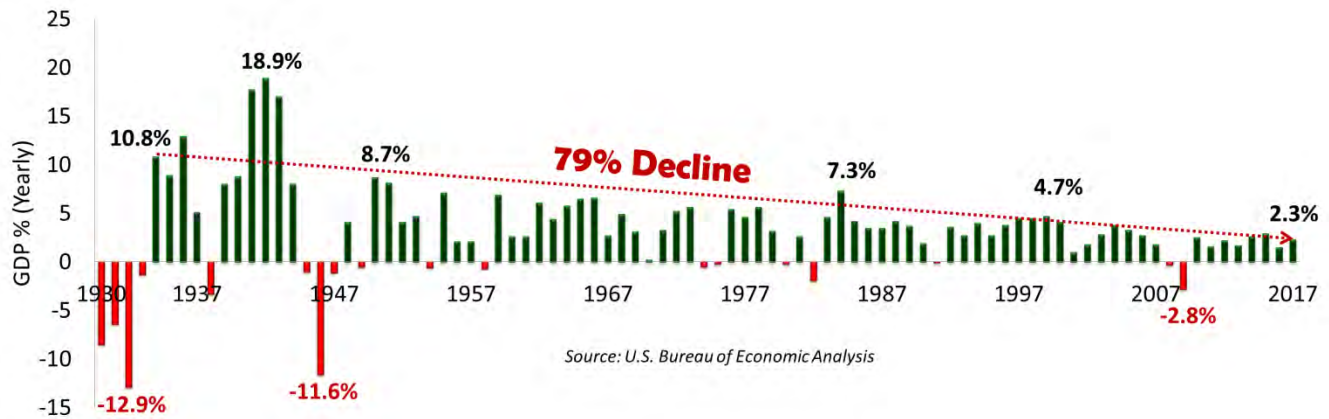
⁷⁰ Allianz, One in Three Americans Believe Another Major Recession Could Happen in the New Year, but Many Remain Optimistic About Making Money, 18 December 2017, <https://www.allianzlife.com/about/news-and-events/news-releases/New-Years-Resolution-Survey-2017>

⁷¹ Fortune, Will the Stock Market Crash in 2018? Here's What Wall Street Predicts, 28 December 2018, <http://fortune.com/2017/12/28/stock-market-predictions-future-2018-crash/>

limited by time, President Trump will not only have to deliver on his campaign promises but bear the sins of past presidential, congressional and central bank decisions.

U.S. GDP Growth History, by Year, Since Great Depression

Source: BEA, Table 1.1.1. Percent Change From Preceding Year

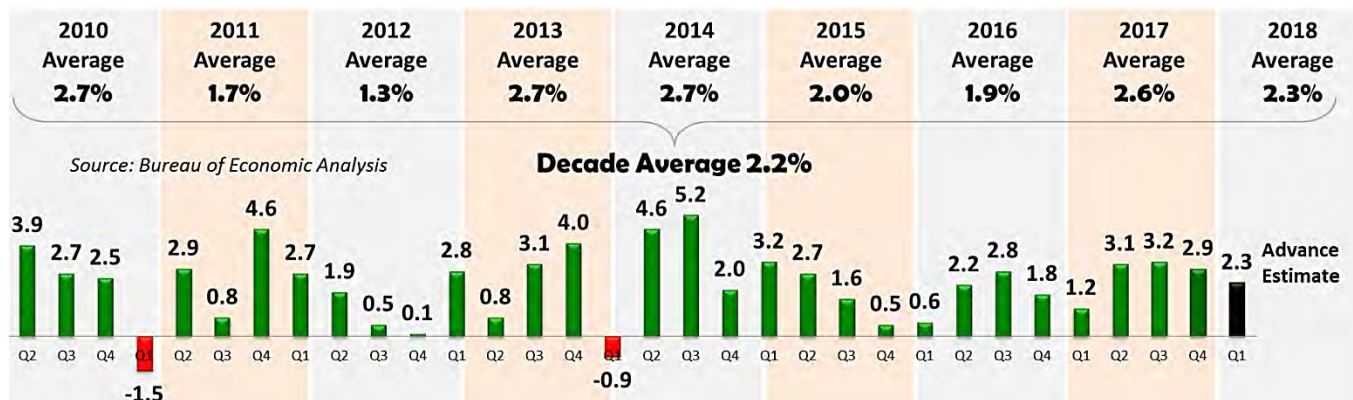


As shown by the dotted red line, year-over-year U.S. GDP growth declined by approximately 79% over the last 9-decades from the end of the Great Depression to the beginning of 2018.

During the Great Depression, U.S. GDP hit its nadir of a negative 12.9% growth in 1932—the year that President Franklin D. Roosevelt was elected. During FDR’s first term in office, he instituted the “New Deal” that pumped significant amounts of federal government money to revive the economy. During FDR’s second term in office (1937-41), the U.S. economy boomed during the buildup and entry into WWII. In 1942, U.S. GDP hit its all-time high of 18.9% during the height of WWII. During the post-WWII period, U.S. GDP growth slumped to a negative 11.6% due to reduced government spending and tepid private sector investment. However, by 1950, the U.S. economy was humming again. By 1950, U.S. GDP hit a high of 8.7%. Since 1950, U.S. GDP declined steadily to the current day, surging during periods of war (Korea 1950-53, Vietnam 1960-75) and declining during recessionary periods (1937-38, 1945, 1949, 1953, 1958, 1960-61, 1969-70, 1973-75, 1980, 1981-82, 1990-91, 2001 and the Great Recession of 2007-09).

Real GDP Quarterly Percent Change This Decade

Source: BEA, Table 1.1.1. Percent Change From Preceding Quarterly Period



Most economists believe that economic growth depends on employment and GDP growth. Today, the ideal rate for U.S. GDP growth is over 3%. In today's mature economy if GDP growth exceeds 4%, it signals overheating and asset bubbles. Any GDP growth below 2% is considered sclerotic growth that makes the U.S. economy vulnerable to financial downturns.

According to the U.S. Bureau of Economic Analysis (BEA), during the post-recession recovery period from 2010 through 2017, U.S. GDP averaged 2.2%. In 2015 and 2016, U.S. GDP grew by subpar rates of 2.0% and 1.9% respectively. During the 8-years of the Obama Administration, GDP averaged 1.8%. During the first year of the Trump Administration, GDP averaged 2.6%. BEA's advance estimate for Q1 2018 is a disappointing 2.3%—the second quarterly decline since the Trump Administration's 3.2% peak in Q3 2017.⁷²

For Q1 2018, the Federal Reserve Bank of Atlanta's GDPNow forecast is 2.0% as of 26 April 2018, which is down from a high of 5.4% on 1 February 2018 and up from a low of 1.8% on 15 March 2018. The GDP Now's "Blue Chip consensus" survey of leading business economists forecast that Q1 2018 growth will be 2.1% with a low estimate of 1.6% and a high estimate of 2.6%.⁷³

While GDP growth does not ensure employment growth, sclerotic GDP growth discourages business hiring, consumer spending and labor force expansion. Sclerotic GDP growth also discourages lower rates of unemployment and voluntary workforce departures. Negative GDP growth creates recessions and depressions depending on the severity and longevity of the contracting economy.

The period of sclerotic GDP growth from 2000, has dramatically impacted the American middle-class and the U.S. labor force that is weaker by 11 million workers today than at the beginning of the 21st Century. Even though wages have improved in the last year, for most American workers, real salaries (purchasing power) have not increased significantly for decades. America's aggregate household income has shifted from middle-income to upper-income households, causing many middle-class workers to leave the workforce altogether. The solution to building a robust middle-class is to accelerate GDP growth, which requires the creation of more productive private sector jobs, which, in turn, can only be generated by a massive expansion of the small business sector.

While GDP growth does not ensure employment growth, sclerotic GDP growth discourages business hiring, consumer spending and labor force expansion. Sclerotic GDP growth also discourages lower rates of unemployment and voluntary workforce departures. Negative GDP growth creates recessions and depressions depending on the severity and longevity of the contracting economy. The solution to avoid a financial crisis is to accelerate GDP growth, which requires the creation of more productive private sector jobs, which, in turn, can only be generated by a massive expansion of the small business sector.

⁷² U.S. Bureau of Economic Analysis, Table 1.1.1, Percent Change From Preceding Period in Real Gross Domestic Product, <https://www.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey>

⁷³ Federal Reserve Bank of Atlanta, GDPNow Forecast for Q1 2018, 17 April 2018, <https://www.frbatlanta.org/-/media/documents/cqer/researchcq/gdpnow/RealGDPTrackingSlides.pdf>

In conclusion, the nexus between jobs and GDP is relatively straightforward. Small businesses create the vast majority of new jobs. Jobs generate wages and consumption. Consumption drives private sector investment that begets returns.

Due to the erosion of the middle class, the vast majority (86%) of Americans now make below mean wages, which results in less consumption and investment. To get profitable returns, the wealthy are increasingly turning to making money on money (stock buybacks, mergers, acquisitions, secondary markets, etc.) as opposed to making money on labor. The net result of today's negative feedback loop is greater income inequality and slow growth.

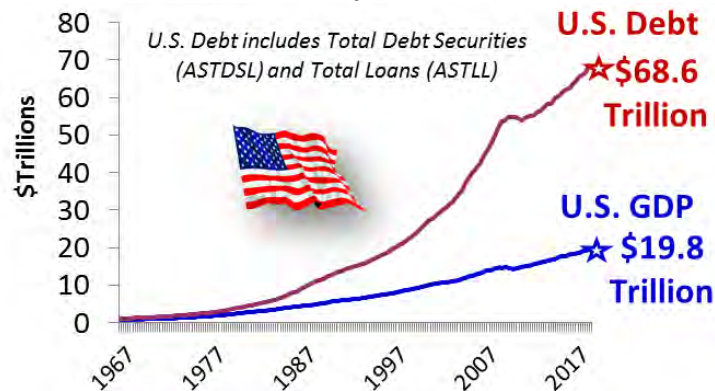
To turn today's economy into a positive feedback loop, the Administration needs to focus more on incentivizing and accelerating startup, self-employed, micro and small business development, which in turn will create the maximum number of new jobs. If each of America's 29.6 million small businesses could produce only one new job, Trump's 25 million new jobs goal could be easily realized.

Impact of Debt & Deficits on the Labor Force & GDP

Over the last half-century, U.S. debt has grown at a rate much faster than GDP and shows no signs of slowing if Americans continue on their current path of over-spending and under-producing. Since spending cuts do not seem to be possible due to America's deeply divided electorate, the solution to growing GDP rests on increased production, which depends on greater business and job creation.

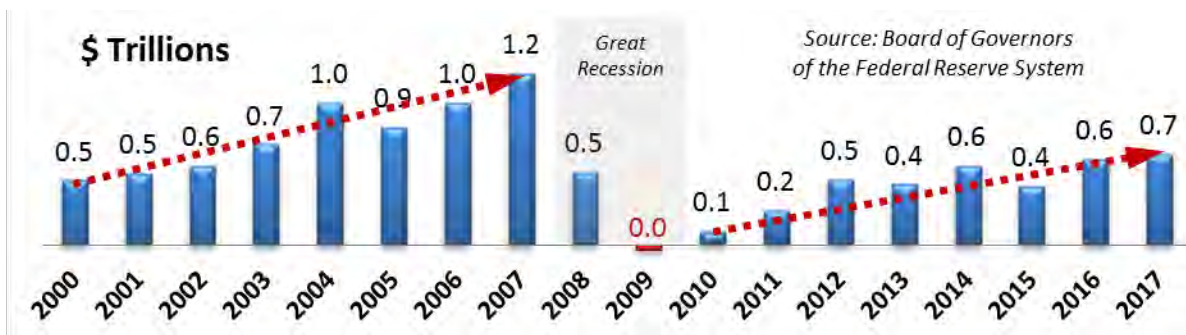
U.S. Debt versus GDP

Source: U.S. Federal Reserve Bank of St. Louis Economic Research (FRED)



Over the last five decades, total U.S. debt (government, business, financial and individual) has grown from a luxury for a few to an addiction to all. Compared to the current GDP of \$19.8 trillion, total public and private debt have now reached an all-time high of \$68.6 trillion, up from \$4 trillion in 1967 and \$27 trillion in 2000, as reported by the U.S. Federal Reserve System of St. Louis.⁷⁴ U.S. federal government debt equals about one-third of total American debt whereas private debt is responsible for the remaining two-thirds. Most of the private debt is due to excessive consumption.⁷⁵

Growth of Total U.S. Debt by Year



This chart indicates that U.S. debt accumulation is following the same path as years prior to the Great Recession. This is not meant to imply that a near-term recession is imminent, but that recessions are often precipitated by reckless spending and imprudent government fiscal and monetary policies.

⁷⁴ \$67 trillion is calculated from Fed tables: Total Debt Securities (ASTDSL), Total Loans (ASTLL) and GDP (GDP) that can be found at <https://fred.stlouisfed.org/series/ASTDSL>, <https://fred.stlouisfed.org/series/ASTLL>, and <https://fred.stlouisfed.org/series/GDP>

⁷⁵ U.S. Bureau of Economic Analysis, Real Gross Domestic Product [GDPC1], retrieved from FRED, Federal Reserve Bank of St. Louis, 9 October 2016, <https://fred.stlouisfed.org/series/GDPC1>, July 9, 2016

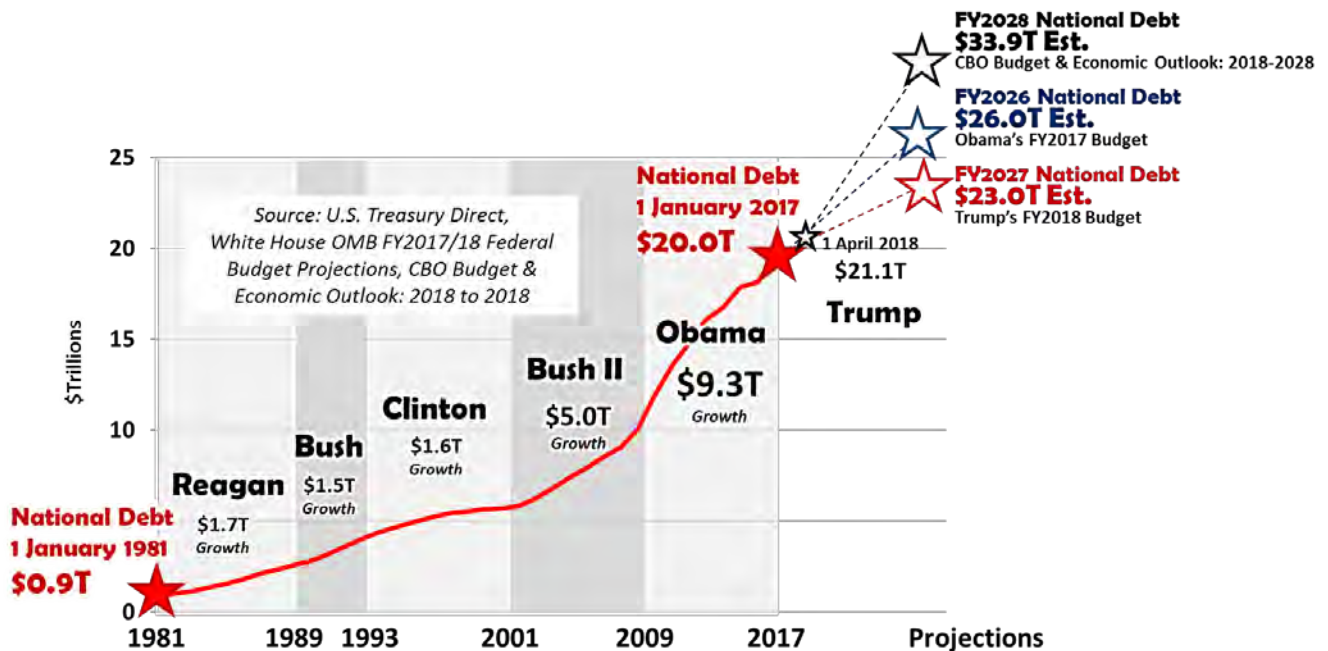
Growth of U.S. Household Debt and Credit

Source: Federal Reserve Bank of New York⁷⁶

\$ Trillions	2007 Q4	2017 Q4	Change
Mortgage	\$9.1	\$8.9	-2%
Student Loan	\$0.5	\$1.4	152%
Auto Loan	\$0.8	\$1.2	50%
Credit Card	\$0.8	\$0.8	-1%
Home Equity	\$0.6	\$0.4	-31%
Other	\$0.4	\$0.4	-8%
	\$12.5	\$13.1	5%

Household (consumer) debt is on the rise again after a brief respite in the aftermath of the Great Recession. While rising consumer debt indicates optimum for the future, the vast majority of the debt increase is mainly due to increased student debt—up 152% in the last decade—in pursuit of good-paying jobs that may not materialize commensurate with debt burden. Student loans (\$1.4 trillion) now exceed auto loans and are second only to mortgage loans. More disturbingly, student loan delinquency rates are now the highest of any debt category at 11% (90+ day delinquency rate)—about 1/3 higher than credit card delinquencies and 2/3 higher than auto loan delinquencies. In terms of debt holders, there are 469 million credit card holders, 110 million auto loans, 43 million student loan recipients and 16 million home equity revolving loan accounts.

U.S. National Debt History & Projections



⁷⁶ Federal Reserve Bank of New York, Center for Microeconomic Data, Reports and Data, 2017 Q4 (latest), <https://www.newyorkfed.org/microeconomics/hhdc/background.html>

Deficit spending practiced by the federal government is out of control. All the states except Vermont have a legal requirement for a balanced budget. The federal government does not have a balanced budget requirement and is racking up unsustainable amounts of debt. Overspending and neglecting to bring fiscal accounts into balance is an existential threat to the U.S. economy. Regrettably, debt and deficit reductions are issues that public officials and the American public tend to ignore.

U.S. national debt increased from \$0.9 trillion when President Reagan took office to \$21.1 trillion by the end of Q1 2018. Since the Great Recession, the U.S. federal government has spent lavishly on a wide variety of new programs, such as Obamacare, without decreasing spending on traditional programs. Excess spending lifted the economy, but eventually the debt will have to be paid or dealt with by other means, such as inflation, IOUs (as California did in 2009) or defaults.

Presidents Reagan, Bush Sr. and Clinton's debt increases were relatively minor, totaling \$1.7T, \$1.5T (over 4 years) and \$1.6T respectively. During President G.W. Bush's tenure, the national debt growth increased by \$5.0T. During President Obama tenure, national debt skyrocketed to \$9.3T. During the first 15-months of the Trump Administration., national debt has grown by approximately \$1.1T. Through Q1 2018, the Treasury is on pace to issue \$1.2+ trillion in 2018—almost double the increase in 2017.

President Trump entered office with a FY2018 Budget plan to cut the rate of debt growth of President Obama's FY2017 Budget in half. The lavish Tax Cuts and Jobs Act of December 2017 abandoned fiscal conservatism and any notion of a balanced budget. Accordingly, **the U.S. Congressional Budget Office's Budget and Economic Outlook: 2018 to 2028 report forecasts that in FY2028 the U.S. national debt will reach an astonishing \$33.9 trillion by 2028.**⁷⁷

This level of debt could cause the U.S. economy to collapse if the Trump Administration is not able to get the U.S. economy firing on all cylinders without disruption or interrupt. The only way for the United States to sustain this level of public indebtedness is for the U.S. economy to generate high-levels of sustained GDP growth (3.5% to 4.0%) and 25 million new jobs to fulfill the 6.5 million open jobs and address the tens of millions of new jobs in the emerging digital and network economy. In other words, debt accumulation is tolerable to the rich not the poor.

Excessive consumption and debt are not only an American challenge. According to the IMF, global combined debt (government, household, and nonfinancial firms—not including the financial sector) is at an all-time at 225% of world GDP, or \$152 trillion. Two-thirds, amounting to about \$100 trillion, consists of liabilities in the private sector. "The sheer size of (private sector) debt could set the stage for an unprecedented private deleveraging process that could thwart the fragile (global) economic recovery....Financial crises tend to be associated with excessive private debt....It is clear that meaningful deleveraging will be very difficult without robust (GDP) growth."⁷⁸

⁷⁷ U.S. Congressional Budget Office, The Budget and Economic Outlook: 2018 to 2028, April 2018, <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/53651-outlook.pdf>

⁷⁸ International Monetary Fund (IMF), Fiscal Monitor, Debt: Use it Wisely, October 2016, <https://www.imf.org/external/pubs/ft/fm/2016/02/pdf/fm1602.pdf>

As scary as this IMF prediction is, it does not include the unimaginable debt associated with the too-big-to-fail financial sector. The financial sector not only includes commercial banks, shadow banks (hedge funds, money-market mutual funds, etc.) and financial intermediaries (insurance companies, pension funds, etc.)—all of which pose a near-term global financial risk in excess of \$50 trillion.

And then there is the invisible financial behemoth called derivatives. Derivatives are largely unregulated financial instruments based on the perceived future value (bets) of an underlying asset like stock, bonds, mortgages, currencies, interest rates, as well as a variety of other exotic bets such as the weather's effect on crops. Investopedia estimates the derivatives market at \$1.2 quadrillion (\$1,200 trillion) that equates to over 10-times world GDP or 60-times U.S. GDP.⁷⁹ Derivatives caused the sub-prime mortgage crisis that led to the 2007 Great Recession and global financial crisis and is likely to be a major contributor to the next global financial reset.

Little has been done by U.S. policy-makers since the Great Recession to mitigate the threat of another U.S. derivative crisis, or protecting the U.S. economy from threats posed by foreign-based financial institutions that manage derivatives.⁸⁰ For example, Brexit, the British exit from the European Union (EU), poses a significant global financial challenge. A significant amount of derivatives trading is accomplished by London clearing houses (intermediaries between buyers and sellers of financial instruments), such as the London Stock Exchange's London Clearing House (LCH).

LCH controls and processes tens of trillions of dollars' worth of derivatives per day including over 40% of the global interest-rate derivatives market with a daily turnover of \$3 trillion. By withdrawing from the EU, London's "passporting" rights of derivatives traded across the EU is questionable from both oversight, legal and self-interest perspectives.⁸¹ According to Financial Times, according to local rules, the European Union would have little control over the policing of derivatives managed by London after the exit.⁸² Any dispute between London and the EU would result in a potential financial crisis that could be as large as the global ramifications of the 2007 U.S. sub-prime mortgage crisis.

Since the Great Recession, government debt increased by 50% in advanced economies that are busy printing money, lowering interest rates, buying up weak financial assets (like mortgages), spending on overpriced infrastructure projects (especially in China) and a host of other programs to stimulate GDP growth. In the short-term, these efforts have been successful elevating consumption and elevating stock and real estate markets. However, risks continue to compound.

In addition, financial institutions are becoming fragile. For example, Germany's largest bank's stock value has dropped by 60% in the last year. Insurance companies are scrambling (e.g., U.S. insurance

⁷⁹ Investopedia, How big is the derivatives market?, 27 May 2014, <http://www.investopedia.com/ask/answers/052715/how-big-derivatives-market.asp>

⁸⁰ For a detailed discussion on derivatives and their role in starting the Great Recession read Jobenomics, the book.

⁸¹ The Economist, Brexit and Derivatives, Standing Novations, Brexit will give the derivatives market a nasty headache, 14 October 2017, <https://www.economist.com/news/finance-and-economics/21730160-legal-status-thousands-contracts-may-be-thrown-doubt-brexit-will>

⁸² The Financial Times, Clearing & Settlement, What is London's euro clearing market and why is Brussels worried?, 13 June 2017, <https://www.ft.com/content/18dcf566-5025-11e7-bfb8-997009366969>

companies are exiting Obamacare in droves). Pension funds are underfunded (e.g., U.S. state and local pension funds have up to \$3 trillion of unfunded commitments). Welfare programs are on the road to insolvency (e.g., Medicare is projected to be insolvent within 10-years). In other words, there are very dark storm clouds on the horizon.

U.S. Government Financial Bailouts, Buyouts, and Stimuli Since 2008

Total \$16.9 Trillion			
Federal Reserve	\$ 11,213	Treasury	\$2,910
Primary Credit Discount	\$ 111	Troubled Asset Relief Program (TARP)	\$700
Secondary Credit	1.00	Tax Break for Banks	\$29
Primary dealer and others	\$ 147	Stimulus Package (Bush)	\$168
ABCP Liquidity	\$ 146	Stimulus II (Obama)	\$787
AIG Credit	\$ 60	Treasury Exchange Stabilization	\$50
Commercial Paper Funding	\$ 1,200	Student Loan Purchases	\$60
Maiden Lane (Bear Stearns)	\$ 30	Citigroup Bailout Treasury	\$5
Maiden Lane II (AIG)	\$ 23	Bank of America Bailout Treasury	\$8
Maiden Lane III (AIG)	\$ 30	Support for Fannie/Freddie	\$400
Term Securities Lending	\$ 75	Line of Credit for FDIC	\$500
Term Auction Facility	\$ 375	Treasury Commitment to TALF	\$100
Securities lending overnight	\$ 10	Treasury Commitment to PPIP	\$100
Term Asset-Backed Loan Facility	\$ 1,000	Cash for Clunkers	\$3
Currency Swaps/Other Assets	\$ 606	FDIC	\$2,478
GSE Debt Purchases	\$ 200	Public-Private Investment (PPIP)	\$1,000
GSE Mortgage-Backed Securities	\$ 1,250	FDIC Liquidity Guarantees	\$1,400
Citigroup Bailout Fed Portion	\$ 220	Guaranteeing GE Debt	\$65
Bank of America Bailout	\$ 87	Citigroup Bailout FDIC Share	\$10
Commitment to Buy Treasuries	\$ 300	Bank of America Bailout	\$3
Quantitative Easing (QE1)	\$ 1,750	HUD	\$306
Quantitative Easing (QE2)	\$ 600	Hope for Homeowners (FHA)	\$300
Operation Twist	\$ 667	Neighborhood Stabilization (FHA)	\$6
Quantitative Easing (QE3)*	\$ 1,440	* \$40B/month thru 2015 (36 months)	
Treasury Buying Program (QE4)**	\$ 885	** \$45B/mon for 18 months & \$75B for 2014	

Source: Bloomberg, Jobenomics

Since the onset of the Great Recession, the U.S. federal government and the Fed spent almost 17 trillion dollars' worth of stimuli and incentive programs. The Fed is responsible for two-thirds (\$11 trillion) of the total. In addition to spending, the Fed has held interest rates to near-zero in hopes of invigorating the economy. The net result of government spending and a near-zero interest rate policy has not achieved robust GDP or labor force growth as anticipated. However, it did keep the economy from sliding into a depression and caused the U.S. stock markets to soar, greatly benefitting the top 1% while simultaneously eroding the American middle-class and labor force.

The infusion of \$17 trillion into the economy, foreign investment has helped keep the U.S. economy recession-free since the Great Recession. The reason for foreign investment is that the U.S. economy has been the "least ugly" economy in the world. The European Union is in crisis with its southern

member nations in recession. China has experienced a slowdown, and a large part of the remaining developing world countries are struggling. Even the oil-rich Middle East is reeling from low oil prices, insurgencies, and terrorism. So until things change, America should continue to be a haven for foreign investment. Unfortunately, the international landscape is rapidly evolving with potentially negative political, economic and military consequences.

By being the least ugly global economy, U.S. stock, bond, and real estate markets have been able to attract both foreign and domestic investors, which has managed to keep GDP growing, albeit much too slowly. President Trump's economic and job creation vision (doubling U.S. GDP growth to the 3.5% to 4.0% range and creating 25 million new jobs.⁸³) is vital to staving off a near-term recession and maintaining the flow of foreign investment into the United States.

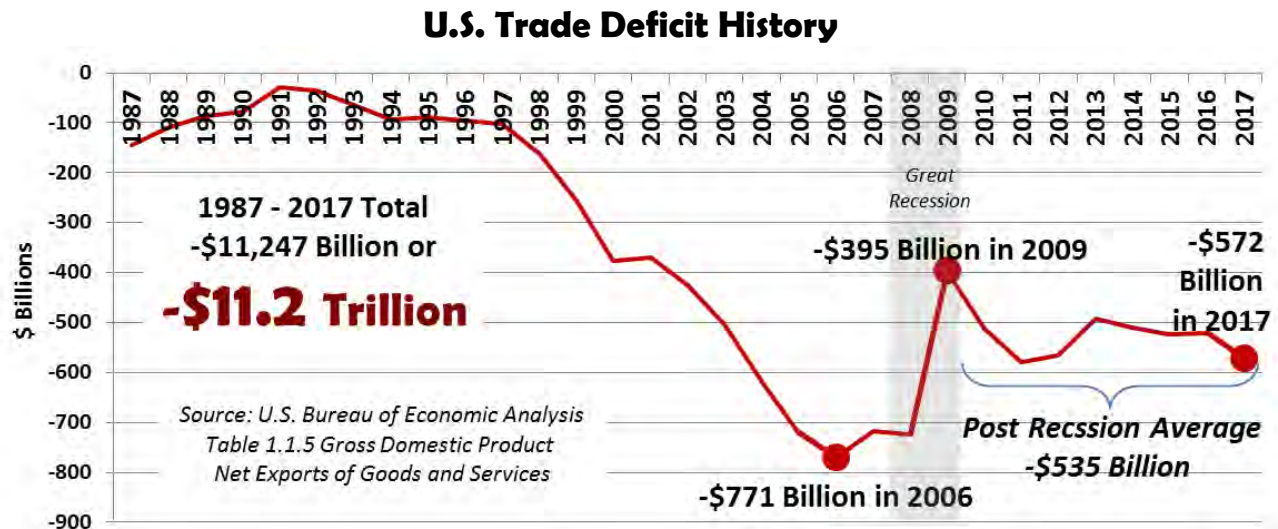
However, the Trump Administration faces a Catch-22 (a dilemma where there is no easy solution due to conflicting positions) regarding foreign investment. If the U.S. economy grows too quickly, the 10 trillion dollars in dollar-denominated foreign debt could trigger a foreign financial crisis that would not only restrict capital inflows to the United States but would threaten foreign government investment in their domestic programs. Implementation of tariffs, import taxes, and other trade-limiting policies could precipitate reciprocal foreign protectionist policies and exacerbate the potential for a financial crisis and conflict. President Trump's Catch-22 ultimately lies in resolving the dispute between supporters of nationalistic policies and those that promote globalism.

Unfortunately, profligate government spending has reached its zenith and the relative attractiveness of U.S. markets may be approaching an apex, making the likelihood of a U.S. recession relatively high. A recession would not only impact the U.S. economy but would cause a U-turn in recent incremental U.S. employment gains.

⁸³ White House Website, <https://www.whitehouse.gov/bringing-back-jobs-and-growth>

Impact of Trade Deficits and Intellectual Property Theft

Over the last three decades, the United States has imported \$11.2 trillion more goods and services than it exported. To a large degree, this is the main reason for the erosion of the American middle-class and its industrial base.



U.S. trade deficits average of \$535 billion per year since the end of Great Recession. \$535 billion is the equivalent of the loss of 7,128,000 jobs calculated at a middle-class job earning \$75,000 per job (including wages and benefits). In 2006, when the trade deficits hit its nadir (-\$771 billion), U.S. job losses were as high as 10,280,000, based on the same calculation.

The Great Recession cut the trade deficit to -\$395 billion in 2009 due to decreased spending. Spending resumed after the recession and averaged -\$535 billion over the last 8-years.

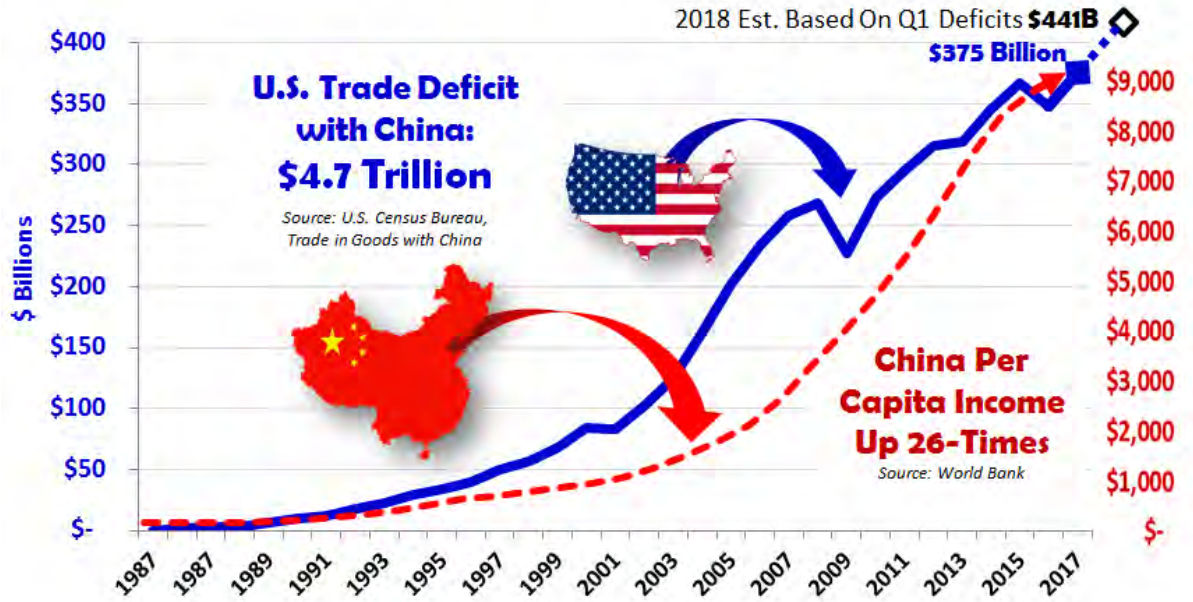
In 2017, the trade deficit was -\$572 billion. Sadly, 2018 shows no improvement. Q1 2018 trade deficit was the highest of any quarter (-\$638 billion) of any quarter since the end of the Great Recession—13% higher than Q1 2017 (-\$567 billion) and 21% higher than Q1 2016 (-\$526 billion). Consequently, President Trump's aggressive trade deficit policies (e.g., tariffs and "reciprocal" and bi-lateral trade agreements) make ultimate sense from economic, workforce and security perspectives.

In 2017, the net (imports versus exports of goods only) to China equated to a negative \$375 billion (67% of the total U.S. trade deficit) was due to unbalanced trade with China. China's trade deficit with the United States was greater than the combined total of the next ten biggest trading partners (-\$71 billion Mexico, -\$69 billion Japan, -\$64 billion Germany, -\$38 billion Vietnam, -\$38 billion Ireland, -\$32 billion Italy, -\$25 billion Malaysia, -\$23 billion India, and \$23 billion South Korea.⁸⁴

⁸⁴ U.S. Census Bureau, Foreign Trade, <https://www.census.gov/foreign-trade/index.html>

In January 2018, China's trade deficit in goods was \$36.0 billion—the highest single month since January 1985. With a Chinese trade deficit of \$29 billion, February 2018 repeated this highest in history trend exceeding the February 2017 deficit by over \$6 billion.^{85 86}

U.S. Trade Deficit History with China



According to the U.S. Census Bureau's Trade in Goods with China database, the U.S. trade deficit increased from \$0 in 1987 to \$375 billion per year today. In the first two months of 2018, the trade deficit of China was \$11 billion higher than the first two months of 2017, which, if left unabated the 2018 trade deficit with China could potentially reach \$441 billion—the largest amount in history by a substantial margin. Fortunately, the Trump Administration is taking steps to mitigate this expansion and possibly make trade with China more balanced and reciprocal.

Since 1987, the total U.S.-China deficit amounted to an incredible trade imbalance of \$4.7 trillion. This enormous influx of foreign capital raised China's Gross National Income per capita substantially. Consequently, the claim that the United States helped finance the Chinese economic miracle that lifted 700 million people out of poverty has merit. Gross national income (GNI) is the total domestic and foreign output claimed by residents of a country. As shown, the World Bank reports a 26-fold increase in Chinese income per person from \$320 in 1987 to \$8,250 in 2016.⁸⁷ While this trade imbalance helped raise hundreds of millions of Chinese out of poverty, it also created the erosion of the American middle-class and the loss of much of the U.S. manufacturing base over the last three decades.

⁸⁵ U.S. Bureau of Economic Analysis, National Data, Table 1.1.5 Gross Domestic Product, <https://www.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey&1903=5>

⁸⁶ U.S. Census Bureau, Foreign Trade, Trade in Goods with China, retrieved April 2018, <https://www.census.gov/foreign-trade/balance/c5700.html>

⁸⁷ The World Bank, GNI per capita, Atlas method (current US\$), China 1987-2016, retrieved 15 April 2018, <https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?end=2016&locations=CN-US&start=1987>

China has not only dominated the U.S. trade balance in goods and services but in intellectual capital as well. The Commission on the Theft of American Intellectual Property states the **intellectual property theft** (cyber theft, counterfeit goods, software piracy and trade secrets theft) **costs the American economy as much as \$600 billion a year** with the vast majority attributed to the Chinese government.⁸⁸

Two highly credible individuals, Dennis Blair (former Director of National Intelligence and PACOM Commander) and Jon Huntsman (former Ambassador to China, Governor, Deputy Trade Representative, and Presidential Candidate) chair this commission. According to the Commission, in addition to annual financial losses of up to \$600 billion per year, intellectual property theft causes **tens of millions less U.S. jobs, suppression of GDP growth and innovation**. In March 2018, the Commission urged the Trump Administration to take serious and immediate action to curtail Chinese theft of U.S. intellectual property.⁸⁹

In the 1980s through early 2000s, the U.S. trade imbalance and technology transfer was a win-win for both countries. With the support of the United States, China became a member of the World Trade Organization in 2001, and their economy accelerated to the point of reaching economic parity (GDP Purchasing Power Parity) with the United States by 2014. Throughout this time period, many Americans (including this author) believed that an economically secure China would stand alongside the Western world to help make the rest of the world a better place. Unfortunately, China chose a different path—a path that is now unmistakably expansionistic and hostile towards the United States. Allowing American trade deficits to fund Chinese economic and military hegemony is not only foolish but dangerous from a national, economic and labor force security outlook.

In its first book, Jobenomics published the following narrative on trade in 2009.

“Jobenomics recommends a policy of reciprocity—a policy in commercial dealings between countries that is based on mutual giving and receiving. The relationship between the US and countries like Canada, Britain, and Australia would be rooted in free trade. The relationship between countries overly protectionist would be based on reciprocal measures, until that country amended its arbitrary practice.

After WWII, when the US had 50% of the world’s GDP, we had a moral obligation to be charitable and help rebuild Europe and Asia. Considering our nascent recovery from the economic crisis, shifting geopolitics, and the magnitude of U.S. debt, Americans can no longer afford to be economically naïve and have a reason to be cautious.

⁸⁸ The Commission on the Theft of American Intellectual Property, <http://www.ipcommission.org/>

⁸⁹ The IP Commission, Recommendations Regarding the Trump Administration’s Section 301 Investigation, March 2018, http://www.ipcommission.org/report/IPC_Recommendations_to_Section_301_Investigation_March2018.pdf



The logical place for the U.S. government to start with reciprocity is with large and medium-sized manufacturing companies that have declined at a precipitous rate over the last few decades."

Jobenomics asserts that this narrative is truer today than it was in 2009.

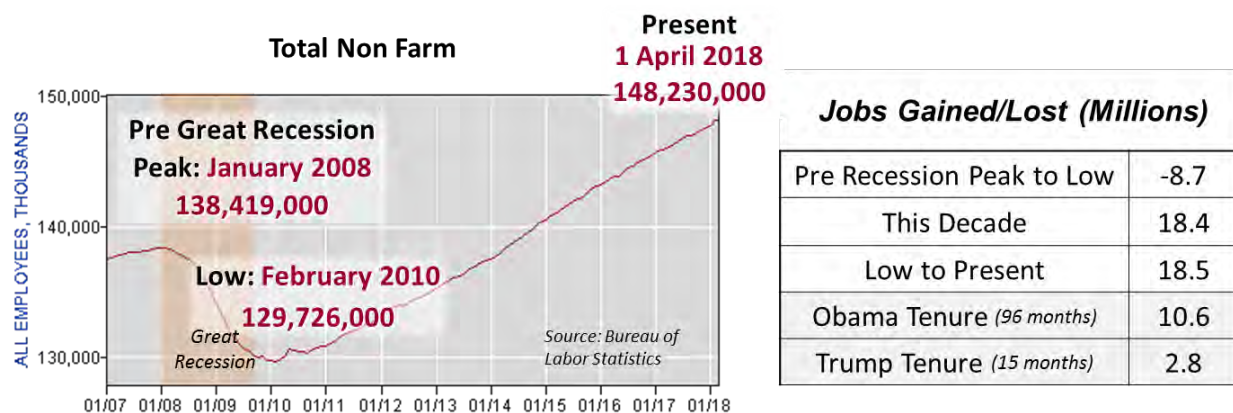
Current U.S. Employment and Labor Force Statistics

The BLS uses two monthly surveys that measure employment levels and trends: the Current Population Survey (CPS), also known as Household data, and the Current Employment Statistics (CES) survey, known as the Payroll or Establishment data. CPS and CES estimates have distinct employment definitions and methods. Generally speaking, the CES estimates approximately 7 million fewer employees than the CPS since CES data excludes agriculture and related employment, the unincorporated self-employed, unpaid family and private household workers and workers absent without pay from their jobs. Both surveys include only civilian employees in Government employment and exclude uniformed members of the armed services. CPS Household data can be found in the BLS Employment Situation Summary CPS Household Data “A” tables and CES Establishment Data “B” tables.⁹⁰ Unless stated otherwise, this report uses CES Establishment data since it provides greater labor force detail on the 13 industries (including federal, state and local government civilian employees) and the 130 industry supersectors, sectors and subsectors in the United States.

Recent U.S. Employment History

As shown below, prior to the Great Recession, peak employment was 138,419,000 and continued its downward slide to a low of 129,726,000 in February 2010 for a net loss of 8.7 million jobs. Since then, the United States has recovered lost jobs and achieved a new employment peak today of 148,230,000 for a net gain of 18.5 million jobs from the post-recession low and 18.4 million jobs since the beginning of the decade. As a side note, President Obama created 10.6 million jobs during the 96-months of the Obama Administration, and President Trump has created 12.8 million new jobs during the 15-months of the Trump Administration (110,365 versus 186,200 jobs per month respectively).

Recent U.S. Employment History



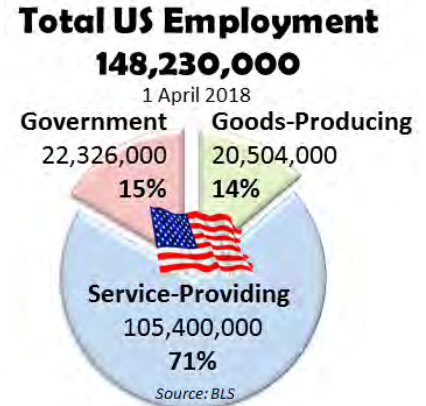
While the steady improvement in employment gains is positive news, employment growth has been slow compared to past recoveries. As discussed throughout this report and the Comprehensive Jobenomics U.S. Labor Force and Unemployment Report, these employment gains are largely offset

⁹⁰ BLS, Employment Situation Summary, “A” and “B” Tables, <https://www.bls.gov/news.release/empsit.nr0.htm>

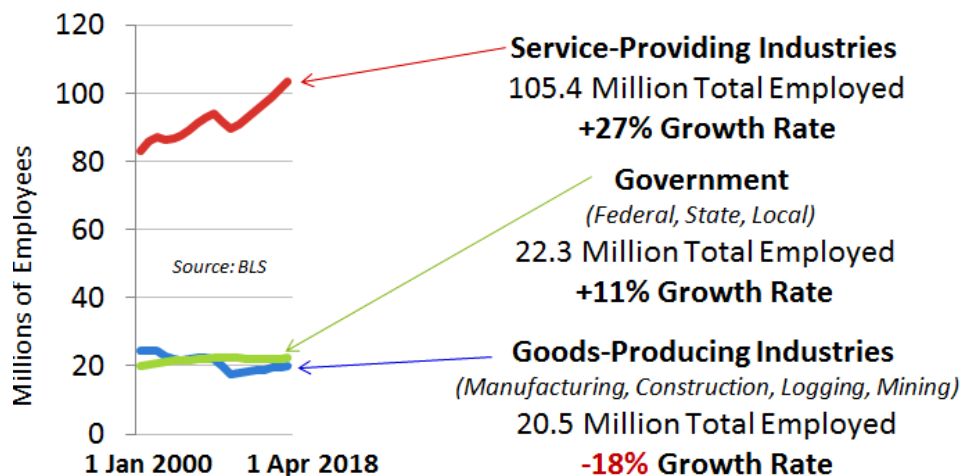
by (1) massive voluntary labor force departures of discouraged citizens who simply quit looking for work, (2) the transition from a standard full-time workforce to a part-time contingency workforce, and (3) population gains of over 24 million new American citizens since the beginning of the Great Recession in 2008.⁹¹

Of the 148,230,000 employed Americans,

- 71% work in seven private sector service-providing industries (Professional and Business Services; Education and Health Services; Trade, Transportation and Utilities; Financial Activities; Leisure and Hospitality; Information; and Other Services)
- 15% work at three government levels (Federal, State and Local)
- 14% are employed in three private sector goods-producing industries (Manufacturing, Construction and Mining and Logging)



U.S. Employment Trends since 2000



Since year 2000, U.S. employment and employment growth has been mainly in service-providing industries that have grown by 27% with 105.4 million Americans now employed. Government employs 22.3 million and has grown at a rate of 11% over the same time period. However, government employment has decreased in the last several years and is likely to continue to do so due to other budget priorities. U.S. goods-producing industries declined 18% since year 2000, now employing 20.5 million people—matching the goods-producing industry employment levels in June 1964 when the U.S. population was 180 million Americans. In 1964, 11% of the U.S. population was employed by goods-producing industries, compared to only 6% of the population today.⁹²

⁹¹ Note: the U.S. population in 2008 was 303 million compared to 327 million today according to U.S. Census Bureau, <https://www2.census.gov/library/publications/2007/compendia/statab/127ed/tables/pop.pdf>

⁹² Calculation: Adjusted Goods-Producing Jobs to 1964 Population Level=19.6M/180M=10.9%, Today=19.6M/324.7M=6.0%

Total Job Creation in The 2010s

Employment <i>Source: BLS</i>	1 Jan 2010	1 Apr 2018	Change	% of New Jobs Created
Total US	129,781,000	148,230,000	18,449,000	100.0%
Total Private Sector	107,299,000	125,904,000	18,605,000	100.8%
Total Government	22,482,000	22,326,000	(156,000)	-0.8%

Monthly Average (99 Months) 186,354

Jobs Needed (Traditional Benchmark) 250,000

Shortfall of Jobs Needed 25%

The U.S. private sector created 18,605,000 jobs and government (Federal, State and Local) lost 156,000 jobs, for a net gain of 18,449,000 net new jobs this decade. The monthly average over this 99-month period is 186,354 new jobs per month. While the U.S. economy has enjoyed employment growth without any major downturns (perhaps the most significant factor considering a slow-growth post-Great Recession economic recovery), the United States produced only 75% (25% shortfall) of 250,000 jobs needed per month as measured against the benchmark as advocated by most economists for a robust recovery.

Private Sector and Government Job creation in the 2010s

Employment <i>Source: BLS</i>	1 Jan 2010	1 Apr 2018	Change	% of New Jobs Created
Total Private Sector	107,299,000	125,904,000	18,605,000	100.0%
Private Sector Service-Providing	89,507,000	105,400,000	15,893,000	85.4%
Private Sector Goods-Producing	17,792,000	20,504,000	2,712,000	14.6%

Total Government	22,482,000	22,326,000	(156,000)	100.0%
Federal Gov't	2,831,000	2,789,000	(42,000)	26.9%
State Gov't	5,150,000	5,113,000	(37,000)	23.7%
Local Gov't	14,501,000	14,424,000	(77,000)	49.4%



Within the private sector, American service-providing industries created 15,893,000 jobs (85.4% of private sector jobs) compared to the goods-producing industries with 2,712,000 jobs (14.6%).

The government sector lost 156,000 jobs this decade. Local government lost about one-half of all government jobs (77,000 jobs or 49.4% of total government job losses), followed by Federal government (42,000 or 26.9%) and State government (37,000 or 23.7%) that each lost about one-quarter of government employees. Most of the Local government losses consisted of teachers, firefighters and police. Note: U.S. Armed Forces (which are also downsizing) are not included in these government figures.

North American Industry Classification System (NAICS)

Before stating a deep dive into each private sector industries in the next two sections of this report, it is important to explain how of the components of each industry are classified.

The North American Industry Classification System (NAICS) is the standard used by U.S. Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. Canada and Mexico also use NAICS and were partnered in the development process of this taxonomy.⁹³

Per the NAICS taxonomy, each industry is broken down into supersectors, sectors and subsectors. The U.S. Goods-Producing Industries group includes 3 industries and the Service-Providing Industries group 7 industries. These 10 industries are partitioned into 19 supersectors, which are further divided into 41 sectors, which then contain 114 subsectors.

NAICS identification codes closely match the BLS Industry Classification System, and are used by the BLS to provide insight into industry supersector, sector and subsector jobs and businesses. An example is shown below in regard to NAICS two-digit codes, industry title and number of businesses. The NAICS Identification Tools's website is very user-friendly down to the six-digit level of research.⁹⁴

NAICS Code List and Number of U.S. Business Establishments

Code	Industry Title	Number of Business Establishments
11	Agriculture, Forestry, Fishing and Hunting	359,914
21	Mining	28,981
22	Utilities	35,256
23	Construction	1,370,571
31-33	Manufacturing	606,661
42	Wholesale Trade	683,373
44-45	Retail Trade	1,654,607
48-49	Transportation and Warehousing	521,221
51	Information	320,317
52	Finance and Insurance	711,410
53	Real Estate Rental and Leasing	775,885
54	Professional, Scientific, and Technical Services	2,088,551
55	Management of Companies and Enterprises	63,223
56	Administrative and Support and Waste Management and Remediation Services	1,879,717
61	Educational Services	373,193
62	Health Care and Social Assistance	1,471,258
71	Arts, Entertainment, and Recreation	315,386
72	Accommodation and Food Services	799,475
81	Other Services (except Public Administration)	1,723,297
92	Public Administration	229,509
Total Business Establishments		16,011,805

⁹³ U.S. Census Bureau, North American Industry Classification System, <https://www.census.gov/eos/www/naics/>

⁹⁴ North American Industry Classification System, NAICS Identification Tools, <https://www.naics.com/search/>

For the private sector workforce, the BLS classification system includes two industry supersector groups: The Goods-Producing Industries and the Service-Providing Industries. Government is treated as a separate supersector, often associated with the Service-Providing Industries.

Goods-Producing Industries include these supersectors and sectors:⁹⁵

- Natural Resources and Mining
 - Agriculture, Forestry, Fishing and Hunting (NAICS 11) sector. Note: this sector is part of the farm group that is not included in the Current Employment Statistics (CES) survey, a survey of approximately 149,000 businesses and government agencies representing approximately 651,000 worksites throughout the United States.
 - Mining, Quarrying, and Oil and Gas Extraction (NAICS 21)
- Construction
 - Construction (NAICS 23)
- Manufacturing
 - Manufacturing (NAICS 31-33)

The Service-Providing Industries supersector group consists of these supersectors and sectors:⁹⁶

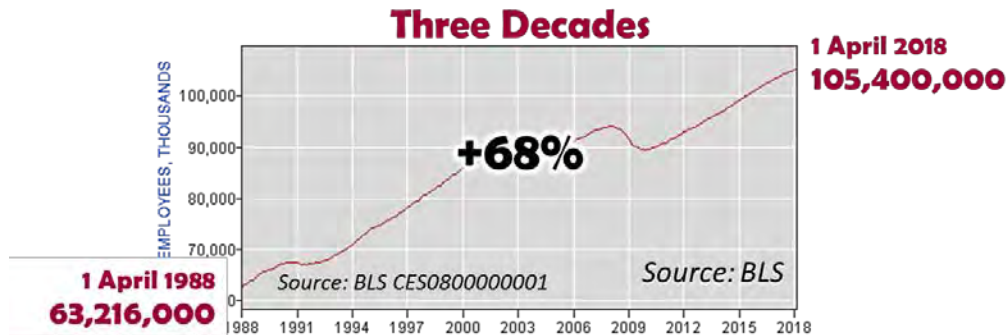
- Trade, Transportation, and Utilities
 - Wholesale Trade (NAICS 42)
 - Retail Trade (NAICS 44-45)
 - Transportation and Warehousing (NAICS 48-49)
 - Utilities (NAICS 22)
- Information
 - Information (NAICS 51)
- Financial Activities
 - Finance and Insurance (NAICS 52)
 - Real Estate and Rental and Leasing (NAICS 53)
- Professional and Business Services
 - Professional, Scientific, and Technical Services (NAICS 54)
 - Management of Companies and Enterprises (NAICS 55)
 - Administrative and Support and Waste Management and Remediation Services (NAICS 56)
- Education and Health Services
 - Educational Services (NAICS 61)
 - Health Care and Social Assistance (NAICS 62)
- Leisure and Hospitality
 - Arts, Entertainment, and Recreation (NAICS 71)
 - Accommodation and Food Services (NAICS 72)
- Other Services (except Public Administration)
 - Other Services (except Public Administration) (NAICS 81)

⁹⁵ BLS, About the Goods-Producing Industries supersector group, <https://www.bls.gov/iag/tgs/iag06.htm>

⁹⁶ BLS, About the Service-Providing Industries supersector group, <https://www.bls.gov/iag/tgs/iag07.htm>

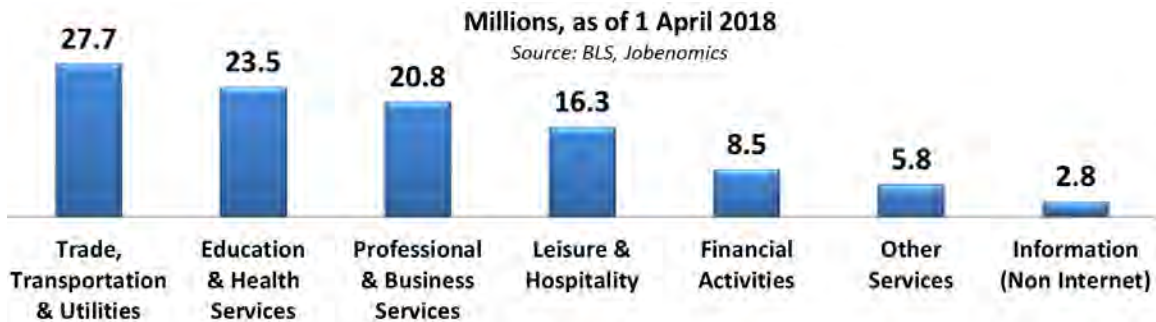
Service-Providing Industries Trends

U.S. Service-Providing Industries Trends



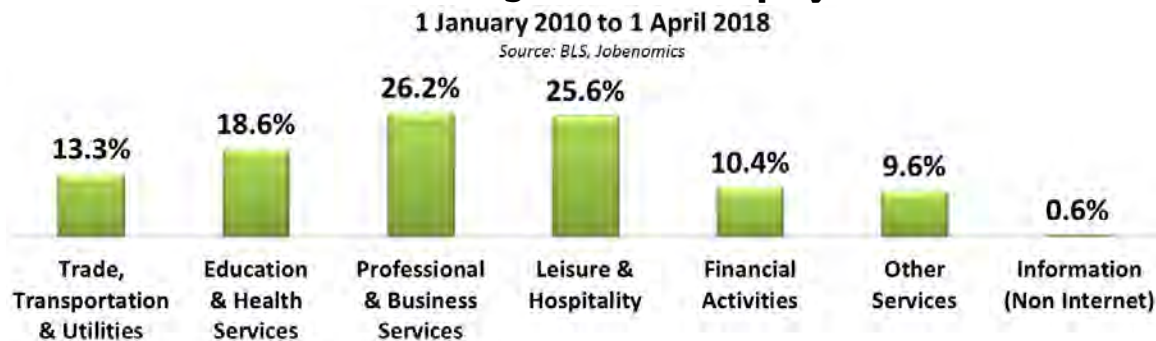
The Service-Providing Industries supersector group grew 68% over the last three decades. As of 1 April 2018, Service-Providing industries employment was 105,400,000. Since 1 January 2010, this group gained 15,893,000 or 86.4% of all new jobs. The remaining 14.6% was created by the private sector Goods-Producing Industries. Government produced no new jobs.

U.S. Service-Providing Industries Employment Size



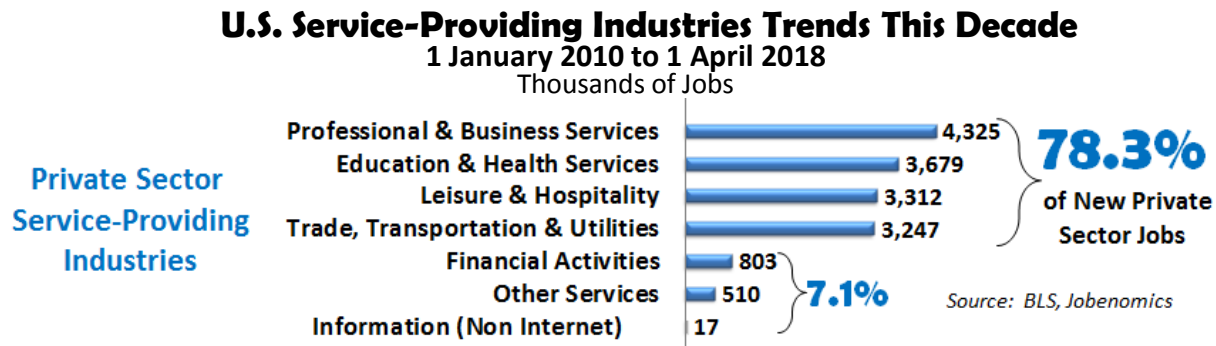
The U.S. Service-Providing Industries employ people across seven supersectors ranging from a high of 27.7 million in the Trade, Transportation and Utilities to a low of 2.8 million in the Information (Non Internet).

U.S. Service-Providing Industries Employment Growth



Of the service-providing industries, all seven supersectors gained jobs since the Great Recession. The four fastest growing supersectors in terms of employment are Professional and Business Services (26.2%), Leisure and Hospitality (25.6%), Education and Health Services (18.6%) and Trade,

Transportation and Utilities (13.3%). These vitally important four supersectors created 78.3% of all new jobs this decade.



A breakdown of each service-providing supersector, ranked in order by the number of new jobs created between 1 January 2010 and 1 April 2018 (99 months) are:

- 1) **Professional and Business Services:** 4,325,000 new jobs or 27% of the 15,893,000 new jobs produced by all U.S. Service-Providing Industries this decade
- 2) **Education and Health Services:** 3,679,000 new jobs or 23% of total
- 3) **Leisure and Hospitality:** 3,312,000 new jobs or 20% of total
- 4) **Trade, Transportation and Utilities:** 3,247,000 new jobs or 20% of total
- 5) **Financial Activities:** 803,000 new jobs or 5% of total
- 6) **Other Services:** 510,000 new jobs or 3% of total
- 7) **Information (Non-Internet):** 17,000 new jobs or 0.1% of new jobs total

Professional and Business Services supersector consists of Professional and Technical Services, Management of Companies and Enterprises and Administrative and Waste Services sectors, as shown on the chart on the next page.

Since the end of the Great Recession (1 January 2010), Administrative and Waste Services sector was the top performer in percentage growth (30%) and job creation (2,150,000 new jobs). However, most of these jobs involved lower wage, part-time contingent workforce positions. The Temporary Help Services subsector grew by 59% creating 1,123,000 temporary jobs alone. Services to commercial buildings and residential dwellings added 418,000 new jobs followed by Investigation and Security Services (154,000), Office Administrative Services (115,000), and Business Support Services (101,000). These subsectors are dominated by contingent (part-time and contract labor) as opposed to standard full-time workers with benefits.

The Professional and Technical Services sector created 4,325,000 jobs and grew by 26% this decade. Computer Systems Design and Related Services and Management and Technical Consulting Services

were the top two outstanding subsectors with growth rates of 47% and 44% creating 661,000 and 437,000 new jobs, respectively.

Management of Companies and Enterprises added 467,000 jobs and grew by 25% so far this decade. This sector is comprised of approximately 51,000 American private business firms. Some firms operate by holding securities and other equity interests of companies for the purpose of owning a controlling interest and influencing management decisions. Others oversee and manage establishments belonging to other companies or enterprises. These management companies typically administer strategic or planning decisions.

Professional & Business Services Trends This Decade

Source: BLS CES6000000001, Seasonally Adjusted

	1-Jan-10	1-Apr-18	New Jobs (000s)	% Growth
	Jobs (000s)			
Professional and Business Services	16,478	20,803	4,325	26%
Professional and Technical Services	7,429	9,138	1,709	23%
Legal Services	1,110	1,136	26	2%
Accounting and Bookkeeping Services	899	985	86	10%
Architectural and Engineering Services	1,292	1,462	170	13%
Specialized Design Services	116	137	21	18%
Computer Systems Design and Related Services	1,420	2,081	661	47%
Management and Technical Consulting Services	1,000	1,436	437	44%
Scientific Research and Development Services	617	671	54	9%
Advertising and Related Services	409	499	91	22%
Other Professional and Technical Services	568	731	164	29%
Management of Companies and Enterprises	1,848	2,315	467	25%
Administrative and Waste Services	7,200	9,350	2,150	30%
Administrative and Support Services	6,849	8,927	2,078	30%
Office Administrative Services	403	519	115	29%
Facilities Support Services	135	156	21	15%
Employment Services (Non-Temporary)	630	684	53	8%
Temporary Help Services	1,894	3,017	1,123	59%
Business Support Services	811	912	101	12%
Travel Arrangement and Reservation Services	188	217	29	16%
Investigation and Security Services	779	933	154	20%
Services to Buildings and Dwellings	1,739	2,157	418	24%
Other Support Services	269	333	64	24%
Waste Management and Remediation Services	351	423	72	20%
	Loss 0-14%	Loss 15%+	Gains 15-29%	Gains 30%+

Education and Health Services supersector includes Education Services and Health Care and Social Assistance sectors, both of which grew at a rate of 19% and collectively produced 3,679,000 this decade.

Education & Health Services Trends This Decade

Source: BLS CES5000000001, Seasonally Adjusted

	1-Jan-10	1-Apr-18	New Jobs (000s)	% Growth
Education and Health Services	19,804	23,483	3,679	19%
Educational Services	3,108	3,694	586	19%
Healthcare and Social Assistance	16,696	19,789	3,093	19%
Healthcare	13,658	15,937	2,279	17%
Ambulatory Healthcare Services	5,885	7,431	1,546	26%
Offices of Physicians	2,254	2,622	368	16%
Offices of Dentists	815	941	126	15%
Offices of Other Health Practitioners	656	914	258	39%
Outpatient Care Centers	629	924	295	47%
Medical and Diagnostic Laboratories	224	277	53	24%
Home Healthcare Services	1,060	1,443	384	36%
Other Ambulatory Healthcare Services	247	310	63	25%
Hospitals	4,671	5,154	483	10%
Nursing and Residential Care Facilities	3,102	3,353	250	8%
Nursing Care Facilities	1,651	1,614	-37	-2%
Residential Mental Health Facilities	564	630	67	12%
Community Care Facilities For the Elderly	728	936	209	29%
Other Residential Care Facilities	161	172	12	7%
Social Assistance	3,038	3,852	814	27%
Individual and Family Services	1,640	2,400	761	46%
Emergency and Other Relief Services	139	171	32	23%
Vocational Rehabilitation Services	410	346	-63	-15%
Child Day Care Services	849	934	85	10%
	Loss 0-14%	Loss 15%+	Gains 15-29%	Gains 30%+

The Educational Services sector added 586,000 jobs this decade. The subsector is structured according to level and type of educational services. Elementary and secondary schools, junior colleges and colleges, universities, and professional schools correspond to a recognized series of formal levels of education designated by diplomas, associate degrees, and degrees.

Health Care and Social Assistance sector added 3,093,000 jobs—the largest of any single private industry sector but not the fastest growing. The Health Care subsector is the second largest producer of jobs of all subsectors with 2,279,000 new positions. (The Food Services and Drinking Places subsector was first with 2,852,000 jobs.) Outpatient Care Centers (47%), Offices of Other Health Practitioners (39%) and Home Healthcare Services (36%) occupations grew at the fastest rates, while Hospitals (483,000) added the most staff. Nursing Care Facilities and Residential Mental Health Facilities were the worst performers largely due to the high cost of managed care facilities and government inaction on growing mental health issues. However, Community Care Facilities that provide in-home residential care for the elderly grew at rate of 29% and added 209,000 new jobs due to the rapidly growing cadre of retiring baby boomers who can afford in-home services.

The Social Assistance sector created 814,000 jobs with Individual and Family Services subsector providing almost all the jobs (761,000) of the Social Assistance total. Individual and Family Services includes child and youth services, and services for the elderly and persons with disabilities. Vocational Rehabilitation Services was the worst performer with a loss of 63,000 jobs and a negative 15% growth rate. Vocational Rehabilitation Services are comprised of federal-state programs that help people who have physical or mental disabilities get or keep a job, or helping people with disabilities find meaningful careers.

Trade, Transportation & Utilities Trends This Decade

Source: BLS CES4000000001, Seasonally Adjusted

	1-Jan-10	1-Apr-18	New Jobs	% Growth
	Jobs (000s)		(000s)	
Trade, Transportation and Utilities	24,475	27,722	3,247	13%
Wholesale Trade	5,475	5,967	492	9%
Durable Goods	2,727	3,009	282	10%
Nondurable Goods	1,943	2,058	115	6%
Electronic Markets and Agents and Brokers	805	900	95	12%
Retail Trade	14,326	15,916	1,590	11%
Motor Vehicle and Parts Dealers	1,617	2,029	412	25%
<i>Automobile Dealers</i>	1,004	1,308	304	30%
<i>Other Motor Vehicle Dealers</i>	130	158	28	21%
<i>Auto Parts, Accessories and Tire Stores</i>	483	563	80	17%
Furniture and Home Furnishings Stores	439	484	46	10%
Electronics and Appliance Stores	510	499	-11	-2%
Building Material and Garden Supply Stores	1,138	1,318	180	16%
Food and Beverage Stores	2,802	3,094	292	10%
Health and Personal Care Stores	983	1,059	76	8%
Gasoline stations	819	937	118	14%
Clothing and clothing accessories stores	1,333	1,364	32	2%
Sporting goods, hobby, book, and music stores	580	592	12	2%
General Merchandise Stores	2,923	3,121	198	7%
<i>Department Stores</i>	1,445	1,168	-277	-19%
<i>General stores, warehouse clubs, supercenters</i>	1,478	1,953	475	32%
Miscellaneous Store Retailers	767	828	61	8%
Nonstore Retailers	417	592	175	42%
Transportation and Warehousing	4,117	5,279	1,162	28%
Air Transportation	461	502	41	9%
Rail Transportation	211	212	0	0%
Water Transportation	63	65	2	3%
Truck Transportation	1,241	1,479	238	19%
Transit and Ground Passenger Transportation	419	495	76	18%
Pipeline Transportation	43	48	5	11%
Scenic and Sightseeing Transportation	28	37	9	31%
Support Activities for Transportation	538	704	166	31%
Couriers and Messengers	493	723	230	47%
Warehousing and Storage	621	1,017	396	64%
Utilities	556	559	3	1%
	Loss 0-14%	Loss 15%+	Gains 15-29%	Gains 30%+

Trade, Transportation and Utilities supersector includes Wholesale Trade, Retail Trade, Transportation and Warehousing and Utilities sectors that are collectively growing relatively slowly at 13% this decade adding 2,932,000 jobs.

The Wholesale Trade sector created 492,000 jobs and grew at only 9% over the last 8-years.

The Retail Trade fared better, producing three-times as many jobs (1,590,000) and only slightly better growth (11%). Automotive Dealers, Nonstore Retailers (online and big box stores) and Other General Merchandise Stores were the outstanding retail trade performers. Department Stores were the greatest loser at -19%, which are being replaced by discount and online retailers.

The Transportation and Warehousing sector created 1,162,000 jobs and grew at 28%. Air, Rail, Water Transportation were slow or no-growth subsectors. Whereas Truck Transportation, Couriers and Messengers (e.g., FedEx and UPS), and Transportation Support Activities (mechanics, drivers, dispatchers, material movers) scored significant gains.

Surprisingly, the highest performer in the entire sector was Warehousing and Storage that created 396,000 new jobs and posted a growth rate of 64%—the bulk of new jobs included freight, stock and material movers and drivers. The proliferation of self-storage businesses has significantly contributed to the growth of this industry.

The weakest performer in the TT&U supersector was the Utilities sector that added only 3,000 jobs and grew by a measly 1%. The Utilities sector comprises establishments engaged in the provision of the following utility services: electric power, natural gas, steam supply, water supply, and sewage removal.

Leisure and Hospitality supersector includes Arts, Entertainment and Recreation, and Accommodation and Food Services sectors that grew collectively at 26% this decade adding 3,312,000 jobs, of which the vast majority (86%) occurred in the Food Services and Drinking Places subsector.

Leisure & Hospitality Trends This Decade

Source: BLS CES7000000001, Seasonally Adjusted

	1-Jan-10	1-Apr-18	New Jobs	% Growth
	Jobs (000s)		(000s)	
Leisure and Hospitality	12,944	16,256	3,312	26%
Arts, Entertainment and Recreation	1,891	2,351	460	24%
Performing Arts and Spectator Sports	392	496	105	27%
Museums, Historical Sites and Similar Institutions	128	172	44	34%
Amusements, Gambling and Recreation	1,371	1,682	311	23%
Accommodation and Food Services	11,053	13,905	2,852	26%
Accommodation	1,749	2,021	273	16%
Food Services and Drinking Places	9,305	11,884	2,579	28%
	Loss 0-14%	Loss 15%+	Gains 15-29%	Gains 30%+

The Arts, Entertainment and Recreation sector produced 470,000 new jobs, of which 68% of new jobs (311,000) were created by Amusements, Gambling and Recreation establishments. Most of these jobs are relatively low paying contingent workforce jobs.

Accommodation and Food Services sector grew 26% which was dominated by increased employment at restaurants, bars and mobile food services. The Food Services and Drinking Places subsector posted the largest number of new jobs, 2,579,000, of any subsector in America. The vast majority of the jobs are part-time gig/contingent workers such as cooks, wait staff, bartenders and bussers. The rise in these occupations is largely due to a slow growing economy which could rapidly reverse itself if a financial reset occurs. The Accommodation sector (hotels, motels, B&Bs, RV parks and campgrounds) grew by 16% and posted 273,000 job gains.

Financial Activities supersector includes Finance and Insurance, and Real Estate and Rental and Leasing sectors that collectively grew at a subpar rate of 10% this decade adding 803,000 jobs.

Financial Activities Trends This Decade

Source: BLS CES5500000001, Seasonally Adjusted

	1-Jan-10	1-Apr-18	New Jobs (000s)	% Growth
Financial Activities	7,743	8,546	803	10%
Finance and Insurance	5,784	6,310	526	9%
Monetary Authorities - Central Bank	21	19	-2	-8%
Credit Intermediation and Related Activities	2,551	2,657	106	4%
Depository Credit Intermediation	1,734	1,715	-18	-1%
Commercial Banking	1,306	1,320	14	1%
Nondepository Credit Intermediation	559	626	67	12%
Activities Related To Credit Intermediation	259	316	57	22%
Securities, Commodity Contracts, Investments, Funds, Trusts	852	961	109	13%
Insurance Carriers and Related Activities	2,361	2,673	313	13%
Real Estate and Rental and Leasing	1,959	2,235	276	14%
Real Estate	1,411	1,622	212	15%
Rental and Leasing Services	522	589	67	13%
Lessors of Nonfinancial Intangible Assets	26	24	-2	-7%
	Loss 0-14%	Loss 15%+	Gains 15-29%	Gains 30%+

The Finance and Insurance sector produced 526,000 new jobs with 59% of all new jobs generated in the Insurance Carriers and Related Activities sector. Commercial Banking was the worse performer losing 18,000 jobs largely due to automation of tellers and staff as well as industry consolidation. Activities Related To Credit Intermediation had the highest growth at 21%. Credit intermediation involves the matching of lenders with savings to borrowers who need money, loan or mortgage. The rise of corporate and individual debt, such as school loans, is fueling the rapid rise of this area.

In the Real Estate and Rental and Leasing sector, the Real Estate subsector (agents, brokers, property managers and office staff) contributed 212,000 (77%) out the total of 276,000 new jobs in this sector.

Lessors of Nonfinancial Intangible Assets (e.g., patents, trademarks, brand names, franchise agreements) was the worst performer, losing 7% of its workforce during this decade. Jobenomics considers this significant since it is a signal of declining business and workforce innovation and entrepreneurialism.

Other Services supersector grew by 10% this decade adding 510,000 new jobs.

Other Services Trends This Decade

Source: BLS CES8000000001, Seasonally Adjusted

	1-Jan-10	1-Apr-18	New Jobs (000s)	% Growth
	Jobs (000s)			
Other Services	5,320	5,830	510	10%
Repair and Maintenance	1,132	1314	182	16%
Personal and Laundry Services	1,264	1,511	247	20%
Membership Associations and Organizations	2,923	3,005	82	3%
	Loss 0-14%	Loss 15%+	Gains 15-29%	Gains 30%+

Personal and Laundry Services sector added 247,000 jobs or 48% of the total. Personal Services occupations include like pet-care, photofinishing and parking attendants. Laundry Services includes washing, drycleaning and linen and uniform supply.

Repair and Maintenance added 182,000 jobs mainly in the computer, office machine, communication equipment, industrial machinery and other electronic and precision equipment related areas.

Membership Associations and Organizations, which employ almost 3 million people, created only 82,000 jobs and grew by only 3%. Unless established membership organizations reach out and gain new members from Generation Y (Millennials) and Generation Z (Screenagers) this subsector is likely to decrease significantly over the next decade.

Information (non-Internet) supersector was the worst performer of the seven service-providing industries with a growth rate of 1% and 16,000 new jobs.

Information Industry Trends This Decade

Source: BLS CES5000000001, Seasonally Adjusted

	1-Jan-10	1-Apr-18	New Jobs (000s)	% Growth
	Jobs (000s)			
Information	2,744	2,760	16	1%
Publishing Industries, Except Internet	770	714	-57	-7%
Motion Picture and Sound Recording Industries	364	401	37	10%
Broadcasting, Except Internet	294	261	-32	-11%
Telecommunications	934	769	-164	-18%
Data Processing, Hosting and Related Services	246	329	83	34%
Other Information Services	137	286	150	109%
	Loss 0-14%	Loss 15%+	Gains 15-29%	Gains 30%+

Most internet-related activities are accounted in other industries if the services are integral or indigeneous to the industry's industries. The Information industry is comprised of establishments engaged in: producing and distributing information and cultural products, providing the means to transmit or distribute these products as well as data or communications, and processing data. The Information sector groups three types of establishments: (1) those engaged in producing and distributing information and cultural products; (2) those that provide the means to transmit or distribute these products as well as data or communications; and (3) those that process data. Cultural products are those that directly express attitudes, opinions, ideas, values, and artistic creativity; provide entertainment; or offer information and analysis concerning the past and present. Included in this definition are popular, mass-produced, products as well as cultural products that normally have a more limited audience, such as poetry books, literary magazines, or classical records.

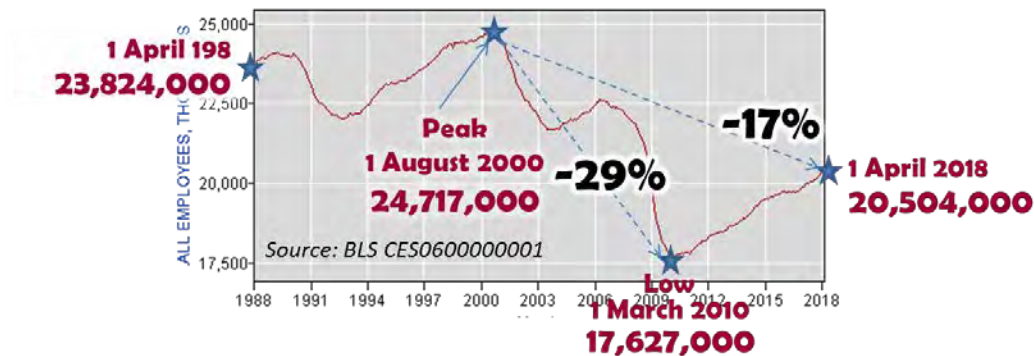
Advanced web-based and digital economy services are replacing the traditional publishing, broadcasting and telecommunications industries. The Telecommunications sector downsized by 18% (the worst percentage decrease of all sectors in the Service-Providing Industry supersector group) resulting in a total loss of 164,000 jobs this decade. Broadcasting (Except Internet) and Motion Picture and Sound Recording Industries sectors downsized 11% and 7% respectively. Increased popularity in Motion Picture and Sound Recording Industries grew 10% adding a small amount of new jobs (37,000).

Surprisingly, the highest percentage increase of all sectors in the Service-Providing Industry supersector group occurred in the Other Information Services sector, which realized a 109% gain in employment (150,000 new jobs). Other Information Services includes internet service providers, web search portals, data processing companies, and information services occupations. It is important to note that this explosive growth rate in the Other Information Services sector is only the tip of the digital and network technological revolution since it does not include the information service providers in other sectors.

Goods-Producing Industries Trends

U.S. Goods-Producing Industries Trends

Three Decades



Over the last three decades, the U.S. goods-producing industry workforce peaked at 24,717,000 in August 2000 (all-time post-WWII peak was 25.2 million in August 1979), declined 29% to a post-recession low of 17,627,000 in March 2010, and rebounded to 20,504,000 As of 1 April 2018. Notwithstanding recent gains, the goods-producing industry workforce is 17% lower than its peak.

U.S. Goods-Producing Industry Supersector Group Employment Size

Millions, 1 as of 1 April 2018

Source: BLS, Jobenomics

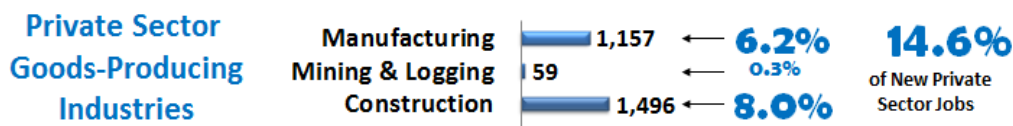


In terms of goods-producing industry jobs, Manufacturing employs 12,632,000 citizens, followed by Construction with 7,150,000 and Mining and Logging with 722,000.

U.S. Goods-Producing Industries Supersector Group Trends This Decade

1 January 2010 to 1 April 2018

(Thousands of Jobs)



Since the beginning of this decade, the Goods-Producing Industry supersector group produced 14.6% of all new jobs. The Construction industry created 8.0% of all new U.S. jobs, followed by Manufacturing with 6.2% and Mining and Logging with 0.3%.

Employment statistics for the Goods-Producing Industry supersector group are ranked by the number of new jobs created, from highest to lowest, between 1 January 2010 and 1 July 2017 (99 months):

- 1) Construction:** 1,496,000 new jobs or 55% of the total of 2,712,000 new jobs produced by the U.S. Goods-Producing Industry supersector group.
- 2) Manufacturing:** 1,157,000 new jobs or 43% of the goods-producing industries

3) **Mining and Logging:** 59,000 new jobs or 2% of the three goods-producing industries

U.S. Goods-Producing Industry Sector Employment Growth

1 January 2010 to 1 April 2018

Source: BLS, Jobenomics



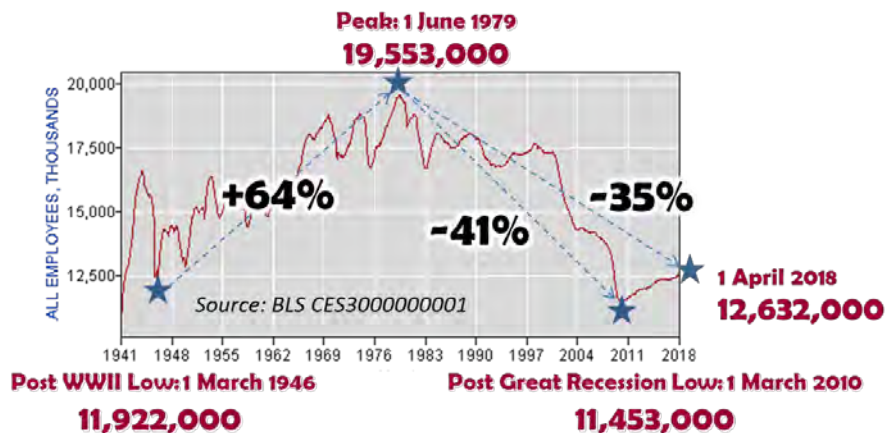
The fastest growing industry in this group is Construction (26.5%) followed Manufacturing (10.1%) and lastly Mining and Logging (8.9%). Given the fact that U.S. GDP averaged an increase of 2.2% per year, growth performance by the Manufacturing and Mining and Logging supersectors have been growing about one-half the rate of the rest of the economy.

Manufacturing Supersector. The industrial age is following the same path as the agricultural age. Several centuries ago, the vast majority of Americans worked on a farm or ranch. Today, Department of Agriculture estimates that there are 2.6 million direct on-farm employees, which equates to 0.8% of the U.S. population of 327 million Americans. In 1960, when the U.S. population was 181 million citizens, manufacturing employed 15.6 million or 8.7% of all Americans. Today, manufacturing employs 12.6 million workers, or 3.9%, less than half as many people as six decades ago.

Manufacturing is the anchor tenant of the U.S. economy that has to be maintained and nourished. On the other hand, manufacturing should not be perceived as either a major source of employment or high-paying jobs.

- Reshoring and keeping American factories in America is a worthy goal from economic and security standpoints. Even if America reshores manufacturing jobs from foreign countries, manufacturing has limited upside employment potential due automation (robotics and artificial intelligent agents) across the entire manufacturing value chain.
- From a wage perspective, **manufacturing is no longer the high paying industry sector that it used to be**, nor will it be in the future. According to the U.S. Berkeley Labor Center and the National Employment Law Project, contrary to public perception that manufacturing jobs are “good jobs,” manufacturing wages now rank in the bottom half of all jobs in the United States and are not even keeping up with inflation. In the largest segment of the American manufacturing base, automotive manufacturing, wages have declined further, falling three times faster than manufacturing as a whole and **nine times faster** than all occupations.^{97 98}

U.S. Manufacturing Supersector Employment since WWII



While the U.S. manufacturing employment increased from its post Great Recession low of 11,453,000 to 12,632,000 today (10% growth), it has a long way to go to achieve its peak level of 19,553,000 in June 1979. Since peak, manufacturing is still down by 35%.

⁹⁷ UC Berkeley Labor Center, Producing Poverty: The Public Cost of Low-Wage Production Jobs in Manufacturing, May 2016, <http://laborcenter.berkeley.edu/pdf/2016/Producing-Poverty.pdf>

⁹⁸ National Employment Law Project, Manufacturing Low Pay: Declining Wages in the Jobs That Built America's Middle Class, November 2014, <http://www.nelp.org/content/uploads/2015/03/Manufacturing-Low-Pay-Declining-Wages-Jobs-Built-Middle-Class.pdf>

As of the most recent BLS Job Openings and Labor Survey⁹⁹, U.S. manufacturers have 391,000 open jobs (6.0% out of a total of 6,469,000 unfilled U.S. jobs)—primarily due to a lack of job skills. According to a 2015 study by the Manufacturing Institute and Deloitte, over the next decade, 3.4 million manufacturing jobs are projected to become available, but up to 60% (2 million) of these jobs will remain unfilled due to a lack of manufacturing skills. 84% of manufacturing executives agree that there is a “talent shortage” and the “skills gap is expected to grow substantially over the next decade.”¹⁰⁰

Manufacturing Trends This Decade

Source: BLS CES3000000001, Seasonally Adjusted

	1-Jan-10	1-Apr-18	New Jobs (000s)	% Growth
Manufacturing	11,475	12,632	1,157	10%
Durable Goods	6,999	7,888	889	13%
Wood Products	346	405	59	17%
Nonmetallic Mineral Products	376	421	45	12%
Primary Metals	347	380	33	9%
Fabricated Metal Products	1,259	1,477	218	17%
Machinery	977	1,106	130	13%
Computer and Electronic Products	1,095	1,060	-34	-3%
<i>Computer and Peripheral Equipment</i>	159	169	10	6%
<i>Communications Equipment</i>	117	86	-30	-26%
<i>Semiconductors and Electronic Components</i>	363	368	5	1%
<i>Electronic Instruments</i>	410	404	-5	-1%
<i>Miscellaneous Computer and Electronic Products</i>	47	32	-14	-31%
Electrical Equipment and Appliances	354	400	46	13%
Transportation Equipment	1,314	1,652	339	26%
<i>Motor Vehicles and Parts</i>	653	965	312	48%
Furniture and Related Products	363	393	30	8%
Miscellaneous Durable Goods Manufacturing	570	593	24	4%
Nondurable Goods	4,476	4,744	268	6%
Food Manufacturing	1,453	1,630	177	12%
Textile Mills	121	111	-10	-8%
Textile Product Mills	120	112	-8	-7%
Apparel	160	117	-44	-27%
Paper and Paper Products	397	371	-26	-7%
Printing and Related Support Activities	497	435	-62	-12%
Petroleum and Coal Products	112	116	5	4%
Chemicals	794	825	30	4%
Plastics and Rubber Products	611	723	112	18%
Miscellaneous Nondurable Goods Manufacturing	210	303	93	44%
	Loss 0-14%	Loss 15%+	Gains 15-29%	Gains 30%+

⁹⁹ BLS, Table 7. Job openings levels and rates by industry and region, not seasonally adjusted, <http://www.bls.gov/news.release/jolts.t07.htm>

¹⁰⁰ Manufacturing Institute, Infographic, <http://www.themanufacturinginstitute.org/Research/Skills-Gap-in-Manufacturing/~media/FF00360FC3344AD9B62F600B9FDEBD5B.ashx>

During the post-recession period (1 January 2010 to 1 April 2018), the Manufacturing supersector produced 1,157,000 new jobs growing at a paltry rate of 10%, which equates to 1.2% per year, or approximately one-half the annual 2.2% rate of GDP growth over this 8¹/₄ years period.

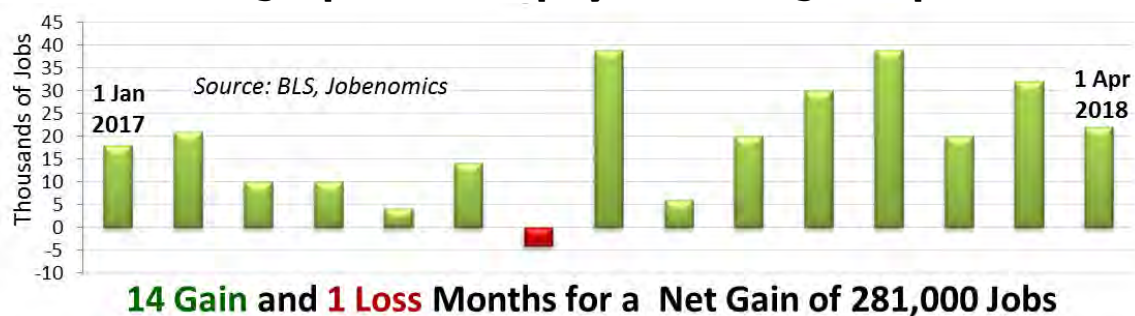
The Durable Goods sector (goods not for immediate consumption and able to be kept for a period of time) posted a gain of 899,000 jobs and grew a lukewarm rate of 13%. The Nondurable Goods sector (products consumers purchase with the plan to use for a short period of time) suffered slow growth of 6% and added only 268,000 new jobs.

Of the twenty Manufacturing subsectors, The Miscellaneous Nondurable Goods Manufacturing and Transportation Equipment are the only two sectors that produced significant expansions of 44% and 26% respectively, or one-third of all new jobs in the entire Manufacturing supersector. Within the Transportation Equipment sector, Motor Vehicles and Parts (NAICS 3361 Motor vehicle manufacturing, NAICS 3362 Motor vehicle body and trailer manufacturing and NAICS 3363 Motor vehicle parts manufacturing) grew at an astounding rate of 48% generating 312,000 new jobs. The lookout for motor vehicle manufacturing-related jobs could be very bright if U.S. automotive companies (like Tesla) can capture the lion's share of the emerging electrical vehicle market.

Of the remaining Manufacturing subsectors, only Plastics and Rubber Products (18%), Fabricated Metal Products (17%) and Wood Products (17%) grew faster than the overall Goods-Producing Industries supersector group average of 15.2%.

The biggest losers were: Apparel (-27%), Printing and Related Support Activities (-12%), Textile Mills (-8%), Textile Product Mills (-7%), Paper and Paper Products (-7%), and Computer and Electronic Products (-3%). Within the Computer and Electronic Products subsector, U.S. Communications Equipment (-26%) and Miscellaneous Computer and Electronic Products (-31%) downsized due to foreign competition. Recent tax cuts coupled with more restrictive trade policies should make American products a better bargain in both domestic and international markets.

U.S. Manufacturing Supersector Employment during Trump Administration



Over the last 15 months, the Manufacturing supersector had 14 months of employment gains and only one month that posted job losses with a net increase of 281,000 jobs. 281,000 jobs equates to 9.4% of the 2,987,000 new jobs produced across all thirteen BLS (industry and government) supersectors during the Trump Administration.

Mixed Manufacturing Outlook.

Manufacturing Supersector Job Growth per Decade

Source: BLS Current Employment Statistics Survey (CES3000000001)

Time Period	1950s	1960s	1970s	1980s	1990s	2000s	As of 1 April 2018	
							2010-2018 Q1	Trump 2017-2018 Q1
New Jobs Created	2,511,000	2,912,000	816,000	-1,420,000	-601,000	-5,805,000	1,157,000	281,000
Annual Growth Rate	1.9%	1.9%	0.4%	-0.7%	-0.3%	-3.4%	1.2%	1.4%

With an average yearly growth rate of 1.9% per year, the 1950s and 1960s generated the most vigorous expansion of U.S. manufacturing jobs. In the 8¼ years in this decade, the growth rate averaged 1.2% per year. In the 15-months of the Trump Administration, the growth rate averaged 1.4%, which reversed the era of jobs lost in 1970s, 1980s and 1990s, but is considerably lower than the heydays of the 1950s and 1960s. The outlook for the remainder of this decade and the early 2020s ranges from very optimistic to very pessimistic. For example, the recent pessimistic BLS Employment Projections 2016-2026 Report is antithetical to President Trump's optimistic outlook.

For the sake of argument, let's assume that the Administration can double their annual rate of growth from 1.4% to 2.8%—a very Trumpian type of deal. At 2.8% growth per year for each of the next ten years, manufacturing employment would swell from 12,632,000 today to 16,650,000 in 2028, for a net increase of 4,018,000 new manufacturing jobs. 4 million is still well short of his 25 million goal. Even if one considers that every new manufacturing job supports three additional indirect jobs (mainly service-providing industries jobs), 16 million is still short of the goal line, but a substantial improvement over the past.

In stark contrast to the Administration, the BLS Employment Projections 2016-2026 Report, published on 24 October 2017—ten months into the Trump Administration—predicts that the U.S. Manufacturing supersector will lose 726,000 jobs (a decline of approximately 6%) during this 10-year period.¹⁰¹

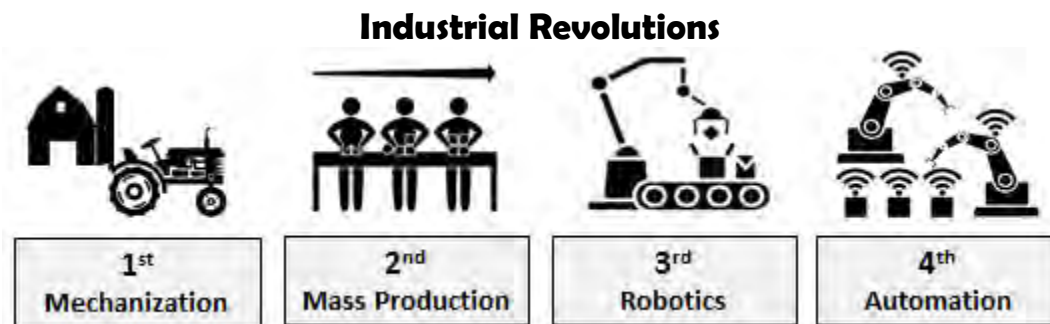
Fortunately, this has not yet transpired since the U.S. manufacturing workforce is stronger by 281,000 jobs today than it was before President Trump took office in 2017 and 272,000 jobs stronger than 1 January 2016. Moreover, President Trump's recent manufacturing initiatives have not had enough time to materialize. Being the dogged dealmaker that he is, the President is spending countless hours promoting, cajoling and enlisting manufacturing executives to help America achieve a manufacturing resurgence that will provide millions of new high-paying jobs.

¹⁰¹ BLS, Employment Projections 2016-2026 Summary, <https://www.bls.gov/news.release/ecopro.nr0.htm>, and https://www.bls.gov/emp/ep_table_201.htm

President Trump's pledge to reduce corporate taxes and regulations will make American manufacturing more competitive, but advances in technology and automation are likely to inhibit employment growth. To maximize employment growth, manufacturing companies must aggressively deploy new-found tax savings and repatriated profits for recapitalizing American manufacturing facilities, implementing a massive workforce skills-based training program, and supporting mass-expansion of manufacturing's subcontractor supplier base.

To create 25 million new jobs over the next ten years, the Administration must also place greater emphasis on the emerging digital economy, network technology revolution and small/startup businesses.

- The digital economy (also known as the web economy, internet economy, network-centric economy, or the new economy) is an economy that is based on digital and networked technologies, which is increasingly intertwining and preempting today's traditional economy. The digital economy is growing at 15% per year compared to traditional economy growth of 2%.
- The network technology revolution is defined by Jobenomics as the "perfect storm" of next-generation network and digital technologies that will transform economies, and revamp existing institutions, businesses, labor forces and governments, According to the McKinsey Global Institute, the grand total economic impact of a dozen disruptive network and digital technologies would be \$124 trillion by 2025.¹⁰²
- The digital economy and network technology revolution is already having a transformative effect on manufacturing and the traditional industrial base. This transformation is known as Smart Factories, Manufacturing of the Future, Fourth Industrial Revolution, or simply Industry 4.0.



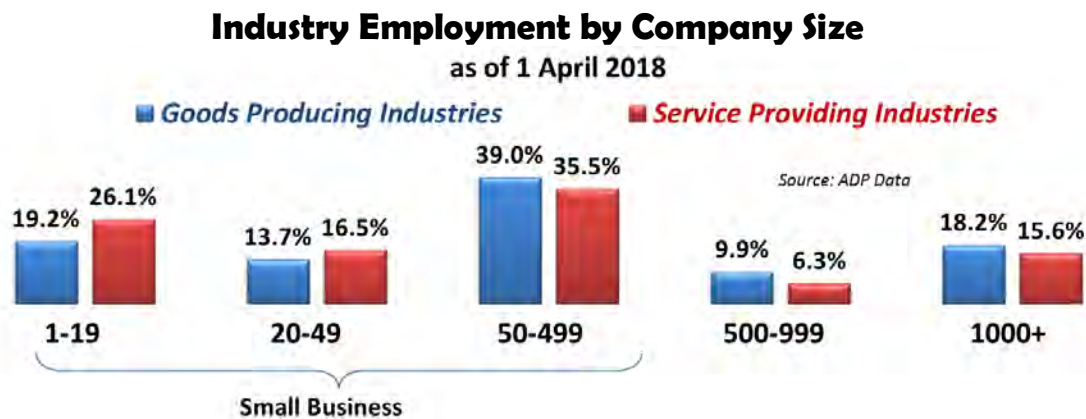
The 1st Industrial Revolution occurred in the 18th Century with the mechanization of agriculture. The 2nd Industrial Revolution transpired in the 19th Century with assembly lines and mass production. The 3rd Industrial Revolution transpired in the 20th Century with robotics on the factory floor. The 4th Industrial Revolution involves automation (robotics, software application, and artificially-intelligent agents) that will transform the manufacturing industry and the entire production value chain by vastly reducing the cost of labor. Advances in digital and network technologies now enable artificially intelligent agents robots to work alongside humans during the entire production process.

¹⁰² McKinsey Global Institute, Disruptive Technologies: Advances That Will Transform Life, Business and the Global Economy, May 2013, file:///C:/Users/CHUCK/Downloads/MGI_Disruptive_technologies_Full_report_May2013.pdf

The tech-titans (Apple, Alphabet, Microsoft, Amazon, Facebook, etc.) dominate the emerging digital economy and related network technology revolution. The combined market valuation of these Big-5 technology titans is \$3.7 trillion dollars, an amount greater than Germany's \$3.5 trillion GDP. Unfortunately, Washington and the Big-5 and many other tech-giants are not on the same song sheet with the Administration in regard to economic, community, business or workforce development. As evidenced by President Trump's disbanding of his Manufacturing Jobs Initiative and its Strategy & Policy Forum after a walk-out of many of the tech-titans, the Administration has a very steep hill to climb with the Big-5 if they hope to maximize the emerging digital economy and network technology revolution as a source for mass-producing small/startup businesses and jobs.

Small/startup business development is also not part of Washington's lexicon that focuses mainly on big business and massive projects. From a Jobenomics perspective, mass-producing highly-scalable small companies should be center stage on the Administration's job creation efforts. Enabled by new digital and network technologies, digital business startups are an order of magnitude quicker and cheaper to launch and support than traditional startups.¹⁰³

According to the U.S. Small Business Administration, there are 29.6 million U.S. small businesses with less than 500 employees compared to 18,600 big businesses with over 500 employees.¹⁰⁴ If the existing U.S. small business sector was incentivized and supported to create an average of only one new job each, the Administration would achieve its 25 million job creation goal in a fraction of the time currently envisioned by the President.



It is a common misconception that small businesses are only involved in service-providing industries whereas large major corporations dominate goods-producing industries. ADP data indicates that small business has a major role in both the Goods-Producing and Service-Providing Industries supersector groups. According to ADP data, the three goods-producing industries employ 20,452,000

¹⁰³ James McQuivey, Digital Disruption: Unleashing the Next Wave of Innovation, Figure 1-1: Digital Disruption Creates One Hundred Times the Innovation Power, Page 11.

¹⁰⁴ U.S. Small Business Administration, Office of Advocacy, Frequently Asked Questions, <https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2017-WEB.pdf>

workers, of which 14,720,000 are employed by small businesses (72%)¹⁰⁵ Since manufacturing represents around 60% of the Goods-Producing Industries supersector group total employment (12.6 million out of 20.4 million), it is reasonable to assume that manufacturing companies have a very large small business supplier base that is likely to grow as Industry 4.0 takes root across the entire manufacturing value chain. U.S. manufacturers are already outsourcing increasing amounts of labor to the contingent workforce that includes independent contractors (small businesses), freelancers (small businesses), self-employed workers (small businesses) and part-timers.

As reported by The Economist, from 2000 to 2010 88% of all U.S. manufacturing job losses were due to increased productivity and automation.¹⁰⁶ While productivity and automation have decimated the manufacturing labor force, they have paid handsomely regarding manufacturing output. American manufacturing has “more than doubled output in real terms since the Reagan era, to over \$2 trillion today.” Also, “output per labour-hour rose by 47% between 2002 and 2015, outpacing gains in Britain, France, and Germany.” Notwithstanding, The Economist projects that “a widening skills gap means that over half of new manufacturing jobs in the decade to 2025 may go unfilled.”¹⁰⁷

Increased automation and productivity are not the only factors depressing manufacturing labor force expansion. Other factors include competitive and predatory foreign labor rates that undercut U.S. workforce wages, dumping of imported below-cost products, tariffs on American made goods, a lack of high-tech manufacturing skills in the civilian labor force, outsourcing U.S. full-time work to American task-oriented workers and independent contractors, and burdensome government regulations and taxation on industries critical to U.S. sovereignty and prosperity. After decades of ambivalence, many of these factors are being now addressed by Washington.

By reducing the human element, U.S. manufacturers could soon out-compete countries that specialize in low-cost, high-touch manufacturing. Tianyuan Garments Company and First Solar Inc. serve as excellent examples of the emerging Industry 4.0.

One of China’s leading garment manufacturers, Tianyuan Garments Company, is scheduled to in production by the end of 2018 in a modern \$20 million Arkansas factory. This factory is unique inasmuch as it can manufacture T-shirts for a paltry 33 cents (\$0.33) each, which is well below the costs of similar manufactured Tianyuan products in China.¹⁰⁸ The primary reason why this Tianyuan Garments-owned Arkansas factory can manufacture so cost-effectively involves 330 American-made “sewbots” from Atlanta-based Software Automation Inc. Another reason is that Arkansas’ lower-cost, high-skilled labor force (the low-skilled labor component is ostensibly replaced by robots) is

¹⁰⁵ ADP Research Institute, April 2018: ADP Employment Reports, <https://www.adpemploymentreport.com/>

¹⁰⁶ The Economist, Companies/Industries, Training Day, 20-26 March 2017, Page 19

¹⁰⁷ The Economist, Manufacturing, Making it in America, American factories could prosper if they find enough skilled workers, 12 October 2017, <https://www.economist.com/news/business/21730188-widening-skills-gap-means-over-half-new-manufacturing-jobs-decade-2025-may>

¹⁰⁸ Bloomberg Businessweek, China Snaps Up America’s Cheap Robot Labor, A Chinese T-shirt company is setting up shop in Arkansas, lured by U.S. sewbots and lower production costs, 30 August 2017, <https://www.bloomberg.com/news/articles/2017-08-30/china-snaps-up-america-s-cheap-robot-labor>

competitive against China's aging, shrinking, higher-paid workforce and lesser automated garment factories.

First Solar, an Arizona manufacturer of solar panels, not only uses second-generation solar technologies (highly efficient cadmium telluride thin film photovoltaics¹⁰⁹) that makes the manufacturing process easier, but is almost fully automating their production facility in Ohio. Compared to the leading Chinese solar companies that make similar-size silicon panels, First Solar panels take 3½ hours to manufacture. According to a Bloomberg report, First Solar panels "produce 244 percent more power at a manufacturing cost of as little as 20¢ per watt, about 30 percent less than the cheapest Chinese equivalent." From a labor force perspective, what took First Solar hundreds of workers to run the Ohio plant now takes only several dozens of workers to supervise hundreds of robots that tirelessly toil over three miles of production lines.^{110 111}

In summary, the Manufacturing supersector is vitally important to national sovereignty and an anchor tenant of the U.S. economy. As opposed to looking to manufacturers as a principal supplier of "good" jobs, manufacturing focus should be on protecting the current set of U.S. manufacturers, focusing on next-generation manufacturing technology and processes, and recapitalization the American industrial base and its workforce. How America handles Industry 4.0 will make or break the Manufacturing supersector. So, far this supersector is responding well to the automation transformation. Unfortunately, the supersector's workforce and small business supplier base is faltering and needs much more attention from Washington and Cabinet-level officials responsible for U.S. labor force and small business development.

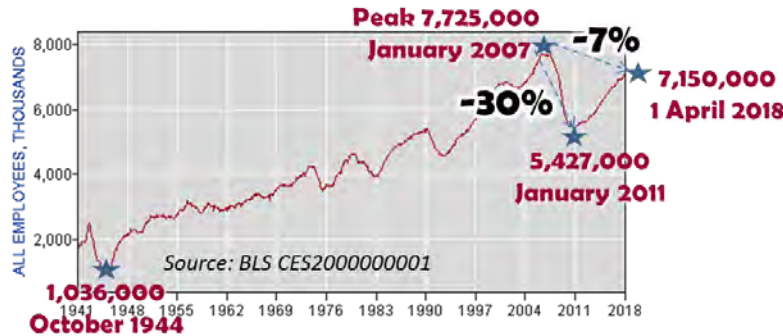
¹⁰⁹ Energy.Gov, Cadmium Telluride, <https://www.energy.gov/eere/solar/cadmium-telluride>

¹¹⁰ First Solar, Modules, Our Technology, <http://www.firstsolar.com/Modules/Our-Technology>

¹¹¹ Bloomberg Businessweek, First Solar Is Using Robots to Better Tap the Sun, 24 January 2018, <https://www.bloomberg.com/news/articles/2018-01-24/first-solar-is-using-robots-to-better-tap-the-sun>

Construction Supersector. Even though the Construction supersector is experiencing good employment growth, the construction workforce is slowly scratching its way back after a rapid rise during the go-go years in the 1990s and the housing bubble in the early 2000s.

U.S. Construction Supersector Employment since WWII



In January 2007, peak construction employment was 7,725,000 and rapidly declined by 30% during the Great Recession to a low of 5,427,000 in January 2011. As of 1 April 2018, construction employment was 7,150,000, still down 7% from its employment peak in 2007.

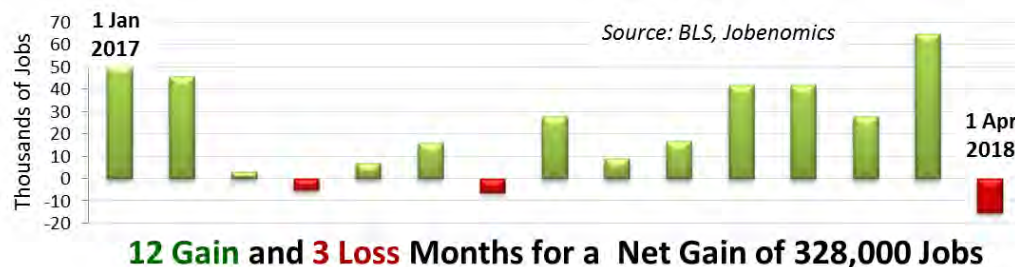
Construction Supersector Trends This Decade

Source: BLS CES7000000001, Seasonally Adjusted

	1-Jan-10	1-Apr-18	New Jobs (000s)	% Growth
Construction	5,654	7,150	1,496	26%
Construction of Buildings	1,263	1,586	323	26%
Residential Building	596	782	186	31%
Nonresidential Building	667	804	137	21%
Specialty Trade Contractors	3,581	4,558	977	27%
Residential Specialty Trade Contractors	1,522	2,007	485	32%
Nonresidential Specialty Trade Contractors	2,059	2,551	492	24%
Heavy and Civil Engineering Construction	810	1,006	196	24%
	Loss 0-14%	Loss 15%+	Gains 15-29%	Gains 30%+

Over the post-recession recovery period (1 January 2010 to 1 April 2018), the Construction supersector produced 1,496,000 new jobs. The Specialty Trade Contractors sector grew by 27% and added 977,000 new jobs—the highest number of new jobs of any sector in the Goods-Producing Industries supersector group (the second highest was Manufacturing” Durable Goods sector with 899,000 new jobs). The Construction of Buildings sector grew by 26% and added 323,000 new jobs. The Heavy and Civil Engineering Construction sector grew only 13% and added 196,000 new jobs.

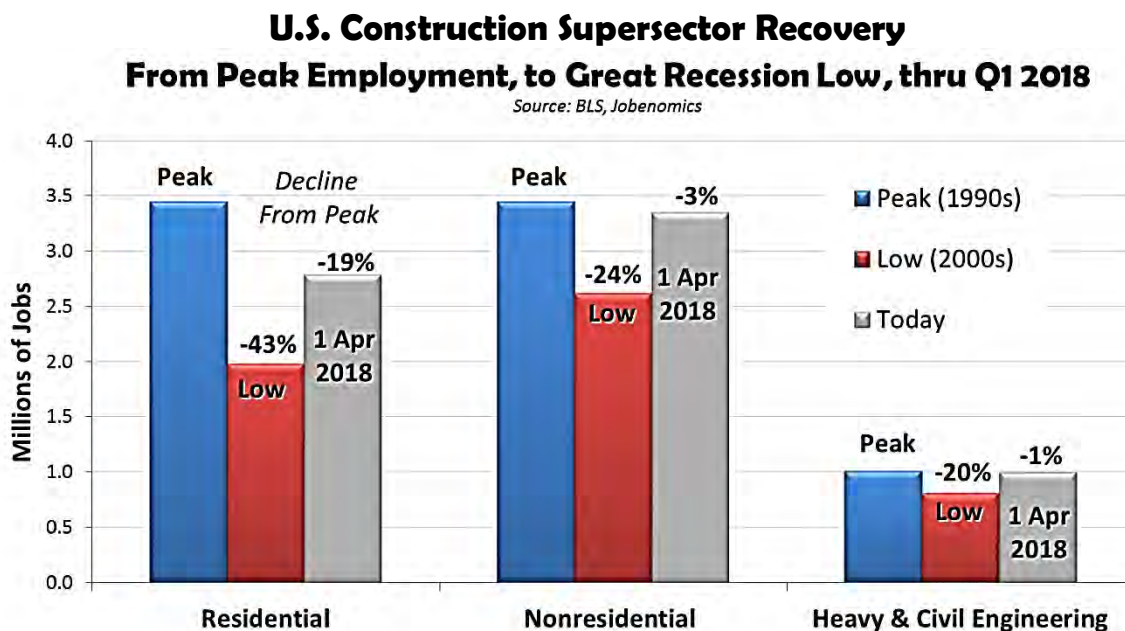
U.S. Construction Supersector Employment During Trump Administration



Over the last 15 months, construction had 12 months of employment gains and 3 months that posted job losses, for a net increase of 328,000 jobs. 328,000 jobs equates to 11.7% of the 2,793,000 new jobs produced across all 13 industry supersectors during the Trump Administration.

As of the most recent BLS Job Openings and Labor Survey (JOLTS), U.S. construction companies have 248,000 open jobs (3.8% of the total of 6,469,000 unfilled U.S. jobs).¹¹² The skilled labor shortage is largely responsible for these vacancies.

Residential construction (Residential Building and Residential Speciality Trade Contractors) grew the fastest at 45% producing a total of 671,000 new jobs (186 + 485) during this decade. Nonresidential construction (Nonresidential Building and Nonresidential Speciality Trade Contractors) grew 42% during this period and produced 629,000 new jobs (137 + 492).



Residential construction employment still remains the hardest hit sector. Residential construction employment declined 43% from its pre-recession peak of 3,451,000 to a post-recession low of 1,982,000. As of 1 April 2018, residential construction employment is still below its pre-recession peak by 19% currently employing 2,790,000 workers. Nonresidential construction fared slightly better with losses of 24% from peak and 3% today with 3,355,000 workers. Heavy and civil engineering fared the best losing 20% from peak and down only 1% today with a total of 1,006,000 employed personnel. If President Trump's proposed \$1.5 trillion infrastructure plan gets enacted, the Heavy and Civil Engineering sector would benefit mightily.

¹¹² BLS, Job Openings and Labor Turnover, Table 7. Job openings levels and rates by industry and region, not seasonally adjusted, <https://www.bls.gov/news.release/jolts.toc.htm>

Residential construction usually leads economic recoveries. However, during the post-Great Recession recovery, residential construction still has a long way to go, especially in the arena of new home starts.

Annual Rate of Residential Sales and Starts

		New Home Starts	New Home Sales	Existing Home Sales	Sales Ratio Existing:New
<i>Peak</i>	2005	1,990,944	1,226,965	6,842,907	5.6
	2006	1,986,117	1,202,437	6,892,887	5.7
	2007	1,655,544	955,793	6,025,384	6.3
	2008	1,194,865	673,462	4,729,586	7.0
	2009	784,821	446,049	4,180,177	9.4
<i>Post-Recession Lows</i>	2010	564,653	356,357	4,280,344	12.0
	2011	594,655	316,007	4,214,124	13.3
	2012	669,256	326,639	4,405,106	13.5
	2013	832,601	388,639	4,798,148	12.3
	2014	953,598	433,079	5,022,290	11.6
	2015	1,036,321	460,471	5,023,749	10.9
	2016	1,129,942	522,265	5,301,018	10.2
	2017	1,189,453	577,860	5,475,508	9.5
<i>Q1</i>	2018	1,234,880	631,884	5,503,069	8.7
	2005 to Low	-72%	-74%	-38%	
	2005 to Q1 2018	-38%	-49%	-20%	
Growth 2017-Q1 2018 (Trump)		104,938 9%	109,619 21%	202,051 4%	

As shown, according to a U.S. Home Sales analysis of U.S. Census Bureau data, New Home Starts dropped precipitously 72% during the recession and is still down 38% from peak 2005 levels. New Home Sales suffered a similar fate decreasing (74%) during the Great Recession and still significantly below (49%) the level of new home sales achieved in 2005. Existing Home Sales was the least effected, down 38% during the recession and 20% today. ^{113 114}

As indicated by the Sales Ratio Existing:New scale, during the recessionary period, the ratio of existing homes sales versus new home sales doubled from 5.6:1 to 13.5:1 due to insolvent homebuilders and homebuyer preference for existing homes that were selling at a steep discount during the recession. In addition, flipping (the practice of buying a home and quickly reselling it for a profit), and do-it-yourself fixer-uppers bouyed the existing home market during the downturn and slow-growth recovery. Since 2013, the ratio of existing homes sales to new home sales began decreasing as investors and consumers became more confident and financially stable. Today, the ratio is 8.7:1 and is expected to continue to decrease as long as the economy stays strong.

¹¹³ U.S. Debt Clock.org, U.S. Home Sales 2017, <http://www.usdebtclock.org/home-sales.html> and U.S. Census Bureau, Table 14. Homeownership Rates for the U.S. and Regions: 1965 to Present, <http://www.census.gov/housing/hvs/data/histtabs.html>

¹¹⁴ U.S. Census Bureau, Business and Industry, Time Series/Trend Charts, New Residential Construction, Annual Rate for Housing Units Started, http://www.census.gov/construction/nrc/historical_data/

New Home Starts is the sector that provides the greatest amount of jobs and underpin future New Home Sales. While this sector has doubled since its low point in 2010, it is still shy of its 2005 peak by 38%.

During the first 15-months of the Trump Administration, the Construction supersector posted a gain of 328,000 new jobs. Residential construction created 136,000 jobs or 41% of the Construction job total. More importantly, New Home Sales increased by 21%, which is good news for the economy and labor force. This good news is tempered by relatively low New Home Starts (9%) that will put fewer homes in the pipeline. This tempering is primarily due to lack of skilled labor and changing attitudes towards homeownership. The possibility of multiple Fed interest rate hikes is also likely to limit New Home Starts by making home mortgages more expensive.

Shortages of skilled-labor and building materials is likely to further stifle construction industry labor force growth as well as the economics of the Construction supersector writ large.

According to the USG Corporation and U.S. Chamber of Commerce Commercial Construction Index (CCI), a quarterly economic index designed to gauge the outlook for and resulting confidence in the commercial construction industry, the Construction supersector is reportedly “strong and healthy”. However, CCI lists a number significant challenges “from sentiment on workforce readiness to the ability to recruit and retain adequate staff levels, from prioritizing the skill set required for today’s jobsite, and the ability of a contractor to staff a future pipeline of work.”¹¹⁵

Sadly the percentage of contractors expecting to employ more workers in 2018 is well below the hiring expectation from one year ago due to the difficulty of finding skilled workers. According to CCI, “Most contractors (90%) are at least moderately concerned about finding workers with adequate skill levels, and over half (52%) are highly concerned. Nearly half of contractors believe workers’ skill levels will worsen in the next six months (Q2 and Q3 2018).” Consequently, these contractors are turning to the use of prefabricated/modular approaches to increase cost savings.

Prefabricated modular construction lowers manual labor and productivity via assembly-line processes and automation. “These alternative construction methods are gaining renewed interest among contractors as a means to confront challenges related to skilled labor, jobsite safety and schedule performance, while technologies like building information modeling (BIM) support increased use.” In other words, automation is coming to the Construction supersector much in the same as is transforming manufacturing’s design-build-logistics value chain to enhance efficiency and reduce (labor) costs. The tight labor market (i.e., dearth of skilled workers) is driving up hourly construction worker wages, which, in turn, is motivating builders to invest in more automated practices.¹¹⁶

¹¹⁵ The Q3 2017 USG Corporation + U.S. Chamber of Commerce Commercial Construction Index, https://www.uschamber.com/sites/default/files/q3_cci_9.14.17.pdf

¹¹⁶ The Q1 2018 USG Corporation + U.S. Chamber of Commerce Commercial Construction Index, https://www.uschamber.com/sites/default/files/q1_2018_cci_2-28_final.pdf

As the skilled labor force shortage becomes more acute in the construction industry, many builders are turning to robotics to fill the skilled workforce gap. A plethora of indoor homebuilding factories, such as Blueprint Robotic Inc.'s new production facility in Baltimore, only builds modular walls, floors and roofs, but not finished products like kitchens.¹¹⁷ Marriott, the biggest hotel operator, recently opened a 97-room, 52-module, three-story modular Fairfield Inn and Suites in Folsom, California, that was built by Guerdon Modular Buildings Inc. The 52-modules, including fixtures (HVAC, plumbing, electrical), furniture (beds, sofas, chairs, pictures), and equipment (TVs, refrigerators) were built, installed and appointed in less than six weeks at a substantial savings in labor costs.¹¹⁸

As reported by the CCI, 60% of surveyed construction contractors report difficulty finding skilled workers as part of the ongoing national skilled labor shortage. In hurricane ravaged locations, like Texas and Florida, skilled labor shortages are especially acute for Speciality Trade Contractors. Moreover, the shortage of construction materials is driving up the cost and financial feasibility of new construction and renovation projects.

The National Association of Homebuilders (NAHB) estimates that construction jobs that have been left unsatisfied are largely due to the skilled labor shortage and the "graying" of the existing workforce. The NAHB believes that the hispanic workforce is "key to combating the labor shortage", which "is projected to account for 74% of the growth in the workforce from 2010-2020, a 20% increase from the previous decade."¹¹⁹ Ostensibly, many of these workers are likely to be foreign-borne workers who are facing greater and greater immigration challenges.

Another issue facing the residential construction industry is changing attitudes towards home ownership and the price of new homes.

According to the U.S. Census Bureau, the average price of a new home in the United States jumped 203% in the last three decades, from \$127,200 in 1987, from \$176,200 in 1997, to \$313,600 in 2007 to \$384,900 in 2017.¹²⁰ The average home price in metropolitan areas (where the jobs are) is much higher. San Jose California's median home price is up to \$1 million. In Manhattan, small condos sell for \$1.4 million. The latest Census Bureau 2017 data states that median income for the 164.6 million U.S. wage earners was only \$36,586.¹²¹ This meager amount of income puts homeownership out of reach for most Americans.

¹¹⁷ Blueprint Robotic Inc., <http://www.blueprint-robotics.com/video/>

¹¹⁸ Guerdon Modular Buildings, Folsom Fairfield Inn & Suites | Folsom, California, <http://www.guerdonmodularbuildings.com/our-work/folsom-fairfield-inn-suites/>

¹¹⁹ National Association of Homebuilders, 30 April 2017, <http://nahbnow.com/?s=skilled+labor+shortage> & Hispanic Workforce Key to Combating Labor Shortage, 9 November 2017, <http://nahbnow.com/2015/11/hispanic-workforce-key-to-combating-labor-shortage/>

¹²⁰ U.S. Census Bureau, Median and Average Sales Prices of New Homes Sold in United States, <https://www.census.gov/construction/nrs/pdf/uspricemon.pdf>

¹²¹ U.S. Census Bureau, Person Income in 2016, PINC-05, Work Experience in 2016--People 15 Years Old and Over by Total Money Earnings in 2016, Age, Race, Hispanic Origin, and Sex, <https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-pinc/pinc-05.html>

The Census Bureau also reports that in Q1 2018 U.S. home ownership rates have dropped to 64.2% from a high of 69.2% in 2004.¹²² This drop is due to less affordable housing, more restrictive lending, fewer first-time buyers who are renting rather than buying, and people who have dropped out of the housing market.

According to Homes.com, “7 in 10 non-home owning Millennials, the largest living generation, feel it will be difficult for them to get a mortgage – with close to 1 in 10 (nine percent) saying they’ve given up completely. Over half (52 percent) feel that their personal financial situation is what is ultimately blocking them from being able to make a massive purchase like buying a home. 37 percent of those who don’t own a home think that the only way they’ll have their own property is through inheritance, a lottery win or being given one.”¹²³

On a more optimistic note, many economists believe that the residential housing market has bottomed as indicated by the upward trend of housing unit starts from April 2009 to today. Bullish economists also point to decreasing unemployment rates and “pent up demand” as reasons to expect a construction boom that could create as many as 250,000 construction jobs if residential starts reach peak levels in the mid-2000s—again assuming that a skilled labor force is available to fill the jobs, which apparently is not the case today.

In conclusion, Jobenomics forecasts that residential construction will not produce a significant number of new jobs for the remainder of this decade due to a myriad of national and global economic uncertainties including: lack of skilled-labor, automation of the workforce, large numbers of affordably-priced existing homes for sale, and changing attitudes to the value of homeownership by the next generation of home buyers. Due to the uncertain economy and government deficits, nonresidential and heavy construction are also unlikely to produce significantly higher numbers of domestic jobs with the possible exception of the Trump Administration’s proposed \$1.5 trillion infrastructure development program. Regarding mitigating the skilled-labor shortage, more citizens need to be subjected to skills-based training and certification programs that can be accomplished in months as opposed to years.¹²⁴

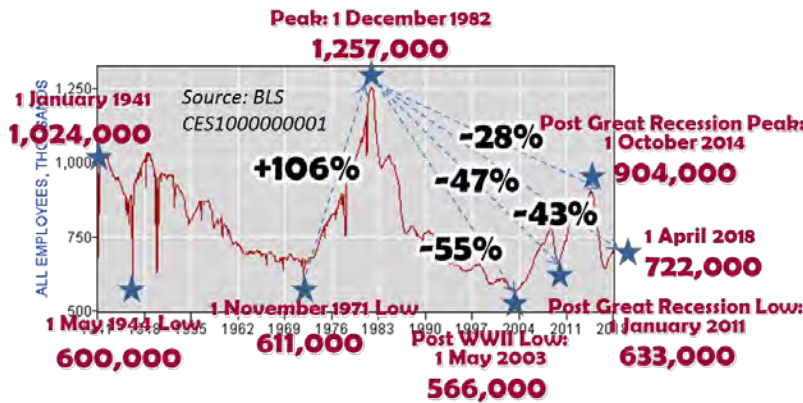
¹²² U.S. Census Bureau, Table 14. Homeownership Rates for the U.S. and Regions: 1965 to Present, <http://www.census.gov/housing/hvs/data/histtabs.html>

¹²³ Home.com, Millennial Survey: A Look At The Millennial Attitude Towards Home Buying, 9 March 2018, <https://www.homes.com/blog/2018/03/millennial-survey-a-look-at-the-millennial-attitude-towards-home-buying/>

¹²⁴ Note: Jobenomics Community-Based Business Generators offer over 9,000 online, federally-certified, skills-based training and certification programs, many of which are in construction fields.

Mining and Logging supersector consists of mining (coal, metal ore, nonmetallic mineral mining and quarrying), oil and gas extraction, and exploration and support activities.

U.S. Mining And Logging Supersector Employment since WWII



Employment in the Mining and Logging supersector has been anything but stable since WWII. Within three years of declaring war, this supersector dropped from 1,024,000 to 600,00 and quickly jumped up to the million job level only to begin another slide to 611,000 thirty years later in November 1971. Shortly thereafter, the Arab oil embargo that quadrupled oil prices overnight and a robust economy skyrocketed the supersector upward to an all-time peak of 1,257,000 by November, a 106% increase in less an decade. Then a precipitous slide began over the next two decades settling at a post-WII low of 566,000 by May 2003. Again, the upward march began reaching 782,000 (not shown) in the early part of the Great Recssion only to slide to a post Great Recession low of 633,000 on 1 January 2011.

During the post recession recovery period, the Mining and Logging supersector employment skyrocketed again from 663,000 jobs to a peak of 904,000 jobs by September 2014, an increase of 36% largely due to the Exploration and Support subsector associated with the fracking industry boom. From the September 2014 peak to the end of the Obama Administration, Mining and Logging job growth stagnated, dropping 17,000 jobs. The Obama era drop was due to low oil prices, international competition, and a harsh regulatory environment in response to climate change concerns. In fulfillment of President Trump's campaign promises, this supersector rebounded with a gain of 76,000 jobs for a grand total of 72,000, which is still down 244,000 jobs from the September 2014 peak. Higher oil prices, now around \$70/barrell, rising metals commodities prices, and relaxed EPA restrictions should continue to propel this supersector upward.

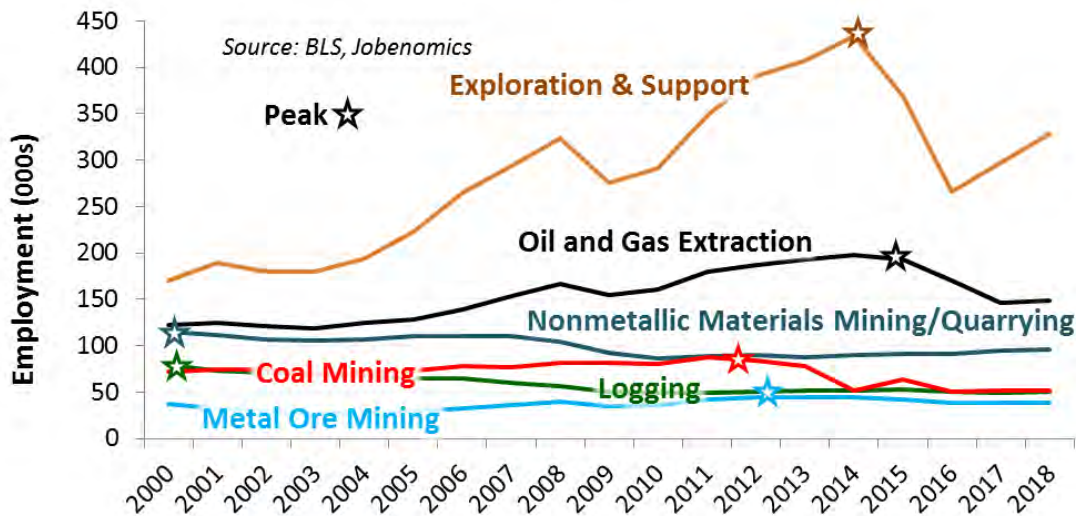
Mining & Logging Supersector Trends This Decade

Source: BLS CES1000000001, Seasonally Adjusted

	1-Jan-10	1-Apr-18	New Jobs (000s)	% Growth
	Jobs (000s)			
Mining and Logging	663	722	59	9%
Logging	49	50	2	3%
Mining	614	672	58	9%
Oil and Gas Extraction	155	150	-5	-3%
Mining, Except Oil and Gas	200	188	-12	-6%
Coal Mining	78	52	-26	-33%
Metal Ore Mining	34	39	5	14%
Nonmetallic Mineral Mining and Quarrying	88	97	9	10%
Support Activities for Mining	259	334	75	29%
	Loss 0-14%	Loss 15%+	Gains 15-29%	Gains 30%+

Despite the roller coaster ride, the Mining and Logging supersector created a total of 59,000 new jobs this decade with a growth rate of 9%. While 9% is meager, it is significant considering the headwinds facing this industry. Coal Mining suffered a 33% downturn but is now beginning to rebound. Oil and Gas Extraction is also down 3% this decade, but its fortunes look a lot brighter now that the price of oil has increased from below \$50/barrel to over \$70/barrel. The breakeven price for oil is around \$50 for U.S. shale producers. Support Activities for Mining (including oil and gas) subsector posted the largest gain of 29%. Jobenomics forecasts that the Mining and Logging industry will see substantial gains in the near future as America becomes more energy independent, an energy exporter, and the U.S. regulatory environment become more business friendly.

U.S. Mining (Oil, Gas, Minerals, Coal) & Logging Sector Employment Trends



Stability and predictability underpin prosperous industries as well as their labor forces. Since the Mining and Logging industry's labor force tends to be generational (children following their parent's footsteps) and communal (small communities usually located in remote areas), constancy becomes even more relevant. Unfortunately, all six Mining and Logging sectors have all experienced instability due to gyrations over the last 18-years. The extent of these gyrations are listed in the order of the most serious to the least serious in terms of downturns from peak employment since the turn of the century.

- **Logging** sector has been in a steady decline since its high of 80,600 loggers in February 2000 to 50,200 as of 1 April 2018, a loss of 30,400 jobs (**62% downturn from peak**) largely due to the downturn in the housing sector, new environmental restrictions on logging in federal forests and foreign imports (Canadian government-subsidized lumber products). Since the Trump Administration took office, logging has lost only 400 jobs or -0.8% of its workforce.
- **Coal Mining** employed 73,700 people in January 2000 and increased steadily to a peak of 89,700 in January 2012. From peak to the end of the Obama Administration, coal miners lost 39,300 jobs, a 45% downturn, largely due to President Obama's alleged "War on coal" and "Clean Power Plan", stringent Environment Protection Agency regulations targeted at coal-fired power

plants, and competition for alternative sources of energy generation such as natural gas and renewables. Today, Coal Mining employs 52,100 miners (**42% downturn from peak**).

President Trump's commitment to coal miners, rolling back the Clean Power plan and exiting the Paris Climate Change Agreement has been beneficial to coal mining industries and workers. Despite this growth, Coal Mining employment is not likely to return coal to its former heights due to the reduction of worldwide coal consumption as well as domestic production of Chinese and Indian coal reserves. Since the Trump Administration took office, 1,700 coal miners have returned to work, which equates to an upturn of 3.4% more jobs. Today, the Coal Mining subsector employs 52,100 people—not a lot on a national scale but a lifeline to the small rural and financially-depressed communities where the mines are located.

- **Oil and Gas Extraction** subsector employed 126,100 in January 2000; 200,700 in September 2014 (peak) and 150,200 as of 1 April 2018. Since peak this sector suffered a loss of 50,500 jobs (**25% drop**) largely due to the drop in oil prices and competition in the unconventional oil and gas sector from foreign oil producers, namely OPEC, Russia and the newly unsanctioned state-run Iranian producers. Since the Trump Administration took office, this subsector lost 2,300 jobs, a downturn of 2%. However, this subsector should increase substantially if the Administration's energy independence, offshore energy licencing and pipeline initiatives are enacted. In addition, the unconventional oil and gas sector (fracking) has reached financial equilibrium. As such, it can quickly reactivate dormant wells with more efficient technology that can produce more oil and gas from rock, and improved waste water treatment systems to become more compliant with environmental regulations and concerns. The near-term prospects for the conventional oil and gas sector is not so clear. The major oil companies are focused on maintaining profitability, diversifying into parallel sectors (e.g., liquid natural gas), and deferring or canceling \$620 billion of projects.
- **Support Activities for Mining** subsector employed 157,700 in January 2000, 445,400 in September 2014 (peak) and 334,100 As of 1 April 2018. Since peak, the high-flying exploration and support industry lost 163,700 jobs (**25% downturn from peak**) largely due to drop in oil prices, unconventional oil and gas (fracking) industry downturn and international competition. During the Obama Administration, this subsector lost 184,700 job and was down as much as 41% from peak. Since the Trump Administration took office, 73,500 new jobs, **a major upturn of 28%**, have been added due to an improving economy, more stable business environment and less drilling restrictions. This recent upturn is significant for the entire Mining and Logging supersector since successful upstream exploration is essential to downstream profitability and workforce growth.

According to the BLS (NAICS Code 213) companies in the Support Activities for Mining subsector primarily provide support services, on a contract or fee basis, required for the mining and quarrying of minerals and for the extraction of oil and gas. Establishments performing exploration (except geophysical surveying and mapping) for minerals are included in this subsector. Exploration includes traditional prospecting methods, such as taking core samples and making geological observations at prospective sites.

- **Nonmetallic Materials Mining and Quarrying** companies have been in decline since its high of 115,200 in January 2000 to a low of 85,400 in January 2011. Today, this industry employs 96,700 jobs (**16% downturn from peak**). Companies in this industry develop mine sites, mine and quarry nonmetallic minerals (sand, gravel, stone, clay, and refractory materials) and provide related support services, and separate minerals from waste. Since the Trump Administration took office, 4,000 new jobs have been added, an upturn of 4%. If Congress passes a major infrastructure program, this subsector should benefit significantly, especially in terms of jobs due to the high-touch labor component of this industry.
- **Metal Ore Mining** activities employed 38,700 in January 2000, 45,700 in March 2013 (peak) and 38,800 as of 1 April 2018. This sector has undergone a decline from peak with the loss of 6,900 jobs (**15% downturn**) largely due to stringent EPA environmental regulations and lower commodity prices. However, this may change as commodity prices (such as gold and silver) increase in proportion to the threat of a financial crisis and or a downturn in stock markets. Copper prices are also likely to increase as the digital economy and electronically-connected consumer devices increase. Since the Trump Administration took office, this subsector has lost only 100 jobs. While the Energy Technology Revolution should increase demand for metal ores, advances in raw materials reclamation systems (recycling) will stifle growth in traditional mining activities. For example, the United States aluminum production is now approximately 40% from metal ores and 60% from reclaiming materials from end-of-life aluminum cans and appliances. This trend is likely to increase in the future as end-of-life materials reclamation systems are installed across America. Note: Jobenomics Urban Mining initiative is at the forefront of monetizing urban waste streams and using the profits for microbusiness and job creation.¹²⁵

2018 will be a pivotal year for the U.S. Mining and Logging supersector as it adapts to the major forces that have dramatically changed the landscape of their industry: OPEC restructuring, China hegemony, the Trump Administration's pro-business, anti-environmental activism initiatives, the advent of electrically-powered vehicles (EVs) and the so-called death of the internal combustion engine.

- **OPEC.** Over the last several years, OPEC, the producer of approximately 40% of the world's oil production with 80% of the world's share of crude oil reserves, planned to drive non-OPEC oil producers out of business by depressing oil prices. To a degree, this plan worked. The economies of Russia (10.5 million barrels per day production) and Brazil (3 million barrels per day) crashed largely due to the loss of this revenue stream. U.S. oil producers (9.2 million barrels per day) were also shaken by the OPEC onslaught directed at both the conventional the unconventional oil industries. The OPEC plan had a number of positive unintended consequences for the U.S. oil and gas including: giving rise to a shift from oil to natural gas, eliminating less efficient companies, creating greater American resolve for energy independence, advancing renewable energy initiatives and reversing decades of legislation that limited U.S. crude oil exports. From a Jobenomics perspective 2016 was the year the old U.S. oil and gas industry died and a new one was born.

¹²⁵ Jobenomics Urban Mining, <https://jobenomicsblog.com/?s=Urban+Mining> and eCyclingUSA (a Jobenomics originated company for materials reclamation of end-of-life electronics and appliances), <http://ecyclingusa.com/>

2018 is likely to be the year that the OPEC plan of over-producing and depressing oil prices succumbs. Saudi Arabia, which is the largest oil producer and dominant force of the dozen OPEC members¹²⁶, has finally agreed with their OPEC members for a “rebalancing process” to cut oil production and let prices rise. OPEC members agreed to cut production by 1.2 million barrels per day for six months beginning from the start of 2017 in a bid to reduce the glut of oil supplies on the shore up prices. Reduced OPEC production will alleviate the glut of oil on the world market, resulting in higher oil prices, which will give impetus for renewed U.S. onshore and offshore expansion.

Global oil prices have been volatile ranging from \$100/barrel in June 2014, to \$27 in January 2016, to \$72 in April 2018. In December 2015, the U.S. Congress lifted America’s 40-year-old ban on oil exports, a historic action driven by a boom in U.S. oil drilling. In March 2018, U.S. exports of crude oil hit an all-time high of 1,605,000 monthly-barrels per day.¹²⁷ According to the latest report from the International Energy Agency (IEA), “this year (2018) promises to be a record-setting one” for U.S. oil output with the potential of surpassing the output of Saudi Arabia and Russia. IEA also forecasts that the United States will produce 30 million barrels of oil and gas a day by 2025, a 25% increase over current levels.

Jobenomics does not see a major crude oil price increase in 2018, but is optimistic that the U.S. unconventional oil and gas industry, dominated by independent contractors and contingency workers, are scaling up quickly as the energy outlook brightens. New industries, like the exporting of liquidified natural gas, construction of new pipelines, and resumption of major offshore exploration projects by the major conventional oil and gas companies will provide new employment opportunities for the U.S. oil and gas workforce.

- **China.** Over the last decade, China has been a major importer of U.S. raw materials from the Mining and Logging industry. 2016 was a pivotal year because of the slowdown in the Chinese economy and Beijing’s shift of emphasis to greater domestic production, exploration and self-reliance. 2018 will be a pivotal year for the U.S. Mining and Logging industry as it realigns itself for a greater reliance on domestic and other foreign buyers. U.S. commodity (oil, metals and coal) companies, long-addicted to exporting to China, are now focusing on other emerging markets, like India, and adjusting to the new normal, which includes viewing China as a near-peer competitor rather than a voracious buyer of American commodities.

In the metal ore mining sector, China is spending hundreds of billions of dollars in mining projects around the world in South America, Africa and the Middle East. China is also building multibillion dollar Urban Mining mining centers to extract raw materials from domestic and imported electronic waste. In the oil and gas sector, China is tripling its strategic oil reserves from 250 million barrels in storage capacity to 900 million, which will exceed the total capacity of the U.S.

¹²⁶ OPEC oil producers include: Saudi Arabia (10.7 million barrels per day), Iraq (4.2 mmbd), UAE (2.7 mmbd), Kuwait (2.5 mmbd), Venezuela (2.4 mmbd), Nigeria (2.4 mmbd), Qatar (2.1 mmbd), Angola (1.7 mmbd), Algeria (1.7 mmbd), Oman (1.0 mmbd), Indonesia (10.9 mmbd) and Libya (0.5 mmbd).

¹²⁷ U.S. Energy Information Administration, Petroleum & Other Liquids, U.S. Exports of Crude Oil, <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCREXUS2&f=M>

strategic petroleum reserve storage of 725 million barrels. China is also increasing its oil production capacity domestically and aggressively pursuing international exploration to reduce its dependence on foreign imports. A large part of the Chinese military buildup in the South China Sea is due to Southeast Asia's vast offshore oil and gas fields. U.S. coal exports to China have also dropped precipitously from 9 million metric tons in 2012 to ¼ million in 2015. Perhaps the only exception to the rule, is U.S. logging exports of forest products (hardwood lumber and softwood log exports) to China.

- **Environmental Activism versus the Trump Administration.** While Jobenomics believes that climate change is a very real and serious challenge, climate change activism is becoming more of a call-to-arms than a call-to-action. As a result, the U.S. Mining and Logging industry has become the cause célèbre for heated debate about the evils of ravaging the planet's non-renewable resources.

2016 was a pivotal year in which U.S. environmental activists were successful in championing domestic and international agreements on climate change from the Obama Administration's Clean Power Plan to the UNFCCC' historic climate change agreement.

2017 was a pivotal year in which President Trump dismantled the Clean Power Plan and exited from the Paris Climate Change Agreement. Manmade climate change is happening. Unfortunately, the Paris Climate Change Agreement was largely political theater with the United States on center stage championing the ability of renewable energy to reduce toxic greenhouse gases and committing the United States to reduce "economy-wide" emissions by as much as 28% by 2025 via the implementation of ultra-clean renewable energy sources.¹²⁸ This ambitious goal was "a bridge way too far" given the United States inability to successfully implement enough new renewable energy sources by 2025 to retire traditional "dirty" sources of fuel.

According to the U.S. Energy Information Agency's Annual Energy Outlook 2018, by the 2025 Paris Agreement deadline the United States is forecast to transition **only 2.3%** of its energy consumption from traditional to renewable fuels (shown below). Even more surprisingly, by mid-century (2050), Americans are projected to transition from traditional sources by **only 5.4%** from fossil to renewable fuels.¹²⁹ According to this data, it is obvious that the United States was never really capable of implementing its "nationally determined contributions" (NDC) as proclaimed on the United Nations Framework Convention on Climate Change (UNFCCC) NDC website.¹³⁰ A 3% reduction in fossil fuel consumption and burning will not generate a 28% decline in greenhouse emissions by 2025.

¹²⁸ United Nations Framework Convention on Climate Change (UNFCCC), United States NDC Registry, retrieved April 2018, <http://www4.unfccc.int/ndcregistry/PublishedDocuments/United%20States%20of%20America%20First/U.S.A.%20First%20NDC%20Submission.pdf>

¹²⁹ U.S. Energy Information Agency's Annual Energy Outlook 2018, Table 1, Total Energy Supply, Disposition, and Price Summary, <https://www.eia.gov/outlooks/aeo/> and <https://www.eia.gov/outlooks/aeo/data/browser/#/?id=1-AEO2018&cases=ref2018&sourcekey=0>

¹³⁰ United Nations Framework Convention on Climate Change, United States NDC Registry, retrieved April 2018 2017, <http://www4.unfccc.int/ndcregistry/PublishedDocuments/United%20States%20of%20America%20First/U.S.A.%20First%20NDC%20Submission.pdf>

U.S. Total Energy Consumption: 2017, 2025 and 2050

Source: EIA AEO 2018 Table 1

	2017	2025		2050	
Total Consumption (Quadrillion Btu)	97.3	100.2		106.7	
Petroleum and Other Liquids	38.7%	36.6%		34.3%	
Natural Gas	28.6%	30.8%	% Change	32.7%	% Change
Coal	14.7%	13.3%	2017 - 2025	12.1%	2017 - 2050
Nuclear	8.6%	7.5%		6.1%	
Traditional Sources	90.5%	88.2%	-2.3%	85.1%	-5.4%
Renewable Energy	9.5%	11.8%	2.3%	14.9%	5.4%
Conventional Hydroelectric Power	2.8%	2.7%		2.5%	
Renewables (Wind, Solar, MSW, etc.)	3.5%	5.8%		8.7%	
Biomass	2.7%	3.0%		3.3%	
Other (e.g. hydrogen, imports)	0.4%	0.3%		0.3%	

Consequently, it should not be too surprising that the Trump Administration, which inherited an unrealistic NDC commitment, would act in the manner that it did by pulling out of the Paris Agreement. Contrary to popular opinion, President Trump's walking away from the Paris Accord is likely to be a positive action from a climate change perspective. President Obama's activist approach to the renewable energy promise brought the world to the climate change table in Paris. President Trump's hardnosed approach has now renewed the climate change debate with a new sense of urgency and energy. Perhaps, now Americans can get down to a realistic climate change strategy with measurable and achievable milestones.

2018 is also a pivotal year for the Oil and Gas Extraction subsector. President Trump's executive orders supporting the Keystone XL and Dakota Access pipelines is equivalent to a tectonic shift from the previous administration's position on pipeline expansion. The \$4 billion, 1,179-mile Keystone XL pipeline from Alberta, Canada to Steele City, Nebraska will carry 830,000 barrels of oil per day, create as many as 28,000 construction jobs, and decrease dependence on Middle East oil. The 1,172-mile Dakota Access Pipeline will carry 470,000 barrels of oil per day from the Bakken shale oil fields in northwest North Dakota and to the oil tank farm near Patoka, Illinois.

In addition to oil pipelines, new natural gas pipelines are economic lifelines to some of the most underserved communities in America. For example, the \$4 billion, 713-mile Rover natural gas pipeline will ship 3.25 billion cubic feet per day (enough to power 30 million homes via natural gas-fired power plants that produce cleaner energy than older coal-fired plants) from remote communities in West Virginia, Eastern Ohio and Western Pennsylvania. The Appalachian Marcellus and Utica gas fields are often dubbed the "Saudi Arabia of natural gas" because they hold a century's worth of gas reserves. For the first time in 60-years, the United States became a net exporter of natural gas in 2017. This trend is expected to continue and grow providing many more jobs in communities that desperately need them.

2018 may be the year that California's aggressive renewable energy plan should begin to bear fruit. In his 2015 Inaugural Address, Governor Brown announced three ambitious new 2030 goals for California: increase from 33% to 50% electricity derived from renewable sources; reduce

automotive petroleum by up to 50%, and increase building efficiency and clean heating fuels by 100%. These enormously bold and disruptive goals are well underway. America will soon be able to see how transformative California's green initiatives will be, and the impact that they will have on California's economy and workforce.

For the most part, Jobenomics is pleased at the progress that California is making in renewable technology implementation. Jobenomics is even more pleased that California has shifted focus from spending 95% of its R&D budget on reducing emissions on coal-fired power plants to a more balanced approach where 50% is now spent on customer on-site generation and energy storage as advocated in the comprehensive Jobenomics Energy Technology report. As stated in this report, "Jobenomics believes that America should strive to be demand-driven where every building and every community is energy sufficient—able to produce and store the energy it needs—at the point-of-consumption." By producing and storing at the point-of-consumption, California will likely facilitate the creation of millions of new local jobs and small businesses that will be dedicated to installing and servicing these point-of-use systems.¹³¹

Jobenomics hopes that the California experiment will bear fruit, but believes that combatting climate change with renewable energy will be less successful in other states that do not have as much sunshine, sustainable winds and unencumbered land. To achieve climate change goals, a balance of renewables, cleaner fossil fuels, nuclear and energy efficiency is needed.

- **Electrically-powered vehicles.** The International Energy Association (IEA) Global EV Outlook 2017 report states that 2 million electric vehicles (EVs) are in use worldwide, up from 1 million in 2015, 145,000 EVs in 2011 and a few hundred in 2005.¹³² By 2020, IEA and other sources (e.g., Paris Climate Change Accord) project 20 million EVs and 100 million EVs by 2030. As a result of these projections, a number of countries are considering banning internal combustion engines entirely. Norway's motor vehicles are already 29% EV and are projected to reach 100% by 2025. The United Kingdom, France, Germany and India are looking at 2030 as 100% battery-electric vehicle goals, thereby eliminating all fossil-fueled powered vehicles.

Other countries are taking a wait-and-see approach since EV will require a public charging infrastructure equal to the number of gas stations currently serving the internal combustion community. There are 168,000 retail locations in the U.S. that sell fuel to the public compared to 16,500 public electric vehicle charging stations.¹³³ Other competing advanced fuels (such as hydrogen), cultural biases (Americans love their cars) and significant improvement in battery economics, scale, and technology are also considerations for taking a more cautious approach to banning internal combustion powered transportation.

¹³¹ Jobenomics, Energy Technology Revolution report, 18 June 2015, <http://jobenomicsblog.com/energy-technology-revolution/>

¹³² International Energy Association (IEA) Global EV Outlook 2017, <https://www.iea.org/publications/freepublications/publication/GlobalEVO Outlook2017.pdf>

¹³³ Statista, Number of public electric vehicle charging stations and charging outlets in the U.S. as of November 2017 (in units), <https://www.statista.com/statistics/416750/number-of-electric-vehicle-charging-stations-outlets-united-states/>

While EVs maybe a threat to petroleum producers in the far-term, they present near-term opportunities for global metal ore mining companies, especially EVs powered by lithium ion batteries. While lithium (a rare energy efficient metal), gets top billing, other metals like nickel, cobalt, manganese, aluminum, iron and phosphate play integral roles in lithium ion batteries. There are a number of different lithium-ion battery cathodes being produced for today's electronic vehicles including NCA (Lithium Nickel Cobalt Aluminum Oxide) for Tesla vehicles, NMC (Lithium Nickel Cobalt Manganese Oxide) for Chevrolet's Bolt, and NMC-LMO (Lithium Manganese Oxide) for the Nissan Leaf.¹³⁴ Tesla, Bolt and Leaf batteries contain 10% to 15% lithium by weight, compared to 15% to 50% cobalt, and 30% to 70% nickel.¹³⁵

According to Elon Musk, Tesla's founder, nickel is the most important metal by mass in lithium-ion battery cathodes. Other types of lithium-ion batteries being produced for other electric vehicle applications, such as Unmanned Aerial Vehicles (drones) include LMO (Lithium Manganese Oxide), LFP (Lithium Iron Phosphate) and LNMO (Lithium Nickel Manganese Spinel).¹³⁶ While the United States possess limited nickel and lithium reserves, it has unparalleled production capacity. Tesla's new Nevada-based Gigafactory is projected to produce as many lithium ion batteries as the rest of world's total current battery production.

In summary, Jobenomics asserts that the Mining and Logging industry is as valuable to national sovereignty as the other domestic goods-producing industries. 2018 will be a pivotal year as the industry adjusts to the new normal. From a national standpoint, leaving trillions of dollars of natural resources lay fallow in or under the ground does not make sense from an economic or security point of view, especially when America has a industry that can extract these resources in an increasingly environmentally friendly way.

¹³⁴ Targray, Cathode Active Materials, Active materials for li-ion batteries including NCA, NMC, LFP, LMO & LCO Cathodes, <https://www.targray.com/li-ion-battery/cathode-materials/cathode-active-materials>

¹³⁵ Visual Capitalist, Nickel: The Secret Driver of the Battery Revolution, 30 October 2017, <http://www.visualcapitalist.com/nickel-secret-driver-battery-revolution/>

¹³⁶ Battery University, Powering Unmanned Aerial Vehicles, http://batteryuniversity.com/learn/article/types_of_lithium_ion

postal workers. Amazon uses the Postal Service for about 40 percent of its shipping needs. According to the U.S. Postal Service's quarterly statistics report, its large financial losses are caused by market forces and governmental constraints as opposed to Amazon. Declining letter volumes, the use of First Class and marketing mail is a major reason for the decline. Package volume is one of the few growing markets for the Postal Service as they shipped around 500 million packages last year for Amazon.

At the State level, State government lost 37,000 jobs (-1%). 93,000 new jobs (4%) in State government education (mainly university professors and staff) offset the loss of 131,000 other government employees. State government education increased from 45.8% of the State government workforce to 48.0% today. Approximately half of all State government employees are within the State university system.

At the Local level, regular Local government employees downsized by 77,000 jobs (-1%). Local government education employees (teachers and staff) lost 132,000 jobs (-2%), whereas other Local government positions grew by 54,000 (1%). Local government education decreased slightly from 55.7% of the Local government workforce to 55.0% today. Much of government funded teacher job losses were offset by a rise in private sector Educational Services subsector that gained 586,000 jobs, a 19% growth rate since the beginning of this decade.

U.S. Armed Forces Personnel Trends. Federal government statistics include only noninstitutional personnel, which excludes "institutionalized" members of the armed forces.

U.S. Armed Forces Downsizing

Active	Mobilized	Guard	Selected Reserve	Civilian	TOTAL
Personnel End Strength - July 2010					
1,421,414	77,861	464,900	379,600	752,000	3,095,775
Personnel End Strength, End FY 2017					
1,296,900	-----	448,700	364,500	764,400	2,874,500
45%		16%	13%	27%	100%

Source: GlobalSecurity.org

Downsizing **-221,275 -7%**

According to GlobalSecurity.org data, a Washington think tank, U.S. Armed Forces (Army, Navy, Air Force and Marines) is one of the largest "noninstitutionalized" organizations with 2,874,500 personnel: 45% Active, 27% Department of Defense civilians, 16% National Guard, and 13% Selected Reserve.¹³⁷

Over the last four decades, the active duty component of U.S. Armed Force downsized from a peak of 3.5 million to 1.3 million today. Since the beginning of this decade, the only component of the U.S.

¹³⁷ GlobalSecurity.org, Military Personnel, <http://www.globalsecurity.org/military/agency/end-strength.htm>

Armed Forces that grew was the Civilian component with an increase of 12,400 personnel, from 752,000 to 764,400.

Overall, since 2010, U.S. Armed Forces have downsized by 221,275 personnel (-7%) but are expected to grow with the Trump Administration's focus on increasing defense spending and rebuilding the military.

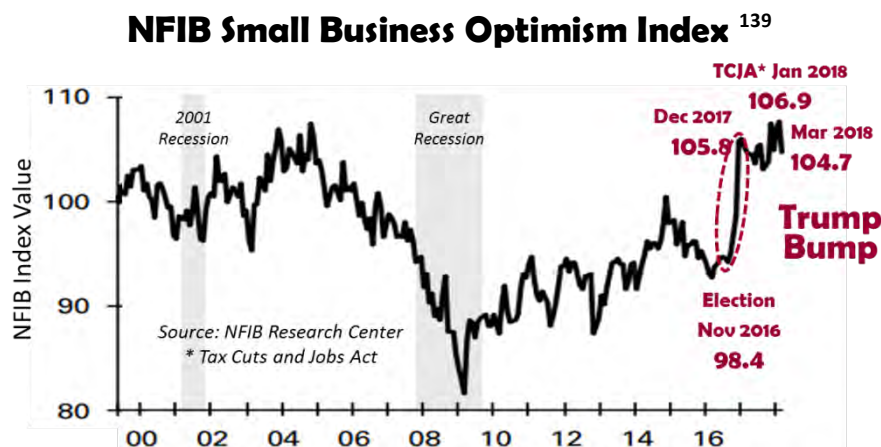
Small Business Statistics and Trends

Small business is the engine of the U.S. economy—an engine that employs the vast majority of Americans and produces the vast majority of new jobs not only this decade but in decades prior.

Business startups are the seed corn of the U.S. economy. Without the planting and fertilization of these seedlings, the fields of American commerce would remain fallow.

Unfortunately, both U.S. small business and startup businesses are faltering. American policy-makers and corporate-leaders do little to energize the small business community and promote American entrepreneurship that is at the heart of small business creation. Instead, government policies rely on big business for job creation. These policies are not likely to bear much fruit. In today's highly competitive global environment, most large corporations are reducing their labor force by outsourcing work to U.S. contingent workers and foreign entities, and automating routine manual and cognitive tasks via the revolution in network and digital technologies.

Kauffman Foundation's 2018 State of Entrepreneurship report states that American entrepreneurs are "very optimistic" about their business and the potential for future growth. On the other hand, entrepreneurs reported that they underestimated the "struggles" associated with the technical aspects of starting their businesses. Moreover, they were frustrated by lack of support from public and established private sector institutions. According to the report, "These entrepreneurs say the government isn't supporting them as they seek to open or grow their businesses. The government resources that are available to them aren't the ones they need, and many feel that the government supports established businesses over their own." 79% of surveyed startup owners felt that they had little government support to start their business. 92% felt that President Trump and Congress should spend more time working to help startup businesses.¹³⁸



Small business optimism jumped with the election of President Trump to historically high levels and jumped again after the passage of the Tax Cuts and Jobs Act. However, small business optimism

¹³⁸ Kauffman Foundation, 2018 State of Entrepreneurship, Breaking Barriers: The Voice of Entrepreneurs, 28 February 2018, https://www.kauffman.org/what-we-do/entrepreneurship/state-of-entrepreneurship-2018?utm_source=eAlert&utm_medium=email&utm_campaign=soe2018

¹³⁹ NFIB Small Business Economic Trends, March 2018, <https://www.nfib.com/assets/SBET-March-2018-2.pdf>

recently returned to post election high as reported by the National Federation of Independent Business (NFIB), a U.S.-based small business advocacy association built on a network of 325,000 small and independent business owners. Of the 432 surveys conducted by the NFIB since its founding in 1943, March 2018 survey is in the top 5%. The Optimism Index includes ten survey questions from current conditions through future plans. 35% of the respondents had current job openings. 32% expect the economy to approve. 28% were optimistic about earning trends. 26% plan to make capital outlays and 20% want to increase employment.

Fortunately, businesses are easier to start than any time in history. America must not squander this opportunity. This opportunity is made possible by the emerging digital and network economy that levels the playing field for startups and small businesses. According to James McQuivey, a leading analyst tracking the development of digital disruption, as compared to the traditional economy, **digital startups are at least 100-times easier to create and have 10-times the number of innovators that can innovate at one-tenth the cost** than traditional startups.¹⁴⁰

More importantly, digital startups provide better-paying, longer-lasting jobs than other start-ups, and they contribute more to innovation, productivity, and competitiveness. A recent study by the Information Technology and Innovation Foundation (ITIF), a Washington DC-based nonpartisan research and educational institute, states that technology-based start-ups “provide outsized contributions to employment, innovation, exports, and productivity growth, many policymakers focus more broadly on helping all business start-ups without regard to type.” Some ITIF study highlights regarding technology-based start-ups include:

- Technology-based start-ups make up only 2.8% of all U.S. firms but growing at faster and faster rates largely due the transformative power of emerging network and digital technologies.
- Over the last decade these startups increased 47%, from 116,000 to 171,000 firms, with a 20% increase of workers from 1.2 to 1.5 million workers.
- Compared traditional “mom and pop” startups that are decreasing, technology-based startups are increasing, producing almost 75% more jobs paying more than twice the national average wage, and almost three times the average overall start-up wage.
- High-growth technology-based startups—firms that increase employment more than 25% year-over-year—are a major contributor to economy-wide net job creation, employing 100,000 workers on average; this figure is equivalent to one-eighth of new jobs added to the economy yearly.
- 78% of new technology-based firms survived past their first year in business; 41% survived through their fifth year.¹⁴¹

¹⁴⁰ James McQuivey, Digital Disruption: Unleashing the Next Wave of Innovation, Figure 1-1: Digital Disruption Creates One Hundred Times the Innovation Power, Page 11.

¹⁴¹ Information Technology & Innovation Foundation, How Technology-Based Start-Ups Support U.S. Economic Growth, John Wu and Robert D. Atkinson 28 November 2017, <https://itif.org/publications/2017/11/28/how-technology-based-start-ups-support-us-economic-growth>

Importance of Tax Reform. Tax Reform is Trump's signature initiative that underpins his bold vision of sustained 4% GDP growth and 25 million new jobs over the next ten years. Jobenomics could not agree more with this vision.

The recent "Tax Cuts and Jobs Act" chops the corporate tax rate on small businesses that will empower the small business economic engine to accelerate GDP growth and job creation commensurate with President Trump's vision. Big businesses are likely to add jobs but not enough given the rationale explained earlier in this document. Cutting regulations will help small business job creation, but the level is unknown. What is needed most is a concerted effort to mass-produce startups, expand existing small businesses, and a shift of focus from the traditional economy to the emerging digital economy. If the Administration accomplishes this menu of items in a stable economic environment, Jobenomics believes that the President will reach its job creation goal.

29.6 million U.S. small businesses employ the majority of all Americans and created the majority of all new U.S. jobs this decade. The "Tax Cuts and Jobs Act" chops the corporate tax rate from 35% to 20% on incorporated small business and reduces the tax rate from 39.6% to 25% for unincorporated pass-through businesses (sole proprietorships, partnerships, and S-Corporations that pay taxes based on the owner's personal income tax returns). Of course, there are many other considerations regarding the enactment of tax reform, but Jobenomics believes that these two small business tax cut provisions need to be maintained during the enactment process with provisions to separate small businesses from large businesses and high wage earners.

These tax cuts on small business should have a dramatic effect on job creation. Unlike large corporations that spend as much money on making money (stock buybacks, mergers and acquisition, secondary market plays, etc.) as they do on labor, small businesses tend to hire and expand their business, which creates more jobs. **If each of these 29.6 million small businesses created or hired only one (1) net new employee over the next several years, Trump's 25 million new jobs goal could be realized in a much shorter timeframe than currently envisioned.**

While Jobenomics asserts that tax cuts for small incorporated and unincorporated businesses will greatly accelerate America's economic and job creation performance, Jobenomics is concerned by exploitation by "large" and "wealthy" pass-through businesses. According to Brookings Institution, a leading U.S. nonprofit public-policy organization, while 99% of U.S. businesses are small and 95% of all U.S. businesses are pass-throughs, over 80% of all sales and profits are accrued by large pass-through businesses that represent only 1% of all firms. "Most hedge funds, private equity funds, law, consulting, and accounting firms are partnerships; these businesses can be large, global enterprises."¹⁴² Unlike large corporations that spend as much money on making money as on labor, Wall Street pass-throughs make breathtaking amounts of money on money alone. Consequently, any pass-through tax cuts should focus on birthing, accelerating and expanding small mom-and-pop businesses as opposed to hedge funds (that pay their managers an average of \$2.4 million dollars

¹⁴² Brookings, 9 facts about pass-through businesses, <https://www.brookings.edu/research/9-facts-about-pass-through-businesses/>

annually¹⁴³) and high wage earners who often masquerade as small businesses in order to reduce taxes.

Current State of U.S. Small Business. According to the U.S. Small Business Administration (SBA), there are 29.6 million U.S. small businesses with less than 500 employees compared to 18,600 big businesses with over 500 employees. Of the 29.6 million small businesses, 5.8 million had paid employees and 23.8 million had no employees, termed “nonemployers”.¹⁴⁴

The BLS definition of a nonemployer business is “one that has no paid employees, has annual business receipts of \$1,000 or more (\$1 or more in the construction industries), and is subject to federal income taxes”. Nonemployer businesses include:

- Individual proprietorships, sole proprietorships, an unincorporated business owned by individual and self-employed persons.
- Partnerships or unincorporated business owned by two or more persons having a shared financial interest in the business.
- Corporations that are legally incorporated businesses under state laws.¹⁴⁵

As explained by the Census Bureau, “Nonemployer statistics data originate chiefly from administrative records of the Internal Revenue Service (IRS). Data are primarily comprised of sole proprietorship businesses filing IRS Form 1040, Schedule C, although a small percentage of the data is derived from filers of partnership and corporation tax returns that report no paid employees.” Nonemployer businesses may operate from a home address or a separate business location.¹⁴⁶

Nonemployers are businesses with no employees other than the owner(s). Nonemployer firms include full-time, and part-time and home-based businesses. Nonemployer firms represent three-quarters of all U.S. businesses but only 3% of business receipts. According to the BLS, “while they represent a relatively small share of economic activity, nonemployer firms are important as a gateway to becoming employer firms, providing flexible work opportunities and a path to economic prosperity”. In addition, nonemployers have a startup rate nearly three times the rate of employer firms.¹⁴⁷

Per the U.S. Small Business Administration, 79.9% of small business establishments started in 2014 survived until 2015 (latest data available), the highest share since 2005. About half of all establishments survive five years or longer. About one-third of establishments survive 10 years or longer.¹⁴⁸

¹⁴³ CNBC, Hedge fund manager pay rises to \$2.4 million, 6 November 2014, <https://www.cnbc.com/2014/11/06/hedge-fund-manager-pay-rises-to-24-million.html>

¹⁴⁴ U.S. Small Business Administration, Office of Advocacy, Frequently Asked Questions, <https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2017-WEB.pdf>

¹⁴⁵ BLS, Nonemployer Definitions, <https://www.census.gov/epcd/nonemployer/view/define.html>

¹⁴⁶ U.S. Census Bureau, Purpose And Use Of Nonemployer Statistics, <https://www.census.gov/epcd/nonemployer/1997/introgen.htm>

¹⁴⁷ U.S. Small Business Administration, Office of Advocacy, Nonemployer Start-up Puzzle, December 2009, <https://www.sba.gov/sites/default/files/Nonemployer%20Start-up%20Puzzle.pdf>

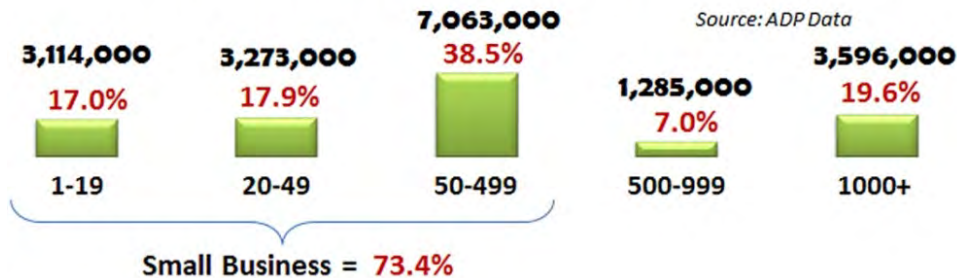
¹⁴⁸ U.S. Small Business Administration, Office of Advocacy, Frequently Asked Questions, retrieved 28 April 2018, https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf

Compared to BLS and Census Bureau data, ADP (a monthly survey of 400,000 U.S. businesses by the ADP Research Institute in close collaboration with Moody's Analytics) has more recent and detailed data regarding U.S. small businesses employment and job creation by company size. Jobenomics asserts that the impact of small and nonemployer businesses, especially the self-employed, are greatly understated by the BLS and Census Bureau due to the nature of CPS and CES Survey samples and questionnaires. As reported by the ADP National Employment Report, small businesses are undeniably the dominant employer and job creator in the United States.

For this report, Jobenomics classifies "small business" as having 1-499 employees (the definition supported by the U.S. Small Business Administration), medium-sized business as 500-999 and large businesses as 1000+ employees. Also, Jobenomics defines micro-businesses as having 1-19 employees, which includes self-employed individuals.

U.S. Private Sector Jobs Created This Decade by Company Size

1 January 2010 to 1 April 2018 (99 Months)

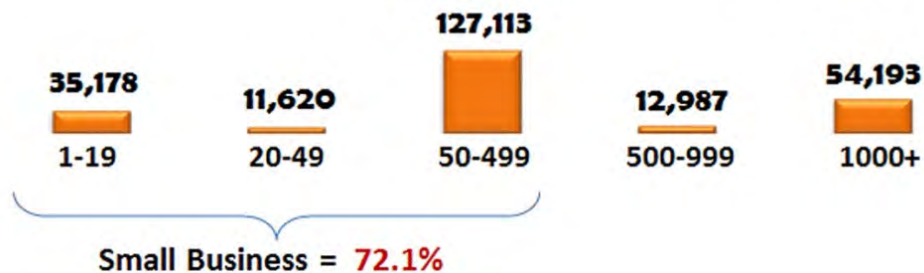


Since the beginning of this decade, small businesses created 73.4% of all new jobs in the United States. Small businesses with less than 500 employees created 2.8-times more jobs as enterprises with 500+ employees, or 13,455,699 versus 4,881,380 new jobs respectively. Micro and self-employed firms with 1-19 employees produced 87% as many jobs as large-scale corporations with over 1,000 employees (3,113,740 versus 3,595,904).

U.S. Private Sector Jobs Created Last Month by Company Size

March 2018

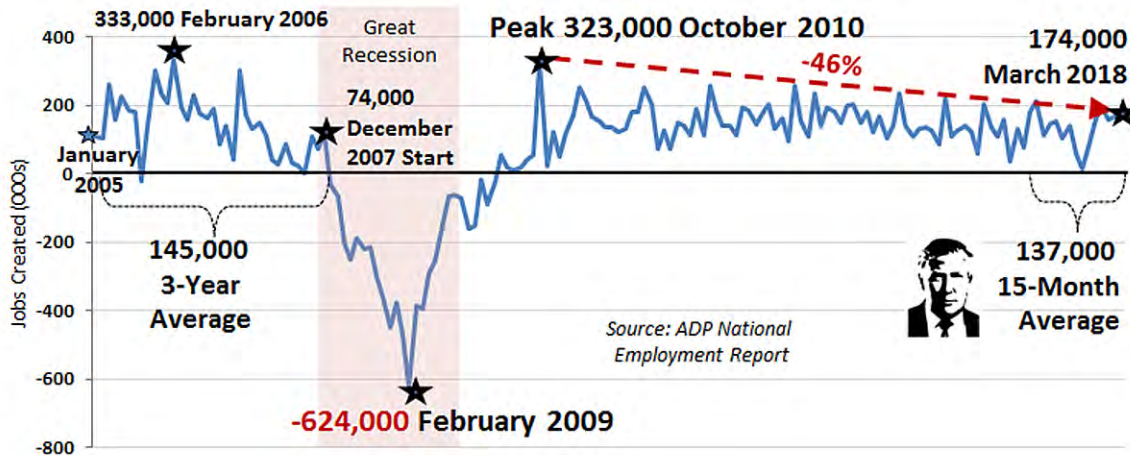
Source: ADP Data



Last month (March 2018), U.S. small business (1-499 employees) created 72.1% of all new jobs. This percentage compares favorably with previous months during the Trump Administration: 68.7% February, 65.4% January 2018, 78.6% December, 82.0% November, 47.1% October, 17.9% September, 35.8% August, 68.5% July, 69.2% June, 76.9% May, 94.0% April, 93.7% March, 75.1% February, and 72.8% January 2017.

As stated since the beginning of this decade, small businesses created around three-quarters of all new jobs in the United States. While impressive, the small business job creation engine is losing power.

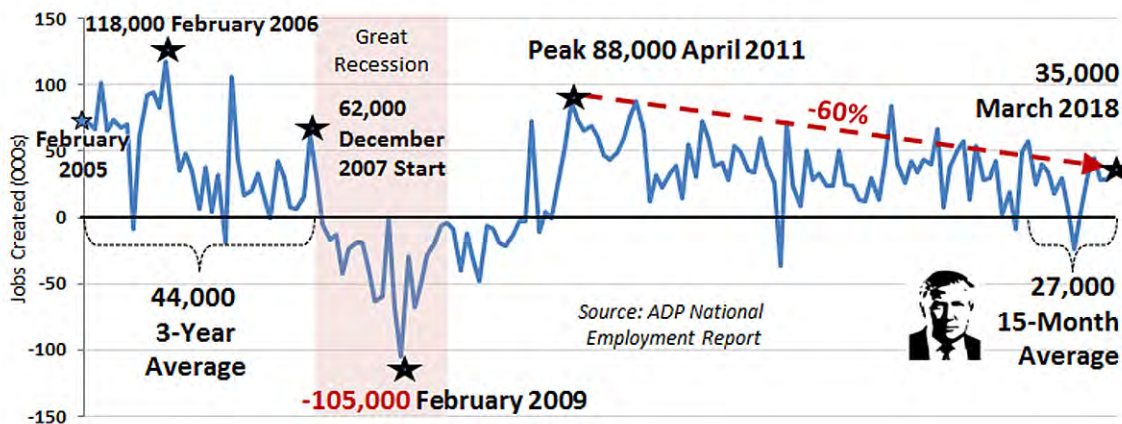
U.S. Small Business (1-499) Job Creation Engine Is Faltering



During the depth of the Great Recession in February 2009, small businesses laid off 624,000 people in a single month, which is indicative of the hazards of a stalled small business engine. Twenty months later, the small business engine was hitting on all cylinders and generated a peak of 323,000 jobs in October 2010.

Since this post-recession peak to today, small business job creation dropped 46% to 174,000 in March 2018, a difference of 149,000 jobs. Consequently, over a 120-month period, a deficit of 149,000 jobs equates to 18 million fewer jobs per decade. The Trump Administration could use these lost jobs to fulfill the President's vision of 25 million new jobs over the next decade.

U.S. Micro-Business (1-19) Job Creation Engine Is Also Faltering



If the small business engine had heart, it would be a micro-business. Most micro-business are self-employed firms (one-person incorporated or unincorporated), family businesses (mom-and-pops) or partnerships. Micro-businesses are also the heart the U.S. economy. Mom-and-pop stores are essential to local communities. They are the type of enterprises that hire the unemployed and give

part-time jobs to high schoolers and other entry-level individuals who want to work. Continued deterioration and denigration of micro-businesses can only lead to economic stagnation.

Sadly, the U.S. micro-business heart is suffering from a form of atherosclerosis (narrowing or blockage of the arteries) as indicated by a 60% decline since the post-recession peak. The average micro-business job creation over the Trump Administration was 27,000 jobs per month, which is a meager number considering the relative strength of the U.S. economy. The 3-year average prior to the Great Recession was 44,000 new jobs per month.

The vast majority (95%) of small and micro-businesses are “pass-through” businesses (sole proprietorships, partnerships, and S-Corporations that pay taxes based the owner’s income tax returns). Consequently, the recent Tax Cuts and Jobs Act (TCJA)’s pass-through businesses tax reduction from 39.6% to 20% for qualified business income should have a positive economic and labor force impact in 2018. The primary intent of TCJA’s pass-through business legislation was to boost mom-and-pop business growth and employment.

Unfortunately, most of the earnings generated by pass-through entities are not by mom-and-pop businesses but by high net-worth individuals (e.g., hedge fund managers, management consultants, and real estate executives) who self-incorporate as an LLC or S-Corp to reduce their tax burden. While the TCJA includes “anti-abuse measures” to ensure that only owners of “bona fide” businesses claim the 20% rate, abuse is likely to grow now that a new “territorial system” exempts foreign profits by U.S. business. A shrewd Wall Street hedge fund manager or real estate broker can start a pass-through business on a Caribbean island to reduce their tax burden and deduct business expenses while enjoying Mai Tais on the beach.

While the Jobenomics outlook for small and self-employed business is positive throughout 2018, it is less bright than it could be. Washington and corporate America need to place significantly more attention on small business development and sustainment. Tax cuts will help but are not the solution to the problems facing small businesses.

After conducting dozens of meetings on Capitol Hill, this author concludes that the overwhelming number of Washington politicians are comfortable collaborating with a CEO of a billion-dollar corporation but uncomfortable with entertaining 100-owners of million dollar companies. While many perceive the reason for this distinction is that, as opposed to small businesses, big business can afford lobbyists and substantial campaign contributions. Jobenomics believes this perception is only partly accurate. The main reason involves Washington’s 20th Century big business mindset. Most politicians just do not understand the business/economic equation and naturally assume that big businesses produce the most jobs as well as high-paying jobs with lots of benefits. Both these assumptions do not hold water in the 21st Century marketplace. Politicians, who claim to understand the business/economic equation, most often view it through a big business lens. Few serial entrepreneurs are found inside the Washington beltway.

America needs to rejuvenate the small business entrepreneurial spirit and create a worldview that small and micro-businesses are a viable alternative to the decreasing number of high-paying full-time jobs. Women-owned and minority-owned businesses are deserving of far more attention than they

Based on a Wall Street Journal (WSJ) analysis of this Census Bureau data, “If the U.S. were creating new firms at the same rate as in the 1980s...more than **200,000 companies and 1.8 million jobs a year**” would have been created.¹⁵²

During the heydays of the 1970s, Bill Gates and Steve Jobs started Microsoft and Apple, two of the world’s most celebrated companies with a market capitalization (the value of the total number of shares multiplied by the present share price) of \$741 billion and \$911 billion respectively. One has to wonder if these companies would have started in our current austere startup environment?

According to a Census Bureau’s Business Dynamic Statistics press release on 20 September 2017, in 2015, 414,000 U.S. startup firms created 2.5 million new jobs, which is well below the pre-Great Recession average of 524,000 startup firms and 3.3 million new jobs per year for the period 2002-2006.¹⁵³ In 2015, job creation minus job destruction equaled **net** job creation of 3.1 million, which supports the Jobenomics hypothesis that net job creation is a critical statistic for policy-makers than just focusing on only new jobs. Other tidbits of the 2017 press release include:

- 5 million U.S. small businesses (1-499 employees) created 45% (1,400,711) of all net new jobs compared to 20 thousand large enterprises (500+ employees) that produced 55% (1,690,591) net new jobs.
- 4.5 million micro-businesses (1-19 employees) net job creation equated to 14% (434,203) of all net new jobs.
- Net job creation in urban areas was over twice the rate of rural communities, or 2.7% versus 1.2% respectively.

Jobenomics agrees with both the WSJ and Kauffman analyses. Moreover, the Jobenomics 20-part series, entitled President Trump’s New Economy Challenge¹⁵⁴ provides a detailed analysis why **the Trump Administration’s bold economic (4% GDP) and job creation (25 million new jobs) vision is likely to fall short** due to its concentration on big business rather than small business creation and sustainment. Small business is not only critical to net job creation; it is the primary determinant for GDP growth given the fact that big firms are increasingly looking at automation and outsourcing (to foreign workers or domestic contingency workers) to replace the conventional full-time labor force.

While the Jobenomics outlook for small and self-employed business is positive throughout 2018, it is less bright than it could be. Washington and corporate America need to place significantly more attention on small business development and sustainment. Tax cuts will help but are not the solution

¹⁵² Wall Street Journal, Sputtering Startups Weigh on U.S. Economic Growth, 23 October 2016, <http://www.wsj.com/articles/sputtering-startups-weigh-on-u-s-economic-growth-1477235874?mod=djem10point>

¹⁵³ U.S. Census Bureau, Startup Firms Created Over 2 Million Jobs in 2015, <https://www.census.gov/newsroom/press-releases/2017/business-dynamics.html>

¹⁵⁴ Jobenomics, President Trump’s New Economy Challenge, <https://jobenomicsblog.com/wp-content/uploads/2011/11/President-Trumps-New-Economy-Challenge-Series-6-February-%E2%80%93-4-April-2017.pdf>

to the problems facing small businesses. Proposed Administration's small business "association health plans"¹⁵⁵ will also help but yet are insufficient.

America needs to rejuvenate the small business entrepreneurial spirit and create a worldview that small and micro-businesses are a viable alternative to the decreasing number of high-paying full-time jobs. Women-owned and minority-owned businesses are deserving of far more attention than they receive today. Additionally, digitally-savvy Screenagers (Generation Z) are suited for starting micro-business tailored to meet the needs of the emerging digital economy and contingent labor force. If the 29.6 million American small businesses created or hired only one net new employee over the next several years, Trump's 25 million new jobs goal could happen in a much shorter timeframe than he currently envisions.

Thomson Reuters/PayNet Indices provide valuable insight into the health of small businesses.

The Thomson Reuters/PayNet Small Business Lending Index¹⁵⁶ measures the volume of new commercial loans and leases to small businesses. To create the Small Business Lending Index, PayNet tracks the borrowing activity by millions of U.S. small businesses as reported by the largest lenders.

The Thomson Reuters/PayNet Small Business Delinquency Index¹⁵⁷ measures small business financial stress and provides early warning of future insolvency.

Thomson Reuter-PayNet Small Business Indices

Small Business Lending Index



Small Business Delinquency Index



(31 – 90 Days Past Due)

January 2005 thru February 2018

Small business creditworthiness is critical to business expansion and job creation.

¹⁵⁵ The Daily Signal, Trump Rule Aims to Extend Health Care Option to 11 Million Uninsured, 4 January 2018, http://dailysignal.com/2018/01/04/trump-rule-aims-extend-health-care-option-11-million-uninsured/?utm_source=TDS_Email&utm_medium=email&utm_campaign=MorningBell%22&mkt_tok=eyJpIjoiWWpBMk5UZ3I0VE0wT0RrMSIsInQiOiJrZndGUlpcL01QUIBN1lxYnBBaDRLaGhMOWUzTCtTZHhd1RrbmF3SmU1XC9ZMElJN3pZb1Zwd20rZEdWNFpuM2tuVIRNaStCQVQzdmhQYTdDVUtoVjdLUTdBeDdXZ0kyZW1hNUZXOUlWbjlGWp5cEt1XC9wUG84SnhSdWUzZHB6bCJ9

¹⁵⁶ Thomson Reuters/PayNet Small Business Lending Index, <https://paynet.com/issues-and-solutions/all-paynet-products/small-business-lending-index-sbli/>

¹⁵⁷ Thomson Reuters/PayNet Small Business Delinquency Index, <https://paynet.com/issues-and-solutions/all-paynet-products/small-business-delinquency-index-sbdi/>

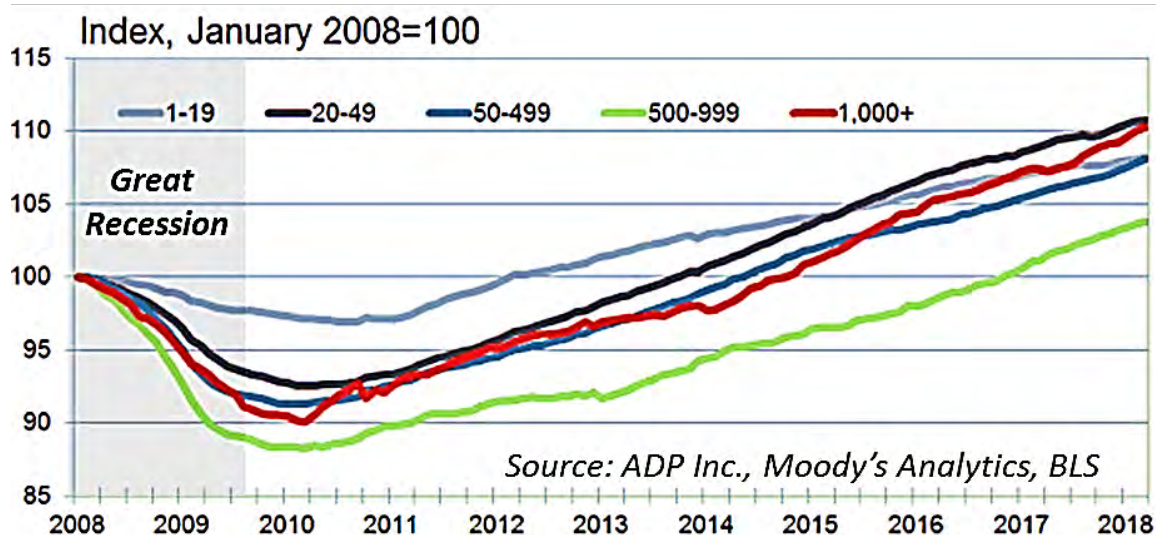
The Small Business Lending Index indicates that new loan originations to small businesses have increased slowly since the end of the recession but began decreasing in 2015—not a good early signal for GDP growth.

According to PayNet, “Because small businesses generally respond to changes in economic conditions more rapidly than larger businesses do, the Small Business Lending Index serves as a leading indicator of macroeconomic and industry trends.” The Small Business Delinquency Index is a “reliable predictor of small business financial stress, a statistically valid indicator of unemployment changes, and an advanced signal of business cycle inflection points.” The good news is that small business loan delinquencies (31 to 90 days past due) recovered from Great Recession highs and are relatively stable at low loan delinquency rates.

It is also a common misconception that small businesses, especially micro and self-employed businesses, are the most fragile.

Post-Recession Employment by Company Size

Total Non Farm Employment (in thousands)



According to ADP’s monthly situation report, as shown above, medium-sized and large corporations suffered greater downturns during the recession and slower recoveries than their small business counterparts. According to ADP data, as shown below, big businesses downsize rapidly during adverse financial times, whereas small businesses have to stay the course in order to stay in business.

Consequently the ratio of new jobs created by small business relative to big business was significantly higher over the last 10-years as opposed to the last 8¹/₄ years during the post-recession recovery. Over the last year, the small business advantage shrunk even further.

New Jobs Created by Company Size During and After Great Recession¹⁵⁸

Source: ADP Historical Data

	Pre Great Recession 1 Dec 2007 to 1 Apr 2018	Post Great Recession 1 Jul 2009 to 1 Apr 2018	Trump Administration 1 Jan 2017 to 1 Apr 2018
Large Business (500+)	2,097,381	4,557,900	891,158
Small Business (<500)	7,912,132	12,942,374	2,062,292
Ratio	1 to 3.8	1 to 2.8	1 to 2.3
Very Large Business (1000+)	1,844,199	3,337,202	597,085
Micro Business (1-19)	2,464,962	3,042,069	408,321
Ratio	1 to 1.3	1 to 0.9	1 to 0.7

As shown, small business creation is the best way to create millions of new jobs both during and after recessions.

- **Job Creation Since the Start of The Great Recession (1 December 2007 to 1 April 2018).** From the start of the Great Recession to today, small businesses created **79.0%** of all new American jobs.
 - Small businesses (less than 500 employees) created **3.8-times more jobs** as large businesses (over 500 employees).
 - Microbusinesses (less than 20 employees) created **1.3-times more jobs** than very large institutions (1,000+ employees).
- **Post-Great Recession Job Creation Comparisons (1 July 2009 to 1 April 2018).** Over the post-recession and recovery period, small businesses created **74.0%** of all new American jobs.
 - Small businesses (less than 500 employees) created **2.8-times more jobs** as large businesses (over 500 employees).
 - Microbusinesses (less than 20 employees) created **90% as many jobs** as very large institutions (1,000+ employees).
- **Trump Administration Job Creation (1 January 2017 to 1 April 2018).** Over the first 3-quarters/9-months of the Trump Administration, small businesses created **only 69.8%** of all new American jobs.
 - Small businesses (less than 499 employees) created **2.3-times more jobs** as large businesses (500+employees).
 - Microbusinesses (less than 20 employees) created **70% as many jobs** as very large institutions (1,000+ employees). Jobenomics projects that this decline will continue in the future due to the decreasing number of new starts. The Trump Administration and Republican Congress promises to reduce corporate taxation for small business, which will be helpful in reversing the downward trend, but tax reform alone will not fix the faltering micro-business challenge.

¹⁵⁸ ADP, National Employment Report, 4 October 2017, <http://www.adpemploymentreport.com/>

The Trump Administration has been primarily focused on big businesses (especially manufacturing) job recreation and reshoring. Jobenomics supports these important policies, but believes that the Administration needs to pay significantly more attention to startup, self-employed, micro and small business development—the primary employer of the majority of Americans, the creator of the majority of new jobs and the unquestionable engine of the U.S. economy.

A better balance between big and small business job creation is needed by Washington policy-makers both in the Administration and on Capitol Hill. In order for President Trump to achieve his bold economic and job creation vision of sustained 4% GDP growth and 25 million new jobs over the next decade, he cannot rely on big business alone, nor can he accomplish this alone without support from both sides of the aisle in Congress. Without a viable small business creation and sustainment strategy, the U.S. economy is unlikely to prosper as it did in the 20th Century. Small business creation is unquestionably the best way to create tens of millions of new jobs.

Dynamics of Churn: Establishment Birth/Deaths and Job Gains/Losses. Business churn is determined by the number of company births compared the number of company deaths. Employment churn is determined by the number of job gains created by expanding or opening businesses compared to job losses generated by contracting or closing businesses. Managing and supporting healthy churn dynamics is fundamental to economic and labor force expansion.

The BLS started reporting on U.S. establishment birth/death history in 1992. The BLS defines establishments as a physical location of a certain economic activity—for example, a factory, mine, store, or office. A single establishment generally produces a single good or provides a single service. An enterprise (a private firm, government, or nonprofit organization) can consist of a single establishment or multiple establishments. All establishments in an enterprise may be classified in one industry (e.g., a chain), or they may be classified in different industries (e.g., a conglomerate).

Quarterly U.S. Business Birth/Death History: Q3 1992 to Q2 2017

Source: BLS Business Employment Dynamics Summary, Table 8¹⁵⁹



Shown above are establishment births and deaths from Q3 1992 to Q2 2017 (latest BLS Data) by quarter. The general slope of both time series is upward, largely attributed to population growth.

¹⁵⁹ Bureau of Labor Statistics, Economic News Release, Table 9, Private sector establishment births and deaths, seasonally adjusted, http://www.bls.gov/web/cewbd/table9_1.txt

The more people in a population generally equates to more firms in a growing economy. The population in 1992 was approximately 255 million as opposed to 327 million today, an increase of 28% more citizens.

The spread between enterprise births and deaths usually widens during growth periods and shrinks during recessions. During both the 2001 and Great Recession deaths exceed enterprise births.

- Deaths exceeded births by the largest amount in Q1 2009 during the height of the Great Recession with a net loss of 50,000 establishments.
- The largest increase of births over deaths occurred in Q1 2012 in the recovery period with a net increase of 50,000 establishments.
- The single biggest change from a previous quarter in the last 93-quarters (23¼ -years), in either births or deaths, was in Q1 2016 with the loss of 26,000 of the number of new establishment births, from 246,000 births in Q4 2015 (the peak year during the last three decades) to 220,000 new establishments in Q1 2016.

Churn In Business Births/Deaths: Q3 2015 through Q2 2017

Source: BLS Business Employment Dynamics Summary, Table 8 ¹⁶⁰

Establish-ments	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Average
Births	242,000	246,000	236,000	242,000	240,000	239,000	240,000	239,000	240,500
Deaths	207,000	208,000	202,000	214,000	215,000				209,200
	207,000	208,000	202,000	214,000	215,000				31,300

Over the last 8 BLS-reported quarters (Q3 2015 to Q2 2017), business births averaged 239,000 births versus business deaths of 207,600 per quarter, for a net growth of 31,400 establishments. Note: By BLS design, the time series has a 3-month difference between deaths and births.

Churn In Net Job Creation: Q3 2015 through Q2 2017

Source: BLS Business Employment Dynamics Summary, Table 1 ¹⁶¹

Jobs	Establish-ments	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Average
Gains	Expanding	5,964,000	6,387,000	5,855,000	6,083,000	6,232,000	6,040,000	6,019,000	6,246,000	6,103,250
	Opening	1,360,000	1,464,000	1,284,000	1,370,000	1,457,000	1,415,000	1,309,000	1,358,000	1,377,125
		7,324,000	7,851,000	7,139,000	7,453,000	7,689,000	7,455,000	7,328,000	7,604,000	7,480,375
Losses	Contracting	5,695,000	5,573,000	5,685,000	5,847,000	5,760,000	5,760,000	5,521,000	5,879,000	5,715,000
	Closing	1,215,000	1,268,000	1,198,000	1,310,000	1,248,000	1,305,000	1,153,000	1,249,000	1,243,250
		6,910,000	6,841,000	6,883,000	7,157,000	7,008,000	7,065,000	6,674,000	7,128,000	6,958,250
Net Job Change		414,000	1,010,000	256,000	296,000	681,000	390,000	654,000	476,000	522,125

Over the last 8 BLS-reported quarters (Q3 2015 to Q2 2017), expanding/opening businesses averaged 522,125 more jobs per quarter than contracting/closing businesses.

¹⁶⁰ BLS, Business Employment Dynamics Summary, Table 8, Private sector establishment births and deaths, seasonally adjusted, retrieved 26 October 2017, <http://www.bls.gov/news.release/cewbd.t08.htm>

¹⁶¹ BLS, Business Employment Dynamics Summary, Table 1, Private sector gross job gains and losses, seasonally adjusted, retrieved 26 October 2017, <http://www.bls.gov/news.release/cewbd.t01.htm>

Churn of Small Business Creation and Destruction

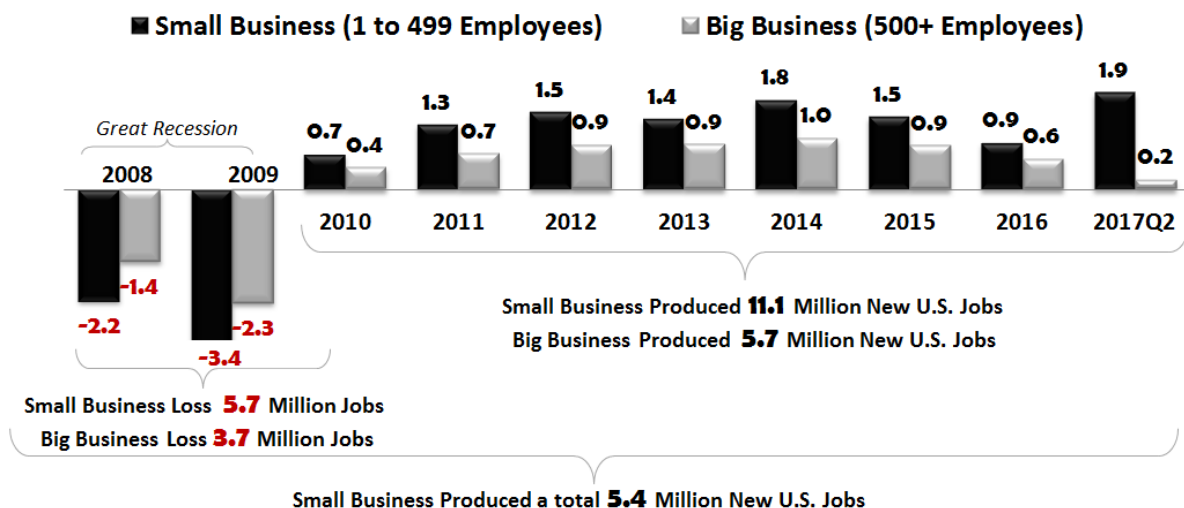
Employment by Expanding & Opening Establishments	7,480,375
Establishment Births	240,500
Average Job Gains per Establishment	31.1
Employment by Contracting & Closing Establishments	6,958,250
Establishment Deaths	209,200
Average Job Losses per Establishment	33.3

Using the averages from the two previous charts, several general findings can be deduced. The first finding is the average size of an expanding and opening establishment is 31.1 new jobs per establishment, which qualifies them as small establishments or businesses. Second, contracting and closing establishments lose an average of 33.3 jobs, which means contracting and closing establishments have slightly greater impact on the nation's employment/unemployment ratio since the average loss is 2.2 workers greater than expanding and opening establishments.

These two findings underpin the need for better national approach to managing business creation and mitigating business losses. The current American laissez-faire approach to business health will be determined by free market forces that will determine winners and losers. Jobenomics asserts that laissez-faire is both wrongheaded and irresponsible in today's competitive world and sclerotic economy. The reason that the Chinese economy has grown so rapidly is that the Chinese public/private partnership is focused on business development. In the past, the Chinese focused on big business development of state controlled enterprises and private sector establishments that raised 700 million urbanites out of poverty via a renaissance in manufacturing, industrial and infrastructure development. Today, the Chinese are aggressively pursuing small business development with emphasis on e-commerce to raise 500 million rural poor out of poverty.

U.S. big business gets too much attention. U.S. small business receives too little. Big business can take care of itself. Small businesses need nurturing to grow and survive. This is especially true of startup businesses. Given proper support for startup companies and self-employed businesses, small business employment could be significantly improved by increasing the numbers of businesses started and reducing the rate of small business failures.

U.S. Business Churn since the Great Recession



According to BLS Business Employment Dynamics (BES) data¹⁶², during the Great Recession and the six-months thereafter, small business lost 53% more jobs than big business (5.7M versus 3.7M respectively for a total of 9.4M jobs lost in 2008 and 2009).

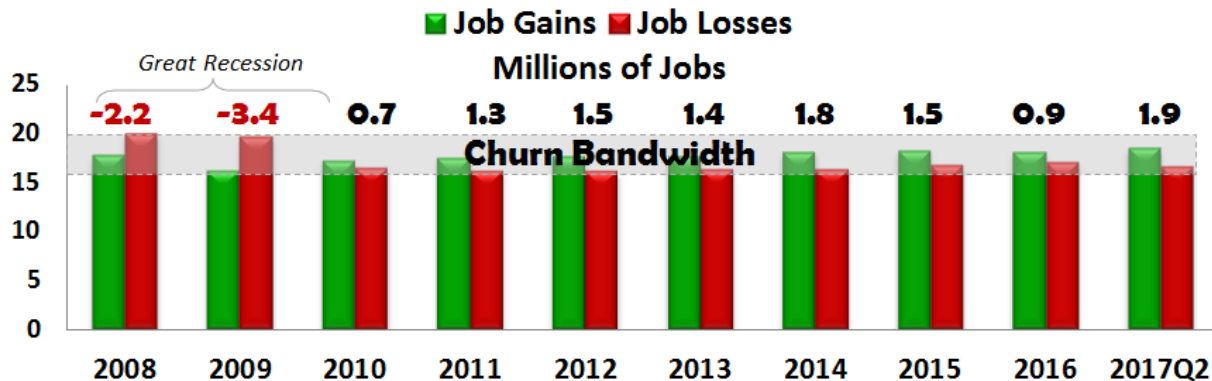
During the post-recession recovery starting on 1 January 2010 through Q2 2017 (latest data), small business gained 95% more jobs than big business (11.1M versus 5.7M respectively for a total of 14.7M jobs).

During the entire post-recession period between 1 January 2008 through Q2 2017, small businesses gained 5.5 million jobs whereas big businesses gained only 2.0 million jobs, a job creation ratio of **2.7-to-1** in favor of small business.

An analysis of business churn using ADP data supports the BES statistics cited in the above paragraph. According to ADP National Employment Report¹⁶³, during the Great Recession and the six-months thereafter, small business lost 64% more jobs than big business (5.7M versus 3.5M respectively for a total of 9.1M jobs lost in 2008 and 2009). During the post-recession recovery starting on 1 January 2010 to 1 April 2018 (9-months more data than the BES), small business gained 81% more jobs than big business (12.7M versus 7.0M respectively for a total of 19.7M jobs). During the entire post-recession period between 1 January 2008 and 1 April 2018, small businesses gained 7.0 million jobs whereas big businesses gained only 3.6 million jobs, a job creation ratio of **2.0-to-1** in favor of small business.

Small Business (1-499 Employees) Churn Dynamics

Source: BLS Business Employment Dynamics Data



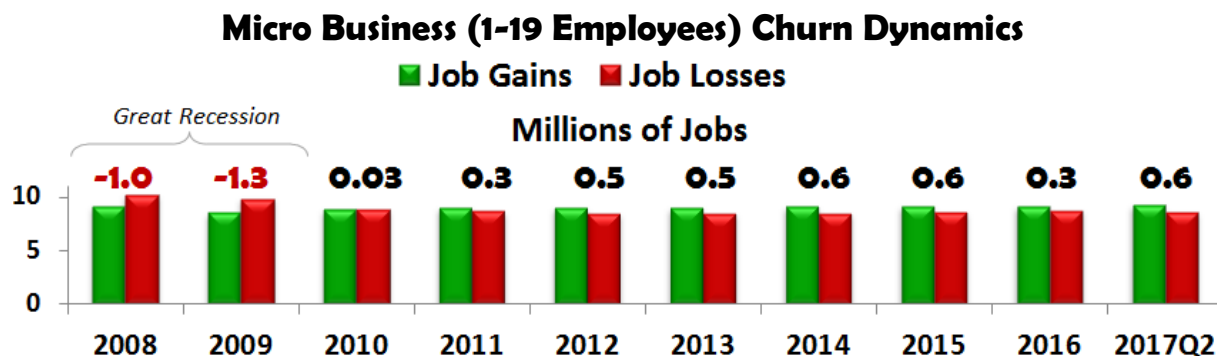
This chart examines small business (less than 500 employees) churn during and after the Great Recession as calculated by the BES. The highlighted area shows that the churn bandwidth is relatively small, ranging from a difference between 0.7 and 3.4 million job losses or gains in any one year.

¹⁶² U.S. Bureau of Labor Statistics, Business Employment Dynamics, Firm Size Gross Job Gains/Losses, retrieved 29 April 2017, <http://data.bls.gov/cgi-bin/surveymost?bd>

¹⁶³ ADP Research Institute, National Employment Report, April 2017, Historical Data, <http://www.adpemploymentreport.com/2017/April/NER/NER-April-2017.aspx>

During the post-recession era, U.S. small businesses generated between 715,000 and 1,802,000 new jobs per year. If the American policy-makers and decision-makers focused on supporting and mass-producing highly-scalable small businesses, they could easily generate double or triple the number of small businesses each year. It is important to note that during the peak year, U.S. small business produced 1.8 million jobs in 2014, but slid to 1.5 million in 2015 and further deteriorated to 0.9 million in 2016. However, during the first two quarters of the Trump Administration, small business created 1,948,000 more jobs than they lost.

As discussed in detail in Jobenomics' 20-part, 130-page blog series entitled "President Trump's New Economy Challenge", the new Administration can facilitate substantial change in improving the lending and regulatory environment for startup businesses and sustainment for existing small businesses. Providing lower taxes for so-called "pass-through businesses" (sole proprietorships, S Corporations and partnerships) that represent the vast majority of small businesses would be a significant leap forward in small business sustainment.¹⁶⁴



Microbusinesses employ 1 (self-employed) to 19 people and produced about 20% of all new jobs this decade. During the Great Recession, microbusinesses lost 2.3 million jobs but gained 3.4 million in the post-recovery period, averaging between 300,000 to 600,000 new jobs over the last six years. This compares very favorably with very large corporations that have large amounts of cash reserves to deal with business churn. During the Great Recession, very large corporations (1000+ employees) lost 3.1 million jobs but gained 4.4 million in the post-recovery period, averaging between 500,000 to 800,000 new jobs over the last six years. It is not understated to say that it is **simply amazing that self-employed and mom-and-pop business can compete toe-to-toe in job creation with the likes of Walmart, Yum Brands (KFC, Taco Bell, Pizza Hut), McDonald's, IBM and UPS—the top 5 largest U.S. employers.**

The Importance of Startup Businesses. The health of the U.S. economy is firmly rooted in an environment that promotes startup businesses. Fewer startups mean fewer small businesses, and fewer businesses that potentially would grow to medium and large scale enterprises.

¹⁶⁴ Jobenomics Blog, <https://jobenomicsblog.com/>

A startup business is defined as any entrepreneurial establishment that is birthed to fulfill a marketplace need. Startups come in various forms.

- **Scalable startups** are often spin-offs from major companies in order to take advantage of a niche or emerging opportunity. Scalable startups are born to be big. Achieving a “unicorn” status is the Holy Grail of scalable startups. A unicorn is a tech startup that has hit a \$1 billion valuation in a short period of time, usually 5 to 10 years. The top 10 rated U.S. unicorns by Forbes include: Uber (transportation services), Airbnb (lodging services), Palantir (data analytics software), Snapchat (social media), SpaceX (aerospace), Pinterest (social media), Dropbox (cloud storage), WeWork (coworking), Theranos (health care) and Intarcia Therapeutics (biotechnology).¹⁶⁵
- **Purchasable startups** are the specialty of the venture capital community that looks for specially and unique opportunities to underwrite, develop, patent and sell. In 2016, U.S. venture capitalists invested almost \$60 billion in 4,500 startups (a 20% drop from 2015).¹⁶⁶ Business incubators and universities are great sources of innovative research and human capital for these kinds of startups.
- **Large company startups** are often associated with companies that specialize in franchises or licensed-companies. The food service industry serves as a good example. Over the last decade (Q3 2006 to Q3 2016, latest data), the BLS reports that the U.S. added 95,189 new establishments (restaurants, fast food businesses, pubs, food service companies, mobile food services, etc.) in this industry that is comprised of mostly small business enterprises.¹⁶⁷
- **Social startups**, unlike scalable startups, are oriented to making a different kind of impact and are likely to be non-profits. There are 1.5 million registered nonprofit enterprises in the United States. A social enterprise is a company that’s core mission is to benefit and improve society, communities or environment. Unlike a charity, a social enterprise is still a business looking to run and grow independently and make a profit. Examples include businesses that concentrate on education, employment, skills, health care and community development.
- **Personal small business startups** are overwhelmingly the largest form of new enterprises that are oriented to providing a living or supplemental income for individuals who seek an independent lifestyle. Today, there are 29.6 million American small businesses according to the SBA. This number is likely to expand greatly with next generation workers who tend to be more entrepreneurial than older generations and seek careers in the emerging digital economy. The rise of the contingent workforce (described in detail later in this report) could increase the number of startup businesses since good paying jobs in big business are increasingly difficult to find.
- **Self-employed startups** are for those enterprising individuals who seek independence and self-sufficiency. Self-employed startups can be either incorporated or unincorporated nonemployer businesses. According to the BLS, as of 1 April 2018, there are 15 million self-employed individuals in the United States. Jobenomics anticipates that these numbers should easily triple

¹⁶⁵ Forbes, The Unicorn List, <http://fortune.com/unicorns/>

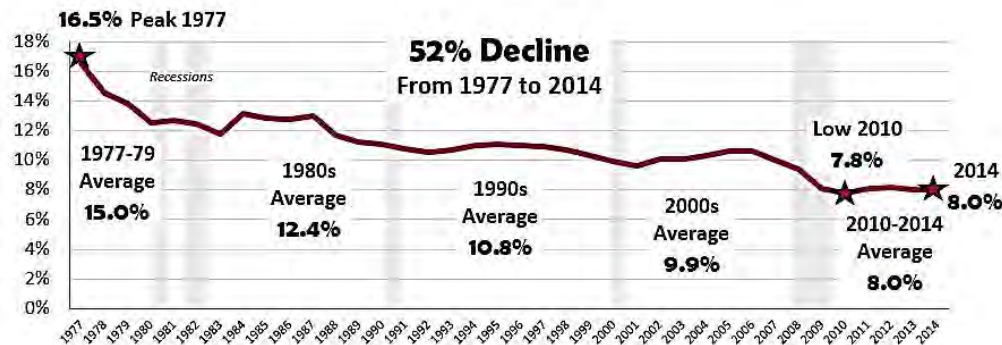
¹⁶⁶ PWC, <http://www.pwc.com/us/en/press-releases/2017/moneytree-report-q4-2016.html>

¹⁶⁷ BLS, NAICS 72 Accommodation and food services, Number of Establishments, 29 April 2017, http://data.bls.gov/timeseries/ENUUS00020572?data_tool=XGtable

or quadruple in the emerging digital economy. Apps developers and Uber drivers serve as excellent examples. Today, 800,000 new mobile phone apps developers are joining the global apps community each year.¹⁶⁸ In 2015, Uber added 167,000 new U.S. ride-hailing drivers.

Startups (Less than 1-Year Old) As a Percentage of All U.S. Firms

Source: U.S. Census Bureau, Business Dynamics Statistics¹⁶⁹



Unfortunately, American startups are facing difficult headwinds with excessively burdensome government regulations, an austere lending environment, minimal support from corporate tech giants, and predatory pricing from big retailers and service companies.

In terms of new starts (firms less than 1-year old), the BLS reports that the **United States is now creating startup businesses at historically low rates**, down from 16.5% of all firms to 8% in 2014 (latest available data on new starts).¹⁷⁰ Based on a Wall Street Journal (WSJ) analysis of this recently released BLS report's data, "If the U.S. were creating new firms at the same rate as in the 1980s that would be the equivalent of more than **200,000 companies and 1.8 million jobs a year.**"¹⁷¹ The WSJ also reports that share of employment at firms less than 1-year old has slipped from nearly 4% to about 2% of private-sector jobs from the 1980s to today.

According to a Kauffman Foundation analysis and study of the BLS/Census Bureau Business Dynamic Statistics data, U.S. startup activity hit its lowest point in 20-years in 2013.¹⁷² Encouragingly, 2014, 2015 and 2016 showed growth in startup activity, which is a positive sign for the economy. However, the study also warns "Despite the recent positive trend, new businesses with employees—those creating jobs for people besides the entrepreneur—are still in a long-term decline compared to levels in the 1980s." Kauffman also states that net job growth occurs in the U.S. economy only through startup firms, and counter to conventional wisdom, existing firms are net job destroyers.

¹⁶⁸ Vision Mobile, Developer Megatrends H1 2015, June 2015, <https://www.visionmobile.com/reports/developer-megatrends-h1-2015>

¹⁶⁹ U.S. Census Bureau, Business Dynamics Statistics, Firm Characteristics Data Tables, Firm Age, retrieved 5 November 2016, https://www.census.gov/ces/dataproducts/bds/data_firm.html

¹⁷⁰ BLS, Business Employment Dynamics Summary, 27 January 2016, Table 8, Private sector establishment births and deaths, seasonally adjusted, <http://www.bls.gov/news.release/cewbd.t08.htm>

¹⁷¹ Wall Street Journal, Sputtering Startups Weigh on U.S. Economic Growth, 23 October 2016, <http://www.wsj.com/articles/sputtering-startups-weigh-on-u-s-economic-growth-1477235874?mod=djem10point>

¹⁷² Kauffman Foundation, The Kauffman Index of Startup Activity: 2017, May 2017, <http://www.kauffman.org/kauffman-index/reporting/startup-activity>

Furthermore, during recessionary years, job creation at startups remains stable, while net job losses at existing firms are highly sensitive to recessionary business cycles.

An earlier landmark Kauffman study, entitled “The Importance of Startups in Job Creation and Job Destruction”, states that most city and state government policies that look to big business for job creation are doomed to failure because they are based on unrealistic employment growth models. “It’s not just net job creation that startups dominate. While older firms lose more jobs than they create, those gross flows decline as firm’s age. On average, **one-year-old firms create nearly 1,000,000 jobs, while ten-year-old firms generate 300,000**. The notion that firms bulk up as they age is, in the aggregate, not supported by data.”¹⁷³

From a Jobenomics perspective, the United States does a poor job planning, managing and supporting business and employment churn dynamics. For the most part, U.S. policy-makers and decision-leaders rely on the principle of free-market dynamics coupled with a laissez-faire approach to business and job creation. To a greater degree than big business, small business is struggling from the laissez-faire U.S. approach to business and job creation. By in large, small business is largely ignored by policy-makers.

After several dozen meetings on Capitol Hill, Jobenomics concludes that the Washington establishment’s approach to small business and job creation is between lackluster and nonexistent. The reasons are many. Too few politicians have a business background. Those that do are usually from big business. Whereas entrepreneurs embrace risk, policy-makers are risk adverse. Perhaps the biggest reason is due to money. Small businesses generally do not have well-funded Political Action Committees or lobbyists. Perhaps the U.S. government’s laissez-faire approach to American small business and job creation will change now that the new President is a businessman.

Startup Businesses. Business startups are the seed corn of the U.S. economy. Creating a new business startup requires different skills from running or growing a small business. Unfortunately, America’s approach to nurturing these skills is ad hoc at best.

Demographics are one of the most important startup factors affecting entrepreneurship, job creation and innovation. According to the Kaufmann Foundation, a leading U.S. foundation focused on education and entrepreneurship, “business startups account for about 20% of US gross (total) job creation while high-growth businesses (which are disproportionately young and small) account for almost 50% of gross job creation.”¹⁷⁴ ¹⁷⁵ Quoting from U.S. Senator David Vetter in the foreword of the 2016 Kauffman Index of Startup Activity National Report,

¹⁷³ Kauffman Foundation, The Importance of Startups in Job Creation and Job Destruction, Last Paragraph, 9 Sep 2010, <http://www.kauffman.org/what-we-do/research/firm-formation-and-growth-series/the-importance-of-startups-in-job-creation-and-job-destruction>

¹⁷⁴ Kauffman Foundation, Entrepreneurship Policy Digest, The Economic Impact of High-Growth Startups, 10 October 2016, <http://www.kauffman.org/what-we-do/resources/entrepreneurship-policy-digest/the-economic-impact-of-high-growth-startups>; and The Journal of Economic Perspectives, The Role of Entrepreneurship in US Job Creation and Economic Dynamism, Summer 2014, <http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.28.3.3>

¹⁷⁵ The Kauffman Index of Entrepreneurship series consists of the Kauffman Index of Startup Activity (measures business startup activity from 1997 to 2017 for the United States), the Kauffman Index of Main Street Entrepreneurship (measures

“We (Americans) have seen a heartening increase in the level of startup activity in the United States, despite the numerous headwinds entrepreneurs face. While these recent trends are certainly good news, longer term trends are still troubling. The levels of startup activity in the nation are still below the prerecession peak, and entrepreneurship continues its long-term decline compared to previous decades....For a small business, capital is king. It affects every aspect of entrepreneurship from launch to long-term growth....lack of capital can also have disastrous effects on communities, as those that don’t already have a vibrant entrepreneurial ecosystem experience difficulty in attracting new capital and spurring growth. Disadvantaged communities, in particular, can be trapped in an economic malaise, as the lack of available capital accentuates the already slow growth many of them experience, and makes it even harder for local entrepreneurs to address local needs and build the local support networks that are so vital to the entrepreneurs that follow.”¹⁷⁶

The Kauffman Startup Index is a comprehensive indicator of new business creation, covering a universe of approximately five million American companies. The Index provides valuable data on entrepreneurs and the startups they create. Rate of New Entrepreneurs measures the percentage of the adult, non-business-owner population that starts a business each month. It captures all new business owners, including those who own incorporated or unincorporated businesses and those who are employers or non-employers.

According to the 2017 Kauffman Index of Startup Activity report, while startup activity is up the last three years from a 20-year historical low in 2013, overall startup activity is still well below the levels before the Great Recession, and startups with employees are still on a long-term decline compared to historical levels. The recovery of startup activity in the United States in the last three years has been driven mostly by more people entering entrepreneurship and more of them entering out of choice (i.e., contingent workers) rather than necessity.

- In 2016, approximately 6.5 million U.S. adults switched from traditional employer-employee relationships to self-employed business ownership.
- In 2016, an average of 0.31% out of the adult population (310 out of 100,000 adults) created new businesses each month, which equates to 6,480,000 new businesses per year.
- In 2016, the proportion of new entrepreneurs driven primarily by “opportunity” rather than “necessity”—necessity entrepreneurs defined as new entrepreneurs who were previously unemployed and looking for a job—reached 86.3% and is now more than twelve percentage points higher than it was in 2009 at the height of the Great Recession.

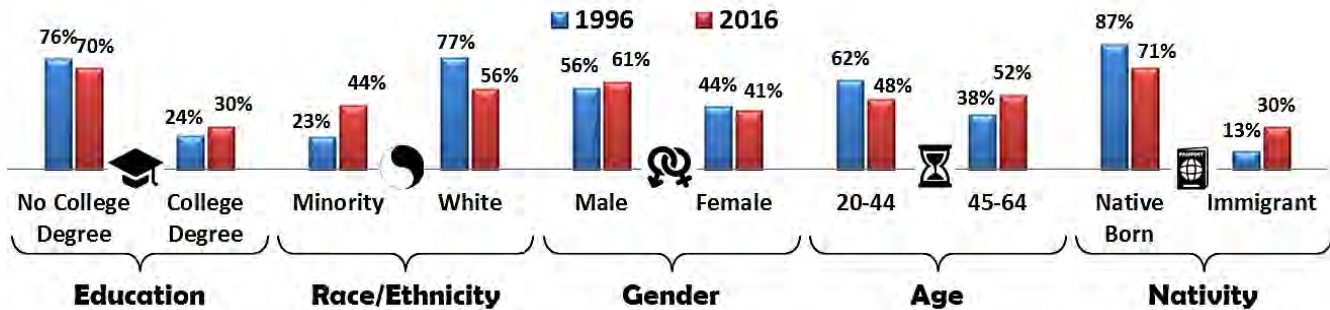
established small business activity that focuses on businesses more than five years old with less than fifty employees from 1997 to 2015 for the United States) and the Kauffman Index of Growth Entrepreneurship (the latest in the series that focuses on entrepreneurial business growth from 1982-2017 in the United States).

¹⁷⁶ Kauffman Foundation, The Kauffman Index of Startup Activity: 2016, Foreword by Senator David Vitter, August 2016, http://www.kauffman.org/~media/kauffman_org/microsites/kauffman_index/startup_activity_2016/kauffman_index_startup_activity_national_trends_2016.pdf

- Older adults (aged 55 to 64) grew from 14.8% of new entrepreneurs in 1996 to 25.5% of all new entrepreneurs in 2016.¹⁷⁷
- Immigrant entrepreneurs now account for almost 30.0% of all new entrepreneurs in the United States, up from 13.3% in 1996.

Rate and Composition of New U.S. Entrepreneurs

Source: Kauffman Startup Index 2017: National



The demographic synopsis of the Kauffman National Trends in Rate of New Entrepreneurs is shown above according to Education, Race, Gender, Age and Nativity.

- **Educational Level.** Substantially more business startups are led by entrepreneurs with less than a college degree, but those with a college degree have increased by 9 percentage points over the last decade. Jobenomics believes that the rate of college-level startup improvement is largely due to the younger generations (Generation Y/Z) outlook being much more entrepreneurial and anti-institutional (do not seek a traditional corporate lifestyle) than older generations (Generation X and Baby Boomers).
- **Race and Ethnicity.** Whites still dominate the small business startup landscape largely because there are many more Whites in the labor force than minorities. However, the percentage growth of Minorities increased by 21 percentage points over the last decade with a corresponding decline in White startups.
 - Hispanics increased from 10.01% to 24.12%, a gain of 14.11%
 - Asians increased from 3.42% to 7.59%, a gain of 4.17%
 - Other (mainly Multiracial, Native Americans and Islanders) increased from 1.02% to 3.46%, a gain of 2.44%
 - Blacks increased from 8.43% to 9.24%, a gain of 0.81%
 - Whites **decreased** from 77.12% to 55.59%, a **loss** of 21.53%

While minority stats have been impressive over the last decade, much more attention needs to be placed on accelerating minority-owned businesses. The 2017 Kauffman Foundation's Zero

¹⁷⁷ Kauffman Foundation, The Kauffman Index of Startup Activity: 2017, May 2017, <http://www.kauffman.org/kauffman-index/reporting/startup-activity>

Barriers report recommends that the United States focuses on minority entrepreneurship as a means to accelerate the growth of minority-owned businesses. Minorities own half as many businesses as White and their businesses tend to start smaller and stay smaller. “if minorities started and owned businesses at the same rate as non-minorities do, the United States would have more than **1 million additional employer businesses** and approximately an **extra 9.5 million jobs in the economy.**”¹⁷⁸

- **Gender.** Surprisingly, American women have underperformed over the last decade in business creation, dropping from 44% in 1996 of the adult population to 41% in 2016. The Rate of New Entrepreneurs in 2016 is 0.39% (390 out of 100,000) for men and 0.23% (230 out of 100,000) for women. Overall, men are twice as likely to start businesses as women, **costing the United States approximately 1.7 million additional businesses** that could produce over **10 million new jobs.**¹⁷⁹

From a Jobenomics perspective, women are the greatest untapped asset in America. The Jobenomics Women-Owned Business initiative is paramount to energizing the U.S. labor force and economy. The decade of 2010’s was supposed to be the Decade of Women-Owned Businesses for a number of reasons. (1) The Great Recession has encouraged many women to join the workforce, due to necessity or desire, of which many are college educated. (2) Male-dominated industries, like construction and manufacturing, aren’t likely to return to pre-recession levels for many years to come. (3) Social norms are changing, allowing greater participation of women in business. (4) Many of the future service-related jobs, like elder-care, are likely to be dominated by women. (5) Women-owned businesses emphasize small businesses, rather than large, and are more likely to experience growth in the next decade. (6) The traditional “nuclear” families, with a male-head of household, have given way to households headed by women. (7) Most importantly, the rate of employment growth and revenue of women-owned businesses had outpaced the economy and male-dominated businesses for the last three decades.

The reason for the gender gap in entrepreneurialism is both ethnological (cultural differences) and structural. Ethnological factors include development, work-life balances and historical biases and characteristics. Structural factors include such things as mentorship and startup financing. Perhaps the biggest factor is the lack of a national initiative to promote women-owned-businesses as a viable alternative to women-in-business.

Regardless of the factors, women’s contribution to GDP growth has been significant since they began entering the U.S. labor force in mass in WWII. According to the Center for American

¹⁷⁸ Kauffman Foundation, State Of Entrepreneurship 2017, Zero Barriers-Three Mega Trends Shaping the Future of Entrepreneurship, http://www.kauffman.org/what-we-do/resources/state-of-entrepreneurship-addresses/2017-state-of-entrepreneurship-address?utm_source=newsletter&utm_medium=email&utm_campaign=iaw_12_31_2017

¹⁷⁹ Ibid

Progress, U.S. GDP would be roughly 11% lower (\$1.7 trillion in 2012) today if women had not increased their working hours over the last three decades.¹⁸⁰

The best way to turn today's sclerotic economic recovery into a robust economic recovery is to engage America's largest and best educated demographic (women) in small business and job creation. Thankfully, women are entering the workforce at greater and greater rates. As shown below, since President Trump took office, 919,000 working-age women entered the U.S. labor force compared to 942,000 men. Adjusted for population size, employment of women increased last year by 2.0% compared to only 1.8% for men.

Last Year's Employment Growth by Sex¹⁸¹

Age 25 to 54 years	Working Age Employment		Total	Growth
	1 Jan 2017	1 Apr 2018	New Jobs	Rate
Women	45,485,000	46,404,000	919,000	2.0%
Men	52,705,000	53,647,000	942,000	1.8%

Source: BLS CPS Household Data, Table A-8

- **Age.** Kauffman's data on age is counterintuitive, showing a 14% decrease in the rate of entrepreneurship in younger adults (aged 20 to 44) and a 14% increase in older adults (aged 45 to 65).
 - Ages 20 to 34 increased from 24.37% in 1996 to 34.27% in 2016, a **loss** of 9.90%
 - Ages 35 to 44 increased from 27.36% in 1996 to 24.04% in 2016, a **loss** of 3.32%
 - Ages 45 to 54 increased from 23.55% in 1996 to 26.13% in 2016, a **gain** of 2.58%
 - Ages 55 to 64 increased from 14.83% in 1996 to 25.46% in 2016, a **gain** of 10.63%

The reason has nothing to do with questioning the widespread entrepreneurial aspirations of new workforce entrants, but understanding the impact of decades of decreasing birth rates and the challenges of an aging population.

Another germane reason involves a tepid U.S. economy and eroding middle-class incomes, which are forcing older Americans to stay in the workforce much longer than originally planned. Since employers are reluctant to hire anyone over 50-years of age, many older Americans have turned to starting their own business as way to earn a living or supplement underfunded retirement income. In addition, the financial strength of older Americans, rather than financial weakness of younger Americans, makes a huge difference in startup activity.

¹⁸⁰ Center for American Progress, The Economic Importance of Women's Rising Hours of Work, 15 April 2014, <https://www.americanprogress.org/issues/economy/reports/2014/04/15/87638/the-economic-importance-of-womens-rising-hours-of-work/>

¹⁸¹ BLS, CPS Household Data, Table A-8, Employed persons by age, sex, marital status, multiple jobholding status, and self-employment, seasonally adjusted, 26 Oct 2017, <https://www.bls.gov/web/empsit/cpseea08.htm>

Nativity. The United States attracts the best and brightest people from other countries to study, work, become citizens and start businesses. In 2016, immigrant startup business entrepreneurs represent 30%, up from 13% in 1996. From a Jobenomics standpoint, this is a powerful statistic considering the far-reaching contribution of foreign-born immigrants and their children to American economic growth and prosperity.

According to a 2011 report by the Partnership for a New American Economy, immigrants or their children founded more than 40% of U.S. Fortune 500 companies—a compelling reason why high-skilled immigrants are so critical to U.S. economic growth. About 20% of the newest Fortune 500 companies founded between 1985 and 2010 have an immigrant founder. Many of America's greatest brands, Apple, Google, AT&T, Budweiser, Colgate, eBay, General Electric, IBM, and McDonald's, owe their origin to a founder who was an immigrant or the child of an immigrant. The Fortune 500 companies that boast immigrant or children-of-immigrant founders have combined revenues of \$4.2 trillion. \$1.7 trillion of that amount comes just from the companies founded by immigrants.¹⁸²

In the United States, legal immigration is largely a family-based system. From an economic and labor force perspective, the United States needs to find ways to attract and retain foreign-born immigrants via a legal skills-based immigration system, also called a talent-based, merit-based or points-based systems used by many countries.

Skills-based immigration systems assess skilled individuals based upon criteria such as age; past experience; language ability, educational and technical skills; entrepreneurship and ability (technical and financial) to start a business; and "adaptability" to assimilate into the host country.

Countries like Australia's General Skilled Migration, the United Kingdom's Highly Skilled Migrant Programme, Canada's Express Entry system, and New Zealand's Skilled Migrant system are legal skills-based systems. Each of these countries uses "point calculators" to determine eligibility. For the most part, these calculators are merits-based, but some add points for having a close family relative living and productively working in the country. Many of these countries use their skills-based to "fast-track" highly-skilled immigrants to permanent resident status, whether it is a permanent work visa (aka Green Card in the United States) or citizenship.

Australia uses its General Skilled Migration (aka Skillselect) program to attract migrants to alleviate general labor shortages and attract tradespeople and skilled professionals. Skillselect's point calculator evaluate potential visa applicants (work visas, student visas, etc.) via a series of questions that start with age, English competency (a score at least a "6" on all four components of the International English Language Testing System examination), post-secondary education or trade qualification (suitable to an assessment of a relevant Australian assessing authority), and

¹⁸² Partnership for a New American Economy, The "New American" Fortune 500, June 2011, <http://www.renewoureconomy.org/sites/all/themes/pnae/img/new-american-fortune-500-june-2011.pdf>

necessary work experience in an applicants nominated occupation (as listed on the Australian Skilled Occupation List).¹⁸³

According to a recent tweet from President Trump, "The merit-based system is the way to go. Canada, Australia!"¹⁸⁴ According to the Government of Canada, "We choose skilled immigrants as **permanent residents** based on their ability to settle in Canada and take part in our economy. There is a new system to manage how people with skilled work experience apply to immigrate to Canada. It is called Express Entry."¹⁸⁵ Express Entry is used to manage applications for permanent residence under these federal economic immigration programs:

- the Federal Skilled Worker Program (allows skilled professionals with significant work experience, employability, and adaptability to gain legal permanent residence in Canada),
- the Federal Skilled Trades Program (allows skilled workers with experience in a selected number of trades to gain legal permanent residence in Canada), and
- the Canadian Experience Class (a popular route to permanent residence for migrants with previous Canadian work experience, such as international students).

Most of the 6.2 million open job positions in the United States are likely to remain unfilled due to a lack of domestic skills. While Jobenomics advocates implementation of a national lifelong applied learning and skills-based training/certification program to upgrade the skills of domestic workers, the United States also needs to recruit and retain global talent since the American education system is not producing the kind of workforce skill sets necessary for a competitive society.

On 2 August 2017, President Trump on Wednesday endorsed a new bill in the Senate sponsored by Republican Sens. Tom Cotton (Ark.) and David Perdue (Ga.) that will create a "merit-based" immigration system that would put a greater emphasis on job skills than family relationships. Unfortunately, the bill also proposes to reduce the annual distribution of green cards awarding permanent legal residence from 1 million to only 500,000. While Jobenomics agrees with a skills-based merit-based system, Jobenomics disagrees with cutting the pathway to legal residence by half. If America wants the world to know that we are a nation of immigrants who welcome fellow legal immigrants, our policy should double the number of green cards as opposed to cutting by 50%. In its current form, this bill is not likely to make it into law.

The United States spends much more money and time per student than most countries. Unfortunately, these expenditures do not translate into better performance or competitiveness.

¹⁸³ Australia Skilled Immigration Points Calculator, <http://www.workpermit.com/immigration/australia/australia-skilled-immigration-points-calculator>

¹⁸⁴ USA Today, Trump renews praise for Canada's 'merit' immigration system, 3 March 2017, <http://www.usatoday.com/story/news/world/2017/03/03/donald-trump-praises-canada-immigration-system-again/98685784/>

¹⁸⁵ Government of Canada, Immigrate as a skilled worker through Express Entry, <http://www.cic.gc.ca/english/immigrate/skilled/index.asp>

According to the Organization for Economic Cooperation and Development¹⁸⁶, “students in the United States have particular weaknesses in performing mathematics tasks with higher cognitive demands, such as taking real-world situations, translating them into mathematical terms, and interpreting mathematical aspects in real-world problems.” Among the 34 advanced economies in the OECD, the United States ranked 17th in reading, 20th in science and 27th in math.

The Deferred Action for Childhood Arrivals (DACA) program was established by an Executive Order from President Obama in June 2012 to protect children of illegal immigrants from being deported. The program was deemed “unconstitutional” by Attorney General Jeff Sessions, and formally rescinded by the Trump administration in September 2017 with the caveat that implementation be delayed by six months to give Congress enough time to deal with the disposition of nearly 800,000 DACA recipients (called Dreamers) who currently receive temporary deportation protection and work permits.

According to many accounts, including the left-leaning New York Times, report that an “exasperated” President Trump is earnestly looking for a way to allow Dreamers to remain in the United States legally. From a Jobenomics standpoint, instituting a Merits-Based (also commonly referred as talent-based, skills-based or points-based) DACA program may be a way out of the current humanitarian/constitutional conundrum and worthy of consideration by Congress.

DACA allowed immigrants who entered the country illegally as children to receive a renewable 2-year period of deferred action from deportation and eligibility for a work permit. In order to qualify, Dreamers came out of the shadows, paid a fee, passed background checks, received Social Security cards and work permits under the promise of government protection. The majority of Dreamers are currently in school or working. Some are on active duty in the U.S. armed forces. Others have even started their own business.

For the most part, Dreamers are productively engaged in pursuing the American dream. According to an August 2017 survey by the Center of American Progress, most of the Dreamers are presently in their 20s and about 80% arrived when they were 10 or younger. For the most part, these Dreamers are more inculcated with American culture than their “home” countries. Consequently, these Dreamers should have established a track record that would make a Merits-Based DACA program feasible. Merits-Based Immigration has been endorsed by the President and is attractive to many Republican and Democrat legislators.

A Merits-Based DACA program would “vet” Dreamers into three general categories: Keeper, High Potential, and Deportable. Keepers would consist of highly talented and skilled candidates that would be granted Green Cards (a permit allowing a foreign national to live and work permanently in the U.S.). The High Potential cadre would be granted extensions of the temporary work permits that they already have been granted under DACA. The Deportable category would consist of criminals, gang members and those that have chosen perpetual public assistance over workfare.

¹⁸⁶ OECD, <https://www.oecd.org/unitedstates/PISA-2012-results-US.pdf>

Instituting a Merits-Based DACA vetting program could be relatively straightforward. For example, those serving in the U.S. armed forces could be granted a Green Card upon an honorable discharge. Business owners, college grads with high GPAs or critical STEM skills, and high-performance employees of reputable corporations could also qualify as Keepers. On the other end of the spectrum, online background checks of police and welfare records could provide justification for deportation. All others would likely fall in the High Potential category. People in this category could be given a finite amount of time to prove their potential via employment or special programs involving public or civil service to their communities.

Instituting a Merits-Based DACA program may also be worthy of consideration by Congress as a potential template for the parents of these children (aka DAPA, a proposed expansion of DACA), other productive undocumented immigrants, as well as a framework for comprehensive immigration reform.

A merits-based immigration system and comprehensive immigration is imperative for two major reasons: (1) the U.S. economy will be highly dependent on integrating and enabling the Hispanic community that will be the largest minority demographic as the United States transitions from a majority-minority to a minority-majority nation status within the next 25-years, and (2) to compete on the world's stage, the United States must attract and retain the best and brightest people from other countries to study, work, become citizens and start businesses via a merit-based immigration system.

Despite all the political rhetoric about U.S. immigration, comprehensive immigration reform, illegal aliens/undocumented workers and legal immigration, the American populace is mostly uniformed or undereducated about the importance of attracting the best and brightest people from other countries to study, work, become citizens and start businesses in the United States.

Most Americans would be surprised to find that there are 26,258,000 foreign-born persons in the U.S. labor force, comprising 16.7% of the total 157,130,000 American workforce (49% Hispanics, 24% Asian, 18% White and 9% Black) as of 2015. The foreign-born include legally-admitted immigrants, refugees, temporary residents such as students and temporary workers **and** undocumented immigrants.¹⁸⁷

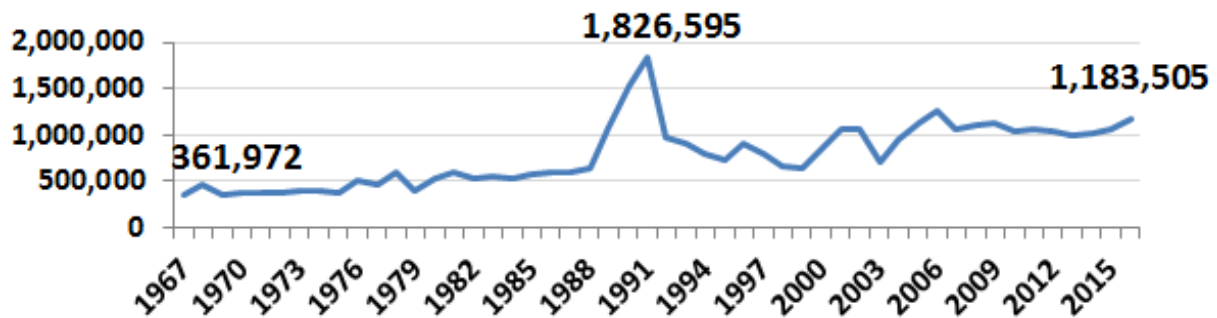
The U.S. Department of Homeland Security (DHS) estimates the unauthorized immigrant population is 11.4 million up from 8.5 million in 2000 and 2-4 million in 1980.¹⁸⁸ Consequently, there are approximately 15 million legal foreign-born U.S. residents that are increasing at a rate of 1-million people per year.

¹⁸⁷ BLS, Labor Force Characteristics of Foreign-born Workers Summary, 19 May 2016 (latest report retrieved July 2017) <https://www.bls.gov/news.release/forbrn.nr0.htm>

¹⁸⁸ DHS, Estimates of the Unauthorized Immigrant Population Residing in the United States: January 2012 (latest report retrieved July 2017), https://www.dhs.gov/sites/default/files/publications/Unauthorized%20Immigrant%20Population%20Estimates%20in%20the%20US%20January%202012_0.pdf

Persons Obtaining Lawful U.S. Permanent Resident Status

Source: U.S. Department of Homeland Security, 2016 Yearbook of Immigration Statistics¹⁸⁹



There were 1,183,505 new lawful permanent U.S. residents in 2016 (latest data from the Department of Homeland Security).

After immigrating to the United States, legal permanent residency (green card holder) is the first necessary step to becoming a U.S. citizen—the highest status of citizenship attainable. Being a valid green card holder allows a person to permanently reside in the United States, have lawful rights to work, and petition for family members to receive green card status. After 5+ years of good legal standing, a green card holder can apply for U.S. citizenship (naturalization). Other ways of becoming a citizen is by being born in the United States (aka “anchor babies”), being born overseas to a United States Citizen parent, living in the United States as a child when a parent undergoes naturalization, and joining the United States armed forces.

In order to become a permanent U.S. resident, one must first come to the United States. According to the U.S. State Department, a citizen of a foreign country who seeks to enter the United States generally must first obtain a U.S. visa, which is placed in the traveler’s passport, a travel document issued by the traveler’s country of citizenship.¹⁹⁰ While there are about 185 different types of visas, there are two main categories of U.S. visas: Immigrant Visas (IM) and Nonimmigrant Visas (NIV).

- An Immigrant Visa is issued to a person wishing to live permanently in the United States.
- A Nonimmigrant Visa is issued to a person with permanent residence outside the United States, but wishes to be in the United States on a temporary basis such as tourism, medical treatment, business, temporary work and/or study.

¹⁸⁹ U.S. Department of Homeland Security, The 2016 Yearbook of Immigration Statistics, Table 1. Persons Obtaining Lawful Permanent Resident Status: Fiscal Years 1820 To 2016, retrieved 20 April 2018, <https://www.dhs.gov/immigration-statistics/yearbook/2016/table1>

¹⁹⁰ U.S. Department of State, Bureau of Consular Affairs, U.S. Visas, Report of the Visa Office 2017, Immigrant and Nonimmigrant Visas Issued at Foreign Service Posts: Fiscal Years 2013 – 2017, retrieved 20 April 2018, <https://travel.state.gov/content/dam/visas/Statistics/AnnualReports/FY2017AnnualReport/FY17AnnualReport-Table1%20.pdf>

Categories of Immigrant Visas (IM) Leading To Permanent Residency

Source: U.S. Department of State, Bureau of Consular Affairs		
Family-Based		
Immediate Relatives	254,430	45%
Family Sponsored Preference	212,155	38%
Vietnam Amerasian Immigrants	36	0%
Subtotal	466,621	83%
Employment-Based		
Employment-Based Preference	23,814	4%
Special		
Diversity Immigrants (aka "The Lottery")	49,067	9%
Special Immigrants (e.g., certain Iraqis or Afghans)	20,034	4%
Armed Forces Special Immigrants	0	0%
Subtotal	69,101	12%
Total Immigrant Visas (IM) Issued	559,536	100%

In 2017, 559,536 foreigners were granted U.S. Immigration Visas (IV), which was slightly higher than in 2016 (617,752) but higher than in the three previous years (2015, 531,463; 2014, 467,370; and 2013, 473,115), per the U.S. Department of States' Bureau of Consular Affairs.¹⁹¹

86% of all Immigrant Visa issued in 2017 were family-based, 10% were for special reasons such as conflict-related services and a diversity "lottery" to attract immigrants with low rates of immigration to the United States, and, lastly, 4% were employment-based.

According to the Bureau, with a few exceptions, a foreign citizen must be sponsored by a U.S. citizen relative, U.S. lawful permanent resident, or a prospective employer to obtain an immigrant visa. The sponsor begins the immigration process by filing a petition on the foreign citizen's behalf with U.S. Citizenship and Immigration Services (USCIS). As discussed earlier, other countries like Canada, United Kingdom and Australia, prioritize employment-based immigration as the primary and fastest route to legal permanent residency.

There is no limit on Immediate Relative immigrant visas nor are there any restrictions for same-sex spouses. For the Family Sponsored Preference category there are four preferences each with a fiscal year limitation: (F1) unmarried children of U.S. citizens and their children, 23,400, (F2) spouses, minor children, and unmarried sons and daughters of a Lawful Permanent Resident, 114,200, (F3) married sons and daughters of U.S. citizens, and their spouses and minor children, 23,400, and (F4) brothers and sisters of U.S. citizens, and their spouses and minor children, 65,000.

¹⁹¹ U.S. Department of State, Bureau of Consular Affairs, Family-Based Immigrant Visas, <https://travel.state.gov/content/visas/en/immigrate/family/family-preference.html#1>

Employment-Based Immigrant Visas

Employment-Based Immigrant Visa Program	
Source: U.S. Department of State, Bureau of Consular Affairs	
E1	Priority Workers
	<ul style="list-style-type: none"> • Persons with extraordinary ability • Outstanding professors and researchers • Multinational managers or executives
E2	Professionals Holding Advanced Degrees and Persons of Exceptional Ability
E3	Skilled Workers, Professionals and Unskilled Workers that are not temporary or seasonal workers
E4	Certain Special Immigrants such as international broadcasters and former U.S. government employees
E5	Immigrant Investors for capital investment in new commercial enterprises in the United States which provide job creation.

According to the State Department,¹⁹² there are five Employment-Based Immigrant Visas: E1 through E5. Approximately 140,000 employment-based visas are made available each year to qualified applicants in five preference categories shown above. However, only 23,814 Employment-Based Immigrant Visas were issued in 2017, which was less than 25,056 in 2018, but slightly greater than the three previous (2015, 21,613; 2014, 21,365; and 2013, 21,144).

From a Jobenomics perspective, 23,814 Employment-Based Immigrant Visas out of a total of 559,536 total Immigrant Visas (4%) is very questionable from an economic and labor force perspective. At best, this activity is tantamount to an intellectual capital embargo in an era where the United States is failing to fill six million high-skilled domestic job openings and competing for its fair share of billions of global jobs in the Network Technology Revolution.

There is a sixth employment-based visa category that is called a “Startup Visa”. Introduced as the Startup Visa Act of 2011, this category languished in Congress for years and was eventually put in motion during the last days of the Obama Administration, with a scheduled start date in mid-2017. Surprisingly the Trump Administration is reportedly not in favor of this visa that promotes foreign entrepreneurs starting their businesses in the United States.

As legislated, to qualify for a U.S. Startup Visa, a foreign owner must satisfy two major conditions: first, have or receive (qualified U.S. investors with established records of successful investments) adequate funds, and second, provide compelling evidence of the startup entity’s substantial potential for rapid growth and American job creation. It is wrongheaded for a pro-business Administration to object to such entrepreneurial legislation. It should be aggressively supported. Eliminating this visa will further show the world, in this case the small business world, that the America seems hell-bent on discouraging foreign visitors, foreign immigration, foreign investment and foreign entrepreneurs in United States.

¹⁹² U.S. Department of State, Bureau of Consular Affairs, Employment-Based Immigrant Visa, <https://travel.state.gov/content/visas/en/immigrate/employment.html#overview>

Not surprisingly, Canada picked up on the startup visa from the Startup Visa Act of 2011. In March 2013, Canada started accepting foreign startup applications. Reportedly, Canada's Start-up Visa website can issue a visa within 15 days of application.¹⁹³ While initial applications were slow, the program is rapidly gaining momentum with the aid of not-for-profit startup accelerators, like the Vancouver-based Launch Academy. The Launch Academy team is especially looking for next-generation advanced technology startups in the following areas artificial intelligence, virtual/augmented/mixed reality, blockchain, fintech, data science, quantum computing, health-tech and cybersecurity¹⁹⁴

It is worthy to re-emphasize the fact that the Network Technology Revolution is facilitating an explosion in the emerging digital economy. Among the 34 advanced economies, the United States ranks 17th in reading, 20th in science and 27th in math—the disciplines required to populate the U.S. labor force with domestic workers with cognitive skills needed to solve real-world problems and provide enough digital-savvy humans to compete in the emerging digital economy. From a Jobenomics perspective, a startup visa would be a rather inexpensive and innovative way to start to mitigate these weak science and math statistics. Foreign-born entrepreneurs are paramount to American economic growth and prosperity. If there is any doubt about this, just look at the contribution that South Africa-born, Canadian-reared, now American citizen Elon Musk has done for America.

ABC's of Temporary Nonimmigrant Visas (NIV)

Classes of Nonimmigrant Visas (NIV) Issued In 2017			
<i>Source: U.S. Department of State, Bureau of Consular Affairs</i>			
A	Foreign Government Official	109,913	
B	Temporary Visitor for Business and Pleasure	7,432,515	77%
C/D	Transit/Crew	326,668	
E	Treaty Trader or Investor	62,974	1%
F	Student	421,008	4%
G/N	NAFTA/NATO/International Organization Staff	77,644	
H	Temporary Worker and Trainee	563,248	6%
I	Foreign Information Media	14,126	
J	Exchange Visitor	383,165	4%
K	Fiance(e) of U.S. Citizen	40,208	
L	Intracompany Transferee	163,432	
M	Vocational Student	9,982	1%
O	Person With Extraordinary Ability	30,038	2%
P	Athlete, Artist or Entertainer	36,196	2%
Q, R, S, T, U	Cultural, Religious, Informants, Victims	10,796	
<i>Jobenomics Special Interest Group</i>		1,506,611	20%
Total Nonimmigrant Visas (NIV) Issued		9,681,913	

¹⁹³ Government of Canada, Start-up Visa Help Centre,
<http://www.cic.gc.ca/english/helpcentre/answer.asp?qnum=645&top=6>

¹⁹⁴ Tech Crunch, Launch Academy's startup visa program gives entrepreneurs permanent residency in Canada, 2 June 2017, <https://techcrunch.com/2017/06/02/launch-academy-startup-visa-program-gives-entrepreneurs-permanent-residency-in-canada/>

9,681,913 people visited the United States for business or pleasure in 2017, which is downturn from 10,381,491, a difference of 699,578 visas.

- The two largest Nonimmigrant Visas categories that decreased in size between 2016 and 2017 were Temporary Visitor for Business and Pleasure (-639,674 visas) and Student (-81,206 visas), which generated an economic loss to U.S. tourism and postsecondary education.
 - According to the U.S. Travel Association, America's share of the international travel market has declined from 13.6% in 2015 to 11.9% in 2017, "a troubling trend given that global long-haul travel increased 7.9 percent in the same period", resulting in a loss of \$32.2 billion "that translates to 100,000 more American jobs" (\$32,200 annual salary).¹⁹⁵
 - According to NAFSA, the world's largest nonprofit association dedicated to international education and exchange based in New York City. 1,078,822 international students studying at U.S. colleges and universities contributed \$36.9 billion (xx per capita) to the U.S. economy during the 2016-2017 academic year.¹⁹⁶ Using NAFSA's math, a loss of 81,206 students equates to around \$3 billion per year to U.S. colleges/universities and their surrounding communities.
- The two largest categories that increased in size between 2016 and 2017 were Temporary Worker and Trainee (+30,416 visas) and Person With Extraordinary Ability (+1,867 visas).

Over 8 million or 78% (highlighted in green above) are temporary visitors for business or/and pleasure. Due to our enhanced security and perceived anti-immigration policies, the number of "B Visa" visitors dropped over the previous year by 6% or 481,000 visitors. This drop is significant not only from tourist expenditures but decreased business meeting and social contact.

Highlighted in yellow are the E, F, H, J, M, O and P nonimmigrant visa categories of special interest to Jobenomics from a workforce and business development perspective. Persons With Extraordinary Ability (O-visa) should be given the red-carpet treatment and a fast-track to a green card if desired. To a lesser extent, the same should be true for talented or high-potential visitors, students, workers and trainees F, J, H, M and P categories. These 1,506,611 visitors by the very nature of their interest in America (education, training and work) would likely make great additions to the American labor pool and society. Moreover, they probably represent the top 5% in the global gene pool.

In summary, foreign-born citizens tend to more entrepreneurial than native Americans. Since the U.S. economy needs more entrepreneurs, startup businesses and skilled labor, it would be logical to promote legal immigration from an Employment-Based Preference Immigration Visa standpoint as well as a skills-based recruiting and retaining perspective on Nonimmigrant Visa holders. Far too many talented foreign graduates from American colleges and universities are not

¹⁹⁵ U.S. Travel Association, International Inbound Travel,
https://www.ustravel.org/system/files/media_root/document/Research_Fact-Sheet_International-Inbound.pdf

¹⁹⁶ NAFSA, NAFSA International Student Economic Value Tool,
http://www.nafsa.org/Policy_and_Advocacy/Policy_Resources/Policy_Trends_and_Data/NAFSA_International_Student_Economic_Value_Tool/

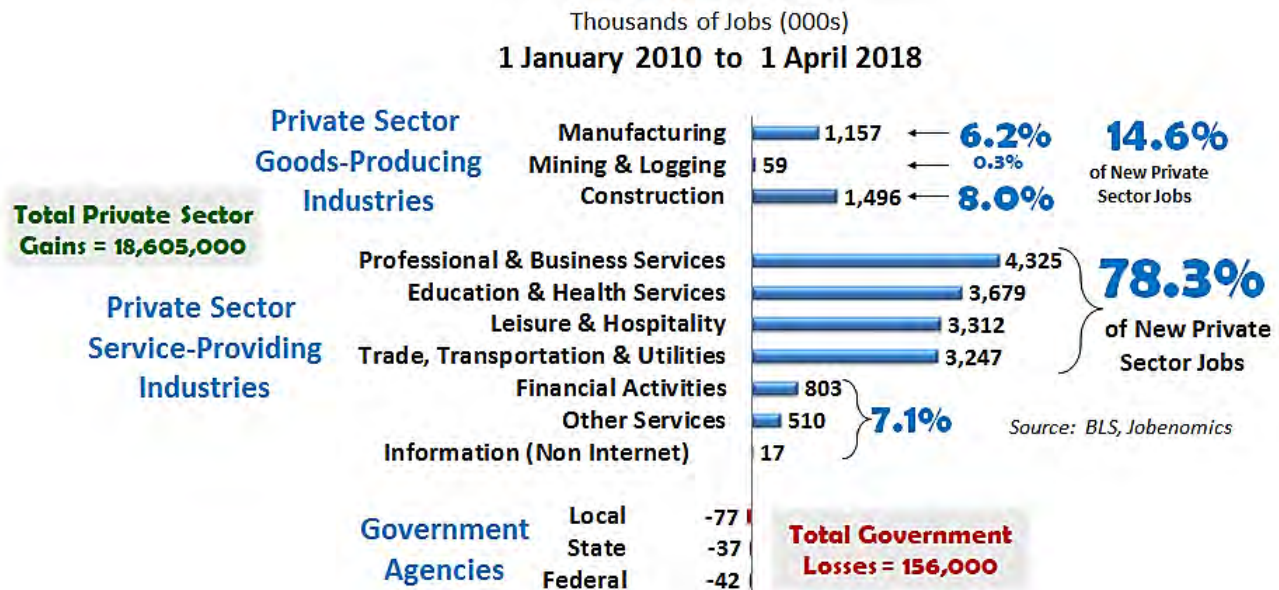
afforded a green card opportunity and are forced to overstay their visa (making them illegals) or return home. From a Jobenomics perspective, the American immigration system is upside-down. Too much attention is afforded to illegal immigration and not enough to legal immigration. In the realm of legal immigration the emphasis should shift from an 86%/4% split been family-based and employment-based emphasis to a more balanced 50%/50% emphasis.

Small Business Statistics and Trends Section Summary. Small businesses are the primary engine of the U.S. economy and labor force. It is time that this engine needs a tune-up by the U.S. government and private sector leaders. In today's world of global competition and sclerotic GDP growth, small business creation and sustainment is paramount. The American laissez-faire approach to small business creation, and its massive potential for job creation, must be changed in order to achieve economic prosperity and competitiveness.

Fastest Growing Private Sector Industries, Occupations and Places

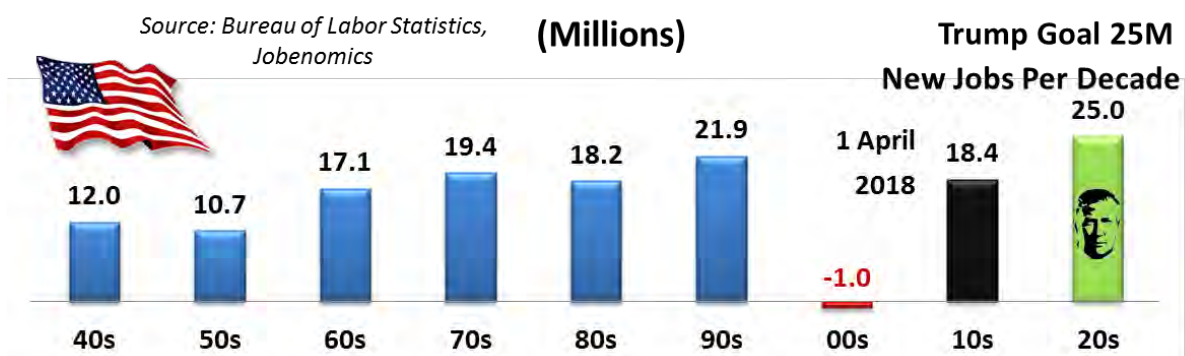
Fastest Growing Private Sector Industries. Since 2010, all ten U.S. private sector industries have created jobs, whereas all three levels of government (Federal, State and Local) government lost jobs.

Industry Employment Growth This Decade (2010s)



78.3% of all net new jobs this decade were produced by four service-providing industries (Professional and Business Services; Education and Health Services; Trade, Transportation and Utilities; and Leisure and Hospitality), while the other three service-providing industries (Financial Activities, Other Services, and Non-Internet Information) created only 6.7% combined. Construction and Manufacturing contributed 8.0% and 6.2% to U.S. employment growth. Government shed jobs at all three levels: federal, state and local.

Trump Goal: 25 Million New U.S. Jobs per Decade



The United States consistently produced tens of millions of new jobs for six consecutive decades from the 1940s through the 1990s. The bottom fell out in the decade of the 2000s with a net loss of 1.0 million jobs. Consequently, it is critical that a significant number of new jobs are created each decade for the next several decades (2010s/2020s) to recover from the historic U.S. employment downturn in the 2000s and for the U.S. economy to prosper.

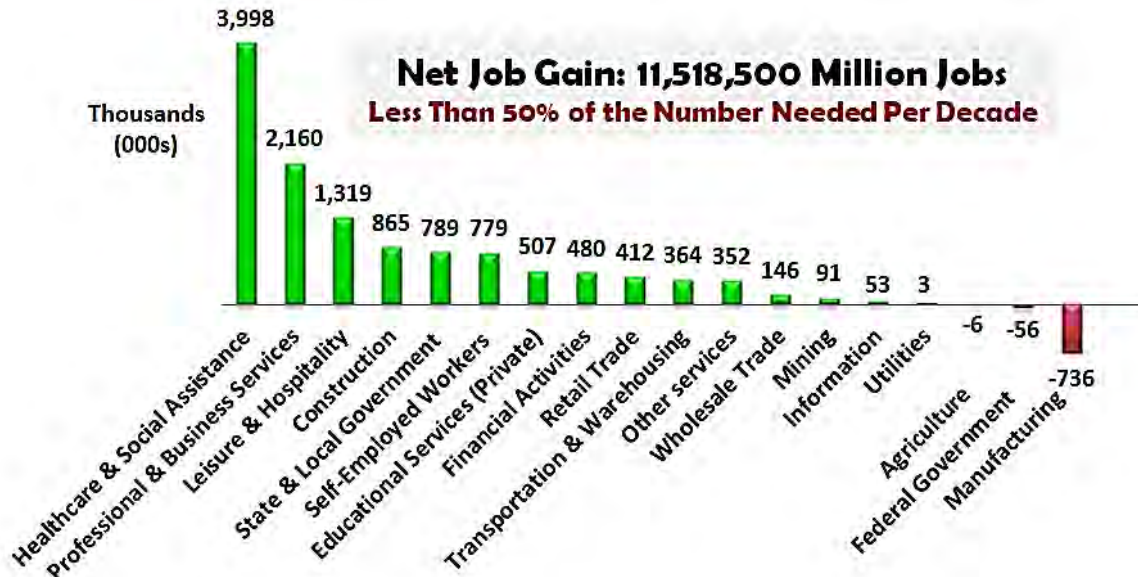
20 million net (workforce gains minus losses) new jobs per decade is a goal that has been historically achieved in the 1990s as well as many of the decades prior if adjusted for population growth. 20 million is the minimum number of new jobs needed to accommodate new labor force entrants and maintain an unemployment rate of 5%, which is considered a normal rate of unemployment. U.S. employment increased by 18.4 million so far this decade (2010s). President Trump's vision of 25 million new jobs is a worthy goal and the level needed to grow the U.S. economy as well as mitigate the negative effects of the next financial downturn and a deeply-divided electorate.

Fastest Growing Occupational Groups. Contrary to the Trump Administration's optimistic labor force vision, the latest BLS Employment Projections 2016-26 Report, released 24 October 2017, projects a future slowdown in labor force growth with only 11.5 million new jobs generated between 2016 and 2026—an annual growth rate of 0.7% that is well below the rate envisioned by the Administration.

BLS sites the following reasons: an aging population, moderate GDP growth of 2.0% annually over the decade, productivity growth of 1.6% annually over the decade, a 2026 unemployment rate essentially the same as today, and moderated economic growth.¹⁹⁷ If this forecast is correct the United States is in significant trouble. 11.5 million jobs is not enough to grow the economy and indicates that the BLS foresees either a period of stalled growth or a recessionary period that would reverse labor gains.

Fastest Growing Occupational Groups: 2014 to 2024

Source: BLS Employment Projections 2016-26 Summary



Due to an aging population and greater numbers of able-bodied Americans voluntarily departing the U.S. labor force¹⁹⁸, 4.0 million of the 11.5 million new U.S. jobs (35%) will entail Health Care and

¹⁹⁷ BLS, Employment Projections: 2016-26 Summary, <http://www.bls.gov/news.release/ecopro.toc.htm>

¹⁹⁸ See Jobenomics U.S. Labor Force & Unemployment Report Q1 2018 for a detailed discussion on voluntarily U.S. labor force departures.

Social Assistance occupations. The second and third largest cadres are 2.2million (19%) jobs in Professional and Business Services and 1.3 million (11%) jobs in Leisure and Hospitality (9%). Manufacturing is projected to be the biggest loser with a loss of 736,000 jobs. Manufacturing currently employs 12,632,000 people. If the BLS projection is accurate, manufacturing employment will decline to 11,896,000, which is roughly equal to the post-WWII manufacturing low of 11,453,000.

Fastest Growing Private Sector Occupations. Using the labor force projections from the BLS Employment Projections 2016-26 Summary, the BLS Occupational Outlook Handbook (OOH), the U.S. government's premier job market reference source, includes about 575 detailed occupations in 325 occupational profiles, covering about 4 out of 5 jobs in the economy.¹⁹⁹ The following tables represent OOH highlights for Top 20 Growing and Declining Occupations, plus the Median Pay in 2017 for each occupation. Note: highlighted occupations indicate median pay below \$30,000 per year.

Top 20 Growing Occupations: 2016 to 2026

Source: BLS 2016-2017 Occupational Outlook Handbook

Top 20 Occupations	New Jobs 2016-2026	2017 Median Pay
Personal care aides	777,600	\$23,100
Combined food preparation and serving workers	579,900	\$20,180
Registered nurses	438,100	\$70,000
Home health aides	431,200	\$23,210
Software developers, applications	255,400	\$101,790
Janitors and cleaners, except maids and housekeepers	236,500	\$24,990
General and operations managers	205,200	\$100,410
Laborers and freight, stock, and material movers, hand	199,700	\$27,040
Medical assistants	183,900	\$32,480
Waiters and waitresses	182,500	\$20,820
Nursing assistants	173,400	\$27,520
Construction laborers	150,400	\$34,530
Cooks, restaurant	145,300	\$25,180
Accountants and auditors	139,900	\$69,350
Market research analysts and marketing specialists	138,300	\$63,230
Customer service representatives	136,300	\$32,890
Landscaping and groundskeeping workers	135,200	\$27,670
Medical secretaries	129,000	\$34,610
Management analysts	115,200	\$82,450
Maintenance and repair workers, general	112,500	\$37,670
Top 20 New Jobs	4,865,500	42%
Total New Jobs	11,518,500	
Below Hourly Wage of \$15 or Annual \$30K Salary	2,861,300	59%
	4,865,500	

¹⁹⁹ BLS, 2016-17 Occupational Outlook Handbook, Table 1.3, <http://www.bls.gov/ooh/>

The Top-20 growing occupations are projected to generate 4,865,500 new jobs, or 42% of the 11,518,500 new jobs projected by the BLS between 2016 to 2026 period. As highlighted, 59% of all new workers will earn below a \$15 minimum wage as calculated on a full-time annual basis (\$15/hour, 50 weeks per year, 40 hour work week). The two occupations that will produce the majority of new jobs include 777,600 personal care aides and 579,900 combined food preparation and serving workers, or 12% of the 11.5 million new jobs.

Declining Occupations: 2016 to 2026

All Declining Occupations	Number of Job Losses	2017 Median Pay
Secretaries and administrative assistants	164,900	\$35,590
Team assemblers	145,000	\$31,850
Executive secretaries and executive administrative assistants	119,200	\$57,410
Inspectors, testers, sorters, samplers, and weighers	55,500	\$37,340
Electrical and electronic equipment assemblers	45,600	\$31,850
Data entry keyers	43,300	\$30,930
Tellers	41,800	\$28,110
Postal service mail carriers	38,200	\$57,000
Legal secretaries	37,100	\$44,730
Correctional officers and jailers	34,500	\$43,540
Assemblers and fabricators, all other	32,600	\$31,850
Office clerks, general	31,800	\$31,500
Cashiers	30,600	\$21,030
Cooks, fast food	27,100	\$21,040
Sewing machine operators	25,700	\$24,320
Bookkeeping, accounting, and auditing clerks	25,200	\$39,240
Word processors and typists	24,800	\$39,740
Molding machine setters operators, and tenders	21,800	\$31,090
Computer programmers	21,300	\$82,240
Printing press operators	18,600	\$35,760
Switchboard operators, including answering service	18,500	\$28,700
Telecommunications equipment installers and repairers	18,200	\$53,380
Postal service mail sorters, processors, and operators	17,500	\$57,260
Purchasing agents	17,400	\$66,610
Cutting, punching, and press machine operators	16,800	\$33,060
File clerks	14,000	\$30,120
Chief executives	12,100	\$183,270
Computer operators	11,800	\$44,270
Structural metal fabricators and fitters	11,800	\$38,450
Extruding and drawing machine operators	11,000	\$34,600

Total Job Losses in Declining Occupations 1,133,700

Below Hourly Wage of \$15 or Annual \$30K Salary 143,700

1,133,700

13%

This table shows 30 occupations that are projected to decline. The BLS estimates that 1,133,700 jobs will disappear between 2016 and 2026. In contrast to the Top-20 fastest growing occupations, middle-level wage earners are forecast to lose 87% declining occupations, whereas low wage earners (less than \$30K) are projected to lose only 13% of the jobs. In other words, the middle-class is forecast to continue to erode according the Trump Administration's Bureau of Labor Statistics. Hopefully, this woeful projection will be revised upward in the BLS's 2017-2027 Projection that should be published around October 2018.

Best and Worst Places to Find a Job. Most of the new jobs will be created in a handful of states and large metropolitan areas.

Best and Worst States & Territories to Work

Source: Quarterly Census of Employment and Wages, Q3 2017

	Number of Jobs		Number of Businesses		Average Weekly Wage	
Top 5 States	California	14,703,433	California	1,498,646	Washington DC	\$1,576
	Texas	10,168,195	Florida	671,126	Massachusetts	\$1,274
	New York	7,948,588	Texas	658,595	New York	\$1,229
	Florida	7,231,976	New York	635,878	Washington	\$1,208
	Illinois	5,178,061	Illinois	358,427	California	\$1,200
Bottom 5 States	South Dakota	352,116	South Dakota	31,004	New Mexico	\$790
	North Dakota	349,367	North Dakota	29,890	Arkansas	\$790
	Alaska	273,176	Wyoming	24,792	Idaho	\$773
	Vermont	261,151	Vermont	24,100	Montana	\$768
	Wyoming	214,933	Alaska	20,193	Mississippi	\$714
Average of States and Territories		4,649,824		363,837		\$952

Top 5 Metropolitan Areas to Work

Source: Quarterly Census of Employment and Wages, Q3 2017

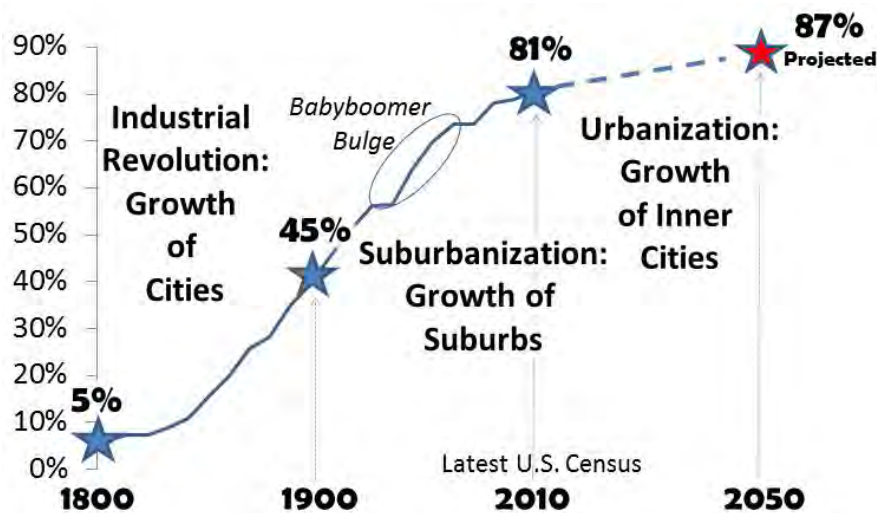
Number of Jobs	
New York-Newark-Jersey City, NY-NJ-PA MSA	8,019,070
Los Angeles-Long Beach-Anaheim, CA MSA	5,294,546
Chicago-Naperville-Elgin, IL-IN-WI MSA	3,984,180
Dallas-Fort Worth-Arlington, TX MSA	3,051,605
Houston-The Woodlands-Sugar Land, TX MSA	2,503,354
Average Weekly Wage	
San Jose-Sunnyvale-Santa Clara, CA MSA	\$2,361
San Francisco-Oakland-Hayward, CA MSA	\$1,667
Seattle-Tacoma-Bellevue, WA MSA	\$1,465
Bridgeport-Stamford-Norwalk, CT MSA	\$1,456
Boston-Cambridge-Newton, MA-NH MSA	\$1,381

The Quarterly Census of Employment and Wages, conducted by the U.S. Census Bureau and interpreted by the BLS, reports on employment and wages by state (including 5 territories and District of Columbia and the 384 Metropolitan Statistical Areas (MSAs)).²⁰⁰ The top five in each category are shown. The disparity between the best and worst locations for jobs and wages is significant.

The main takeaway from the Quarterly Census of Employment and Wages Report is geographical polarization. America is becoming increasingly polarized in terms of jobs and wages according to location. Urban areas offer more career and income opportunities than rural areas. High tech and financial cities are superior to older manufacturing cities that continue to slide into decay.

Urbanization of America

Source: U.S. Census Bureau²⁰¹



In 1800, 95% of America lived in rural areas. Today, 81% live in urban areas (90% on the West Coast). The top ten U.S. metropolitan areas employ over 32 million people or 20% of the U.S. workforce.

For the first time in over 100-years, starting in 2011, workforce migration started from the suburbs to the inner city. Consequently, urban areas are getting increasingly denser, diversified and polarized. Job polarization occurs when middle-class jobs that require moderate skill levels and income, decline relative to those at the top and bottom, requiring relatively greater or fewer skills and income.

Technology is creating a form of job polarization between traditional full-time employees and part-time contingency workers who have to cobble together an income from task-oriented work, part-time jobs, supplement their income from government subsidies, or seek unreported income opportunities in America's \$2 trillion per year underground economy (also known as the shadow, cash or barter economy).

²⁰⁰ BLS, Quarterly Census of Employment and Wages, Q1 2017, Private, Total, All Industries, http://www.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables

²⁰¹ U.S. Census Bureau, Geography, 2010 Census Urban and Rural Classification and Urban Area Criteria, <http://www.census.gov/geo/reference/ua/urban-rural-2010.html>

As evidenced by recent protests and violence, the United States has already reached a point of restiveness and anger due to urbanization and job polarization—for plausible reasons. As discussed in detail the Jobenomics U.S. Labor Force and Unemployment Report, 72% of the 164.6 million American wage earners made below the mean wage of \$59,817 in 2016 as reported by the Census Bureau.²⁰² If one adds the 95 million able-bodied adults who voluntarily departed the labor force (ostensibly for education, retirement, alternative lifestyles and public assistance) and the 64 million people who have no reported income, the percentage of below average income Americans jumps to 86%. In other words, the United States has reached a point where 46 million Americans receive above median wage and 279 million Americans report below median wage or no wage at all.

From a Jobenomics perspective, these trends can and should be reversed before geographic polarization solidifies job polarization that is already creating grave disparities between the rich and poor, the skilled and unskilled, and the standard full-time workers and nonstandard part-time contingent workforce.

²⁰² U.S. Census Bureau, PINC-05, Work Experience-People 15 Years Old and Over, by Total Money Earnings, Age, Race, Hispanic Origin, Sex, and Disability Status, Person Income in 2016, <https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-pinc/pinc-05.htm>

Contingent Workforce Challenge

Jobenomics asserts that the contingent workforce will be the dominant form of labor by 2030. Moreover, the contingent workforce produces more jobs than the standard full-time labor force. According to a Harvard study, from February 2005 to November 2015, almost all employment growth (9.7 million) in the U.S. labor force occurred in the contingent workforce (9.4 million) as opposed to the standard labor force.²⁰³

The Bureau of Labor Statistics (BLS) defines “contingent workers are people who do not expect their jobs to last or who reported that their jobs are temporary. They do not have an implicit or explicit contract for ongoing employment. Alternative employment arrangements include people employed as independent contractors, on-call workers, temporary help agency workers, and workers provided by contract firms.”

Unfortunately, Washington turns a blind eye to the challenges for contingent workers who do not expect their jobs to last or who reported that their jobs are temporary. The latest published contingent workforce data was from a supplemental survey conducted in February 2005. The BLS conducted a special supplemental survey on contingent and alternative employment arrangements in May 2017, which will be published 7 June 2018.²⁰⁴

The “contingent” workforce could be the predominant source of employed U.S. labor by 2030, or sooner, depending on economic conditions and seven ongoing labor force trends. Today, Jobenomics estimates the contingent workforce to be over 60,000,000 employed Americans or 40% of the total employed workforce. By 2030, this will rise to approximately 90,000,000, or 50%, of the total employed workforce.

U.S. Contingent Workforce Size Estimates 1998 to 2030

Source: GAO Contingent Workforce Report (GAO-15-168R), Tables 3 and 4, Jobenomics Estimates

	BLS/GAO 1995 CWS	BLS/GAO 1999 CWS	BLS/GAO 2005 CWS	GSS 2006	GSS 2010	Jobenomics 1 Mar 2018	Jobenomics 2030 Est.
Employed	123,208,000	131,494,000	138,952,000	143,150,000	138,438,000	155,215,000	180,000,000
Contingent	39,549,768	39,448,200	42,519,312	50,531,950	55,790,514	62,086,000	90,000,000
Workforce	32.1%	30.0%	30.6%	35.3%	40.3%	40.0%	50.0%

Jobenomics’ 2017 estimate of 40% for core and non-core contingency workers is roughly equivalent to the GAO’s high water mark of 40.4% of the U.S. labor force in 2010²⁰⁵ and Bloomberg’s contingency workforce estimate of 40% for 2020.²⁰⁶ Jobenomics’ 2018 estimate is similar to estimates from other developed economies. For example, in Japan, contingent workers (non-regular

²⁰³ Harvard University and NBER, The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015, Lawrence F. Katz and Alan B. Krueger, 29 March 2016, page 7-8, https://krueger.princeton.edu/sites/default/files/akrueger/files/katz_krueger_cws_-_march_29_20165.pdf

²⁰⁴ BLS, Contingent and alternative employment arrangements, Notice, <https://www.bls.gov/cps/lfcharacteristics.htm#contingent>

²⁰⁵ U.S. Government Accountability Office, Contingent Workforce: Size, Characteristics, Earnings, and Benefits, 20 April 2015, <http://www.gao.gov/products/GAO-15-168R>

²⁰⁶ Bloomberg Businessweek, 20-25 October 2014 Edition, Companies/Industries, Page 20

workers) accounted for up to 50% of younger Japanese workers and 40% of the total Japanese labor force in 2014, up from 10% in 1990.²⁰⁷

Defining the Contingent Workforce. To understand the contingent labor force, it is necessary to first know what U.S. government agencies (Bureau of Labor Statistics, Census Bureau, Government Accountability Office and others) say about part-time, temporary, nonstandard, independent, or workers with “alternative” work agreements, who are collectively defined as contingent workers.

According to an April 2015 study by the Government Accountability Office (GAO), compared to the traditional workforce, the size, character, earnings and benefits of today’s contingent workers are largely unknown to U.S. Department of Labor and U.S. policy-makers. Quoting the GAO, “there is a lack of consensus on how to define contingent work, in part because researchers focus on different aspects of the labor market. Some definitions focus on job tenure or the precariousness of work, while some focus on employer-employee relationships. Available data thus produces varying estimates of the size of this workforce, depending on definition. Available data also does not fully enable analysis of trends in the size of the contingent workforce or the effects of economic cycles, such as the recent recession.”²⁰⁸

As a result, there is no government consensus on the magnitude of the contingent workforce. Estimates vary from a low of 5% to a high of 40% of the total U.S. employed workers in 2017. Jobenomics asserts that 40% is a more reasonable estimate. Jobenomics also asserts that this percentage will continue to increase and exceed 50% of the employed labor force by 2030, or sooner, based on seven labor force trends, described herein, and the state of the economy. Unlike standard employment growth, contingent employment will increase whether the economic conditions are positive, neutral or negative. Neutral and negative economies usually reduce full-time labor and increase part-time contingent labor and task-oriented work.

Generally speaking, policy-makers view the contingent workforce as a relatively insignificant portion of the U.S. labor force. They also view contingent workers more as a governmental liability than a public asset. The prevailing view of policy-makers is that most contingent workers receive lower wages and fewer employer-provided retirement and health benefits compared to standard workers. As a result, these workers are compelled to turn to government welfare and other means-adjusted programs for assistance. While this is true for the low-end of the contingency workforce, it is not necessarily the case for top-end contingency workers who chose nonstandard work as a matter of choice.

Largely due to the current traditional workforce focus of Census Bureau/BLS survey questions, policy-makers are unaware of the fact that contingent work is no longer an aberration, but a key component of the labor force (60 million contingent workers versus 90 million standard workers). In addition, a growing number of contingent workers do want full-time jobs and traditional careers. 90% of

²⁰⁷ Asia-Pacific Journal, Scott North, "Limited Regular Employment and the Reform of Japan's Division of Labor", The Asia-Pacific Journal, Vol. 12, Issue 15, No. 1, April 14, 2014, <http://www.japanfocus.org/-Scott-North/4106/article.html>

²⁰⁸ U.S. Government Accountability Office, GAO-15-168R, Contingent Workforce: Size, Characteristics, Earning and Benefits, 20 April 2015, <http://www.gao.gov/assets/670/669766.pdf>

independent contractors and self-employed workers reported in the last BLS Contingent Workforce Survey that they would not prefer a different type of employment from the one they have.²⁰⁹ Uber drivers, apps developers, fracking industry wildcatters and knowledge workers are just some of many examples of the upside of the growing contingent workforce in occupations that did not even exist a decade ago.

The BLS defines the contingent workforce as the portion of the labor force that has “nonstandard work arrangements” or those without “permanent jobs with a traditional employer-employee relationship”. The BLS further makes a distinction between contingent and alternative employment agreements. According to a BLS special supplemental survey conducted in February 2005 (the last contingent workforce survey conducted by the BLS), “Contingent workers are persons who do not expect their jobs to last or who reported that their jobs are temporary. They do not have an implicit or explicit contract for ongoing employment. Alternative employment arrangements include persons employed as independent contractors, on-call workers, temporary help agency workers, and workers provided by contract firms.”²¹⁰

A 2015 GAO report, entitled the “Contingent Workforce: Size, Characteristics, Earnings, and Benefits”, grouped contingency workers into two categories: core and non-core.

- The core category includes agency temps, direct-hire temps, on-call workers and laborers and contract company workers who are characterized as low wage earners who are subjected to nonstandard work arrangements **out of necessity**. Core workers cede control over their work making them economically dependent on employers. Consequently, a disproportionate number of these involuntary core workers are subject to exploitation in terms of wages and benefits.
- The non-core category includes independent contractors, self-employed workers and standard part-time workers who work fewer than 35 hours per week as a **matter of choice** and are economically independent by volition.

From a social science perspective, the major difference between core and non-core work involves social compact, an implicit contract for remuneration and protection in exchange for surrendering personal liberties. Relational employer-employee social compacts that evolved over the 20th Century are now less enforceable in today’s transactional society. Relational social compacts emphasize mutual-interests whereas transactional social compacts promote self-interests. Relational compacts better accommodate low-skilled, risk-adverse, vulnerable core contingent workers who are dependent on near-term wages and benefits. Transactional compacts favor skilled non-core contingent workers who tend to be more self-directed, entrepreneurial and self-supporting.

Consequently, Jobenomics believes that America needs a dual contingent workforce strategy to (1) minimize low-end core contingent workers and (2) maximize top-end non-core contingent workers with emphasis on individuals and occupations with the highest need and potential.

²⁰⁹ Ibid, Job Satisfaction, Table 12: Estimated Percentage of Workers Who Want a Different Type of Employment, 2005

²¹⁰ U.S. Bureau of Labor Statistics, Contingent and alternative employment arrangements, retrieved 23 January 2016, <http://www.bls.gov/cps/lfcharacteristics.htm#contingent>, and <http://www.bls.gov/news.release/pdf/conemp.pdf>

According to many labor force experts, new workforce entrants (e.g., Generation Z “Screenagers” and Generation Y “Millennials”) prefer contingent work over standard work for a number of reasons including self-direction, variety, flexibility and skill development. In addition Screenagers and Millennials exhibit a general disillusionment with traditional corporate social compacts and promises that have proven to be short-lived with older generations. Screenagers and Millennials also understand that traditional workforce growth is highly dependent on a robust economy, whereas contingent workforce growth is more resistant to economic fluctuations.

The rise of the contingent workforce is not unique to the United States. Furthermore, contingent work is being embraced by foreign policy-makers to a greater extent than in America. Japan serves as a good example. Japanese contingent workers (called non-regular workers) accounted for up to 50% of younger Japanese workers and 40% of the total Japanese labor force in 2014, up from 10% in 1990.²¹¹ In 2015, Japanese Prime Minister Shinzo Abe announced policies to make it easier for companies to dismiss standard workers in favor of contingency workers in order to make Japanese companies more competitive. An aging Japanese population will also fuel contingent work growth in Japan as retired workers and older women are seeking part-time work to supplement income in a struggling national economy.

Policy-makers in other parts of Asia and many countries in Western Europe are also actively preparing for the possibility of contingent work becoming the dominant element of their national labor force. China’s 13th Five-Year Plan, a roadmap for the nation’s development from 2016 to 2020, emphasizes the need to create a policy environment that can foster homegrown contingent workforce development and investment with emphasis on micro and self-employed businesses engaged in the emerging digital economy (e-business, e-commerce and e-retailing).

Estimating the Size of the Contingent Workforce. Out of approximately 155 million (nonfarm and farm) employed American workers in 2017, 40% are in the contingent workforce (part-time, self-employed, independent contractors, temporary workers, on-call and day laborers).

To understand the size of the U.S. labor force and its contingent workforce component, one must have a basic knowledge on how data is collected by the government.

The two primary sources of data are from joint Census Bureau/BLS household surveys and BLS industry surveys. The “Household” survey collects data via the Current Population Survey (CPS) and the “Establishment” payroll survey via



²¹¹ Asia-Pacific Journal, Scott North, "Limited Regular Employment and the Reform of Japan's Division of Labor", The Asia-Pacific Journal, Vol. 12, Issue 15, No. 1, April 14, 2014, <http://www.japanfocus.org/-Scott-North/4106/article.html>

the Current Employment Survey (CES).²¹²

- CPS Household data is collected monthly from a sample from over 60,000 American households and includes comprehensive data on the labor force, the employed, and the unemployed classified by such characteristics as age, sex, race, family relationship, marital status, occupation and industry attachment. The CPS also provides data on the characteristics and past work experience of those not in the labor force. The CPS includes all workers, nonfarm and farm, and estimates current total employment at 153 million.
- CES Establishment data is collected monthly from a sample of approximately 143,000 businesses and government agencies representing approximately 588,000 worksites throughout the United States. The primary statistics derived from the CES survey are monthly estimates of employment, hours, and earnings for the nation, states, and major metropolitan areas. CES produces estimates on the number of employees on nonfarm payrolls, average hourly earnings, average weekly earnings, and average weekly hours.²¹³ The CES includes only nonfarm workers and estimates current nonfarm employment at 146 million.

CPS and CES data are reported in the BLS monthly Employment Situational Report and various BLS Supplements to the Current Population Survey. The monthly BLS Employment Situational Report is a widely read government report used for policy-making in the United States.

BLS Supplements are also important since they provide a significant level of detail for public and private analyses. It is important to recognize that these BLS reports and supplements are focused mainly on standard workers who are employed by nonfarm, industry-centric and employer-providing firms. Agricultural (farms and ranches) and nonstandard (contingent) worker data is sparse and episodic due to historical precedent and budgetary constraints.

The BLS Employment Situational Report's focal point is on the "civilian noninstitutional population" that consists of three main categories: "Employed", "Unemployed" and "Not in Labor Force". To be Employed, one must have a job. To be Unemployed, one must be looking for a job. To be Not-in-Labor-Force, one must be an able-bodied adult who is neither employed nor unemployed.

The overwhelming amount of BLS statistical labor force data is centered on statistics relating to the 145 million nonfarm American jobs, who are accounted in three general sectors (private sector goods-producing, private sector services-providing and government) that are subdivided into 13 industry groups and further subdivided into 130 industries. Since the BLS defines contingent workers as those without "an explicit or implicit contract for long-term employment", their focus is on the temporary nature of work. Consequently, those that chose not to work or work outside traditional labor occupations receive much less scrutiny and analysis.

²¹² U.S. Bureau of Labor Statistics, Household vs. Establishment Series, <http://www.bls.gov/lau/lauhvse.htm#hvse>

²¹³ BLS, CES Survey Frequently Asked Questions, <http://www.bls.gov/web/empst/cesfaq.htm>

Jobenomics applauds the work the BLS accomplishes with standard industries, but believes that the U.S. government should allow the BLS to evaluate at super sectors, like energy and health care, and major trends, like the contingent workforce and Not-in-Labor-Force group, with the same intensity.

To a lesser degree, BLS Employment Situational Report contains data on 15 million unemployed Americans who are accounted in six unemployment categories from U1 Long-Term Unemployed to U3 Officially Unemployed to U6 Unemployed and Underemployed. To a minimal degree, the BLS reports on the 95 million people who are categorized in a single Not-in-Labor-Force category that is reserved for able-bodied Americans who can work but chose not to work for a variety of reasons. Jobenomics sees the evergrowing Not-in-Labor-Force, which has grown by 25.5 million Americans since year 2000, as impactful to the U.S. labor force as the rise in the contingent labor force. The Unemployed and Not-in-Labor-Force is addressed in the Jobenomics U.S. Labor Force and Unemployment Report.

The CPS is also used to collect data for a variety of other studies. Supplements cover a wide variety of topics depending on the needs of the supplement's government sponsor, including a BLS sponsored Contingent Workforce Supplement (CWS). A total of five CWSs were conducted by the BLS in 1995, 1997, 1999, 2001 and 2005. Since the 2005 CWS, the BLS repeatedly requested that the CWS be reinstated.²¹⁴ After a 10-year hiatus, the BLS will now resume the CWS. In the FY2016 Budget, out of a total BLS budget of \$637.4 million, the BLS was granted \$1.6 million and 3 full-time equivalent personnel to conduct a CWS every two years.²¹⁵ As stated at the beginning of this discussion, a CWS survey was conducted in May 2017 but the Bureau has yet to release even preliminary findings.

U.S. Core and Non-Core Contingent Workforce Size Estimates

Source: GAO Contingent Workforce Report (GAO-15-168R), Tables 3 and 4, Jobenomics Estimates

	BLS/GAO 1995 CWS	BLS/GAO 1999 CWS	BLS/GAO 2005 CWS	GSS 2006	GSS 2010	Jobenomics 1 Mar 2018	Jobenomics 2030 Est.
Employed	123,208,000	131,494,000	138,952,000	143,150,000	138,438,000	155,215,000	180,000,000
Contingent	39,549,768	39,448,200	42,519,312	50,531,950	55,790,514	62,086,000	90,000,000
Workforce	32.1%	30.0%	30.6%	35.3%	40.3%	40.0%	50.0%
<i>*Total Farm and Nonfarm Employment (CPS Data, LNS12000000)</i>							
Agency & direct-hire temps, On-call workers & day laborers, Contract company workers							
Core	7,269,272	7,495,158	7,781,312	10,163,650	10,936,602	12,417,200	21,600,000
Contingent	5.9%	5.7%	5.6%	7.1%	7.9%	8.0%	12.0%
Independent contractors, Self-employed workers, Standard part-time workers							
Non-Core	32,280,496	31,953,042	34,738,000	40,368,300	44,853,912	49,668,800	68,400,000
Contingent	26.2%	24.3%	25.0%	28.2%	32.4%	32.0%	38.0%

This chart was derived from the GAO's GAO Contingent Workforce Report that compared historical surveys (CWS, CES Establishment, CPS Household, CPS Disability, CPS Annual Social and Economic

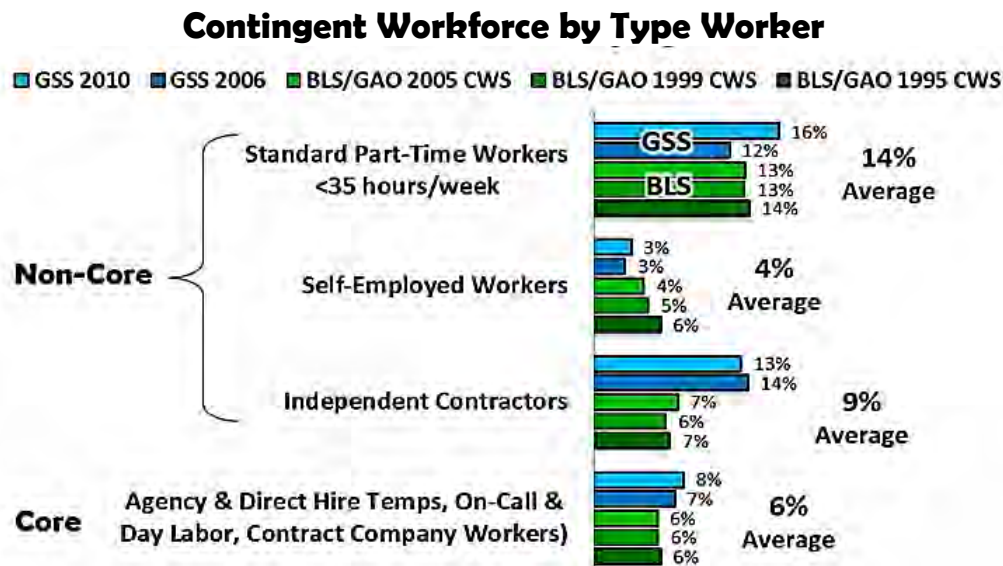
²¹⁴ U.S. Government Accountability Office, GAO-15-168R, Contingent Workforce: Size, Characteristics, Earning and Benefits, 20 April 2015, Background, page 3, <http://www.gao.gov/assets/670/669766.pdf>

²¹⁵ FY 2016 Congressional Budget Justification Bureau Of Labor Statistics, Labor Force Statistics, CWS, pages BLS-1 and BLS-11, <http://www.dol.gov/sites/default/files/documents/general/budget/2016/CBJ-2016-V3-01.pdf>

Supplement, NORC General Social [GSS], Survey of Income and Program Participation).²¹⁶ Jobenomics 2016 and 2030 estimates are also included.

Using composite data from multiple sources, the GAO estimates core and non-core contingent workers between 5.7% to 7.9% and 24.3% to 32.4% respectively, for a total of approximately 30% to 40% of the employed labor force. As of 1 April 2018, the total number of U.S. employed (farm and nonfarm) is 155,215,000 million people.²¹⁷ Using the 30% and 40% figures, a total of 46 to 62 million Americans would be considered contingent workers. By 2030, at 50% of all employed workers, the United States would have a total of 90 million contingency workers and 90 million standard full-time workers. By 2030, Jobenomics estimates that 12% (21,600,000) will be core contingency workers and 38% (68,400,000) non-core contingency workers. If a major financial downturn occurs, the core percentage could be much higher.

The recent growth in 1099 workers (IRS Form 1099-MISC used by independent contractors, aka contingent workers) suggests a massive transition from full-time to contingent work this decade. In 2010, 82 million 1099s were sent to the IRS. By 2014, the number grew to 91 million for a total of 9 million for the four-year period or roughly 22 million if extrapolated for the entire decade. It should be noted that 1099s are only filed for wages over \$600. Many contingent workers, like apps developers, are working for zero wages with the hope of a large future payoff or jobs with leading network-centric corporations.



Within the contingent workforce, standard part-time workers are the largest group, at 14%, of all employed workers, followed by independent contractors at 9%, self-employed workers at 4% and core group workers at 6%. It appears that only the incorporated self-employed number were included (5.8 million), not including the unincorporated self-employed (9.4 million), which is consistent with the Jobenomics premise that government surveys are focused on incorporated

²¹⁶ GAO, Contingent Workforce Report (GAO-15-168R), Tables 3 & 4, 20 April 2015, <http://www.gao.gov/assets/670/669766.pdf>

²¹⁷ BLS, Labor Force Statistics from the Current Population Survey, (Seas) Employment Level (LNS12000000). 25 July 2017



businesses in existing nonfarm industries. It is also important to note that the number of incorporated self-employed businesses has grown by 35% since year 2000, giving credence to the notion that non-core contingent businesses are an important faction of the U.S. labor force and overall economy—a faction that is neither well reported nor understood.

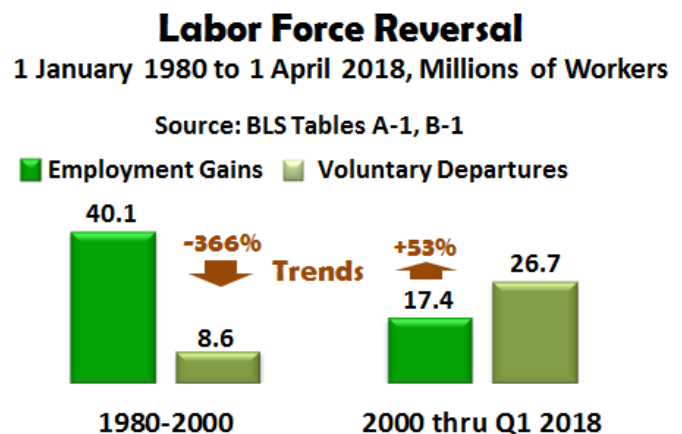
Jobenomics contends that resumption of the CWS will be a vitally important first step to laying a framework in understanding the contingent workforce's size, character and impact on the U.S. labor force and economy. However, Jobenomics is concerned that the BLS has historically been constrained by key worker protection laws that focus surveys on employees of standard companies as opposed to non-core contingent workers who are not classified as employees. Without a complete analysis of the entire contingent workforce spectrum (core and non-core, standard and nonstandard, or contingent and alternative work arrangements), it will be impossible for policy-makers to assess the degree of influence that the contingent workforce is having on the labor force.

Jobenomics Contingent Workforce 50%+ Forecast (Seven Major Factors).

By 2030, or sooner, Jobenomics forecasts that contingency workers will be the dominant (over 50%) component of the U.S. workforce. This forecast is based on seven factors: (1) increasing labor force losses versus labor force gains, (2) adverse corporate hiring and employment practices, (3) revolution in energy and network technologies, (4) impact of the emerging digital economy, (5) automation of the labor force, (6) shift from full-time, to part-time and task-oriented labor, and (7) cultural differences of new labor force entrants.

(1) Increasing labor force losses versus labor force gains. The U.S. labor force took an ominous reversal at the beginning of the 21st Century when able-bodied adult workforce departures dramatically outpaced the number of people entering the labor force.

During the 1980s and 1990s, voluntary departures were 366% less than employment gains (40.1 million versus 8.6 million). From the beginning of year 2000 through Q1 2018, voluntary departures were 53% more than employment gains (17.4 million versus 26.7 million). From a Jobenomics standpoint, this labor force reversal is largely due to the poor economic conditions, conservative hiring practices, use of technology to automate and outsource work to contingent workers, and attractiveness of government welfare and means-adjusted assistance programs.



Without significant jobs growth in conjunction with a meaningful reduction of voluntary departures, the U.S. economy is not sustainable, middle-class wages will continue to erode, consumption (70% of U.S. GDP) is likely to falter, and another recession is probable. Consequently, it is imperative that policy-makers, decision-leaders and business executives aggressively create employment opportunities that will motivate citizens towards workfare over welfare and self-sufficiency over public/familial dependence.

The best way to motivate contingent workers is to emphasize the plethora of employment opportunities afforded by the millions of open U.S. jobs, the fastest-growing service industries that are generating vast majority of all new jobs, by the millions of new opportunities that are available via the ongoing energy technology and network technology revolutions, and mass-producing small and self-employed businesses.

According to the most recent BLS Job Openings and Labor Turnover Survey (JOLTS), there are 6,469,000 job openings in the United States.²¹⁸

²¹⁸ BLS, Job Openings and Labor Turnover Survey (JOLTS), <http://www.bls.gov/news.release/jolts.htm>

Job Openings by Industry

6,469,000 Unfilled Jobs

Source: BLS, JOLTS Table 7, Not Seasonally Adjusted

Thousands (000s) of Jobs, as of **March 2018**



The JOLTS report calculates the number and rate of job openings, hires, and separations for the nonfarm sector by industry and geographic region. As shown, the four private sector industries that have the largest number of openings are: Health Care (1,121,000), Professional and Business Services (1,100,000), Retail and Wholesale Trade (877,000) and Accommodation and Food Services (821,000). State and local government have 553,000 openings that are likely to remain unfilled due to budget constraints. The primary reason for the large number of private sector job openings is due to the lack of job skills. The secondary reason is due to economic uncertainty.

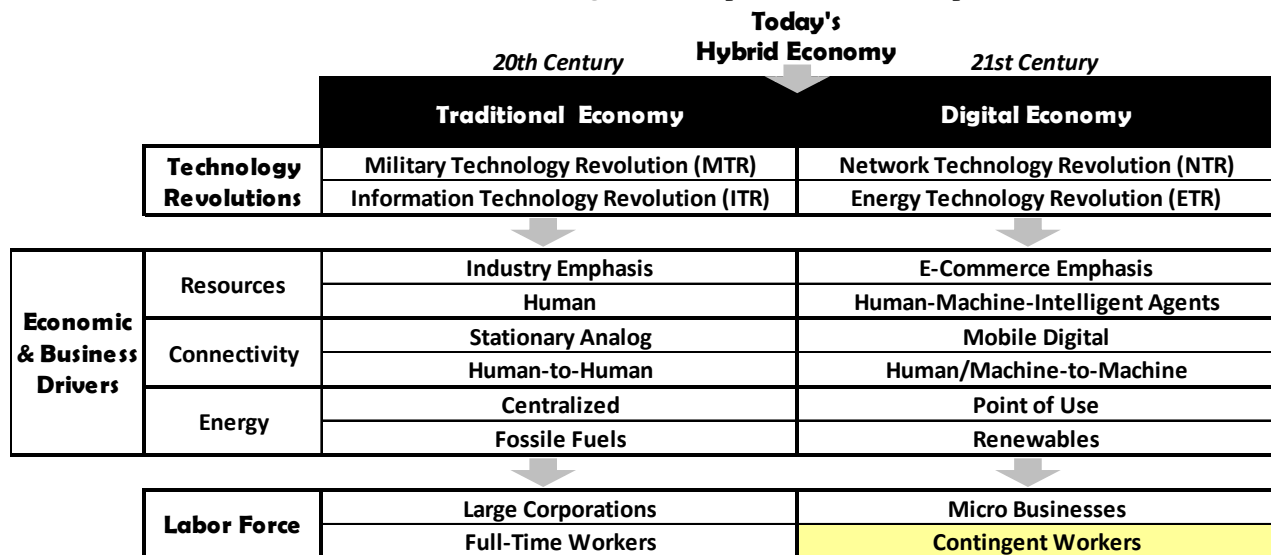
Contingent work and new non-core contingency businesses are an important component of fulfilling these opportunities—a component that has not been aggressively supported in the United States. These open jobs can be filled by a combination of new full-time hires or contingent labor (independent contractors, consultants and part-time task-oriented workers). Now is the time to plan and create meaningful employment and income opportunities for the contingency workforce.

(2) Adverse corporate hiring and employment practices. From 2010 to 2017, small businesses created 3.4-times as many jobs as big businesses. Today, major corporations make more money on money than on people-made goods or people-provided services. Since the end of the Great Recession in 2009, big business received numerous government incentives and low interest loans compared to small businesses. Rather than using these incentives to recapitalize, most corporations understandably used the money to buy back stock, merge, acquire and invest in the secondary market. The net result of these actions was stronger corporations and a weaker labor force. If not for small business, the U.S. labor force would be much smaller than it currently is.

While it is essential that the United States maintain strong corporations, it is equally essential to develop a strong labor force. Major corporations must play a larger role in developing skills, jobs and

startup businesses to fill open private sector jobs, provide meaningful wages to contingent workers and helping to provide opportunities for small business development.

U.S. Transitioning To a Hybrid Economy



The U.S. economy is transitioning from a traditional W-2 economy with standard employees to a digital 1099 economy with non-employee contingent workers. From a corporate standpoint, non-employees (contingent workers) make a lot of sense. Outsourcing work to a task-oriented and temporary workforce can provide corporate managers more flexibility and higher profitability than maintaining higher-priced, full-time employees. Contingent workers are also a solution to corporations that are struggling to attract talented workers. Critical skillsets can often be obtained by independent contractors, flex-workers, freelancers and on-demand labor.

According to Ardent Partners, a U.S. research consultancy, “95% of organizations today perceive their contingent workforce as important and vital today not only to day-to-day operations, but also to ultimate enterprise success and growth.” In 2015, Ardent calculates that 54% of corporate top talent is concentrated on traditional workers, 20% on contingent workers, and the remaining balance (26%) a combination of traditional and contingent workers. By 2017, this concentration is expected to be 41% traditional, 25% contingent and 34% combined.²¹⁹

Unfortunately, corporate America does not have a common contingent workforce management framework. The same is true with government agencies at both the federal and state level. In order to build a stronger U.S. labor force, leading corporate executives and government officials need to develop a strategic contingent workforce plan that will minimize exploitive hiring and contracting practices of non-employees as well as giving rise to contingency-oriented businesses that provide livable incomes to their constituencies.

²¹⁹ Ardent Partners, The State of Contingent Workforce Management 2015-2016, <http://ardentpartners.com/CWM15/ArdentPartners-TheStateofCWM2015.pdf>

(3) Revolution in energy and network technologies. Today, the U.S. economy can be characterized as a hybrid economy that was formed largely by previous technology revolutions (the post-WWII Military Technology Revolution and the 1980s/1990s Information Technology Revolution) and is being transformed by two emerging technology revolutions (Energy Technology Revolution [ETR] and the Network Technology Revolution [NTR]).

The ETR and NTR have the potential to create millions of small and self-employed businesses and tens of millions of net new U.S. jobs. A substantial percentage of these new jobs will be high-end contingency work provided by a contingent workforce oriented professional services firms, consultancies, independent contractors and self-employed businesses.

The ETR and NTR will be both innovative and disruptive. Innovative technology produces new and more efficient products and services that *create* new jobs, businesses, markets and industries. Disruptive technology produces new and more efficient products and services that *displace* existing jobs, businesses, markets and industries. If properly planned and executed, the churn created by the ETR and NTR can provide significant benefit to the U.S. labor force and economy. Unfortunately, the United States does not have a strategic vision for either of these revolutions.

Energy Technology Revolution (ETR) ²²⁰ involves emerging energy technologies that will transform the global energy mix and create hundreds of millions of new jobs around the world.

The Energy Technology Revolution (ETR)

The ETR Is A Perfect Storm of Energy Technologies, Processes and Systems Including:

Renewable Energy Sources (Biomass/Biofuels/Wood, Hydroelectric & Hydrokinetic, Wind, Solar, Geothermal, Municipal Waste), Alternative Fuels, Advanced Batteries, Advanced Vehicles (Electric Vehicles, Fuel Cells, Hydrogen Vehicles), Nuclear (Small Modular Reactors, Fusion Reactors), Coal, Conventional and Unconventional Oil & Gas (Petroleum & Other Fluids, Natural Gas, LNG & GTL, Methane Hydrates), Exotics and Yet Unknown Technologies as well as new energy services including Energy Efficiency, Energy Conservation, Energy-as-a-Service (EaaS), Energy Assurance and Security and Energy Disaster Preparedness and Recovery Services.



The ETR Will Revolutionize Labor Forces, Economies And Nations Via The:

Renewable energy sources, micro-grids, net-zero communities, advanced vehicles, alternative fuels, energy storage devices and smart networks will allow energy generation to occur closer to the consumer. Generating power close to the point-of-consumption eliminates cost, complexity, interdependencies and inefficiencies associated with transmission and distribution over 3 million miles of power lines in America.



The ETR Will Be Brilliantly Innovative And Creatively Disruptive:

Creating tens of millions of net new U.S. jobs and businesses.

Countries that have a national ETR strategy will claim the bulk of these jobs. Future U.S. energy employment growth will be determined by the degree of forward planning and investment, new

²²⁰ Jobenomics Energy Technology Revolution Report, <http://jobenomicsblog.com/energy-technology-revolution/>

businesses creation, recapitalization of retrofitting/replacing old equipment and exportation of American energy-related goods and services. Replacing and retrofitting retiring power generation and transportation systems with newer, cost-efficient and cleaner systems will also produce a new generation of high-tech workers for a workforce that is likely to be dominated by contingent labor.

Jobenomics estimates the size of the U.S. energy super-sector to be approximately 12 million employees, not including another 4 million automotive industry direct employees. If properly managed, this super-sector's future is so bright that it is conceivable that the U.S. could double these numbers within the foreseeable future by (1) exporting energy, technology, systems, processes and services, and (2) moving from a centralized supply-driven architecture to a more decentralized demand-driven architecture that generates power at the point-of-consumption, whether it is a residence, a vehicle or a portable device.

Driven by growing global energy demand (that is forecast to grow 33% by 2030), climate change, renewable energy, cleaner fossil fuels and energy efficiency, the appetite for clean and affordable energy has never been higher. Climate change is a catalyst for nations, businesses and citizens to adopt new ETR technologies, systems, processes and services that will create a better, cleaner and cheaper energy ecosystem. Renewable energy sources, including **solar, wind, biofuels, hydroelectric, hydrokinetic, geothermal, municipal waste** and **biomass**, are already producing millions of new American jobs. Cleaner fossil fuels will play a major role in job creation in conventional and unconventional **oil and gas** production. U.S. **coal**, considered a dirty fossil fuel, has a strong upside potential with exports, and clean coal and coal gasification technologies. **Methane hydrates, liquefied natural gas** and **gas-to-liquid** production could also create millions of new jobs. The United States is also on the verge of major nuclear technology breakthroughs including **fusion, small modular** and **thorium nuclear** reactors.

The economic, business and employment potential in transportation is also huge considering revolutionary technologies in **alternative fuels, advanced vehicles, advanced batteries** and exciting new systems, such as **fuel cells**. In the alternative fuels industry, a dozen technologies show promise including biodiesel, electric, propane, natural gas, hydrogen, ethanol, biobutanol, drop-in biofuels, methanol, P-Series fuels, renewable natural gas, and Fischer-Tropsch xTL fuels. A wide variety of advanced vehicles (biodiesel vehicles, hybrid electric vehicles, plug-in hybrid electric vehicles, all-electric vehicles, flexible fuel vehicles, natural gas vehicles, propane vehicles, and fuel cell electric vehicles) are changing the global automotive and transportation landscape. Every advanced economy has a national advanced battery program. Advanced batteries and fuel cells will boost national economies, perhaps rivaling the economic impact of the personal computer. Jobenomics expects that lithium batteries (lithium-sulfur, lithium-ion, and lithium-ferrophosphate) will deliver the most viable near-term storage systems in both the transportation and electric power generation sectors. Global revenue for fuel cells (proton exchange membrane fuel cells, direct methanol fuel cells, phosphoric acid fuel cells, molten carbonate fuel cells, alkaline fuel cells and solid oxide fuel cells) is projected to grow from \$2 billion today to \$40 billion in 2022.

Worldwide, the automotive manufacturing industry supports over 50 million jobs. Approximately 10 million are direct manufacturing employees and 40 million are indirect or induced jobs. If vehicle manufacturing were a country, it would be the sixth largest economy in the world.

The ETR is likely to change energy scarcity to energy abundance. No one saw the renaissance in the natural gas industry a decade ago due to the combination of horizontal drilling and hydraulic fracturing (fracking). Fracking is unlocking hydrocarbons buried deep underground in the continental U.S. and soon will do so around the world. A decade from now, hydrogen could replace gasoline, and renewables could replace coal. Equally possible, coal would be cooked rather than burned to produce clean methane and net-zero buildings could be energy self-sufficient. Gasification technology is unleashing clean-burning synthetic gases from garbage, human and animal waste and biomass. Energy efficiency has moved from the “hidden fuel” to the “first fuel”, exceeding output from any other fuel source. The vast majority of jobs created by these technologies will involve the contingent workers by a substantial margin over standard jobs.

The energy service-providing industry is one of the fastest growing, and least understood, American industries. Energy services include **energy efficiency, energy conservation, energy security and assurance, energy-as-a-service** (managing large and complex energy assets in an interactive, integrated and seamless way) and **energy disaster preparedness and recovery**. The energy efficiency sector alone could create 1.3 million new U.S. jobs by 2030 and saving U.S. consumers \$1.2 trillion by 2020. Energy service companies, called ESCOs, specialize in monetizing gains in energy efficiency. U.S. ESCO industry revenues grew from \$2 billion in 2000, to \$6 billion in 2013 and are projected to be as high as \$15 billion by 2020.²²¹

Exotic technologies, such as **hydrogen**, energy harvesting, spray-on solar cells, cold fusion and vortex technologies are in development—each of which could have a significant impact on the U.S. economy and labor force. The impact of a hydrogen economy would be dramatic. According to a DoE report to Congress²²², under a rapid transformation scenario, hydrogen would completely replace new light-duty vehicle sales, replace 11 million barrels/day of oil by 2040, and provide 10% of U.S. electrical consumption by 2050. According to the same report, 675,000 net new direct jobs could be created with manufacturing hydrogen fuel cells, fuel cell maintenance and support systems, and hydrogen production from fossil fuels like coal and natural gas. Net employment in the automotive industry would remain unchanged between the gasoline and hydrogen economies, but replacement of gasoline-related skills with hydrogen-related skills would be substantial in the dealership and repair industries.

Renewable energy sources, **micro-grids, net-zero communities**, advanced vehicles, alternative fuels, **energy storage** devices and **smart networks** will allow energy generation to occur closer to the consumer and create millions of microbusinesses for the contingency workforce. Generating power close to the point-of-consumption eliminates cost, complexity, interdependencies and inefficiencies associated with transmission and distribution over 3 million miles of power lines in America. Like distributed computing (i.e., PCs) and distributed telephony (i.e., mobile phones), distributed generation shifts control to the consumer. It is also likely that on-site power generation will create

²²¹ DoE, Berkeley Lab, September 2013, <http://emp.lbl.gov/sites/all/files/lbnl-6300e-ppt.pdf>

²²² DoE Hydrogen Program, Effects of a Transition to a Hydrogen Economy on Employment in the United States, Report to Congress, Page 6, July 2008, http://www.hydrogen.energy.gov/pdfs/epact1820_employment_study.pdf

an order of magnitude more businesses and jobs, much in the same way the PCs and smartphones and personal digital assistants currently provide.

Net-zero communities, buildings and homes could significantly reduce the \$2.0 trillion needed by 2030 to modernize and protect the aging and highly-vulnerable U.S. electrical grid that loses as much electrical energy as it delivers. By shifting energy generation from centralized to decentralized, point-of-use systems, the ETR will not only be more efficient but has the potential to create a massive number of local jobs and small businesses.

While the U.S. is in the forefront in the emerging ETR, America lacks an overall strategy from a business and job creation perspective. A combination of renewable, cleaner fossil fuels, nuclear, transportation, storage, energy efficiency and energy security advancements are needed as outlined in the Jobenomics ETR plan. In the view of many energy experts, the Jobenomics ETR plan is unique since it is a synergistic development plan that focuses on emerging energy technologies, systems, processes and services across the entire energy ecosystem from a business and job creation perspective. As the unconventional oil and gas and renewable energy industries have proven, contingent workers and independent contractors are ideally suited for the ETR.

The Network Technology Revolution (NTR) ²²³ is defined by Jobenomics as the “perfect storm” of next-generation network and digital technologies that will (1) transform economies, (2) revamp existing institutions, businesses, labor forces and governments, (3) institute new and different ideas, beliefs, behaviors and cultures, and (4) change the very nature of human endeavor and work.

The nascent NTR already has been brilliantly innovative and creatively disruptive. The more creative the NTR becomes the more destructive it will be. From an American outlook, with the proper focus and leadership, the NTR can create millions of new U.S. small businesses and tens of millions of jobs. Left unattended, unstructured and unplanned, the NTR is likely to render half of the U.S. workforce obsolete in the near future. From a global perspective, the NTR can be even more transformational.

From an NTR perspective, Jobenomics sees three major U.S. labor force trends occurring today that will have a dramatic effect on America’s future economy and employment, (1) more than any other labor force trend, the NTR will create significantly more employment opportunities for the contingent workforce than the traditional workforce, (2) new workforce entrants and NTR-savvy digital natives have a substantial different view regarding the way business is currently conducted and their roles in business, and (3) those who cannot adapt will likely depart the U.S. labor force to the growing netherworld of perpetual familial and government assistance.

The power of the NTR should not be underestimated or understated. What took centuries to transform in the Agricultural Age and decades in the Industrial Age, now takes years to transform in the emerging Digital Age. Computing power increased 400,000 fold since the advent of the first microprocessor in 1971. Today, half of the world’s population carries a smartphone with the power of a 1980s room-size supercomputer. This super-colossal, miniaturized, proliferated and customized

²²³ Jobenomics Network Technology Revolution Report, <http://jobenomicsblog.com/network-technology-revolution/>

power is poised to transform society exponentially more via a perfect storm of over three dozen emerging, revolutionary NTR technologies, systems, processes and services.

Even in today's fledgling stage of development, the NTR's impact is extraordinary. At maturity, the NTR's future impact is likely to be somewhere between phenomenal and cataclysmic. Some of the world's leading technical thinkers (Steven Hawking, Bill Gates, Elon Musk) believe that the perfect storm of NTR technologies, systems, processes and services can potentially pose an "existential threat" to mankind when machines achieve the level of general human intelligence—the point of "singularity"—which could arrive as early as mid-Century.

The Network Technology Revolution (NTR)

Source: Jobenomics



NTR's "Perfect Storm". Industrial Revolution (IR) transformed America from an agricultural-based society to an industrial-based society. WWII and post-WWII Military Technology Revolution (MTR) underpinned the creation of the largest economic superpower on the planet. The 1980/90s Information Technology Revolution (ITR) ushered in an information age of prosperity and international commerce. Today, the Network Technology Revolution (NTR) is reshaping the global economy. Like the IR, MTR and ITR, the NTR could lead to the creation of millions of U.S. businesses and tens of millions of new American jobs, as well as countless economic and social benefits.

Globally, the NTR's potential is exponentially greater in terms of business, employment and societal transformation.

The NTR is characterized by a “perfect storm” of highly advanced technologies, systems, processes and services including **big data** (datasets that are too large to efficiently handle), **cloud computing** (practice of using a network of remote servers hosted in data centers to store, manage, and process big data), **semantic webs** (thinking websites), **synthetic reality** (blending of the virtual and natural worlds), **mobile computing** (proliferation of smart mobile devices and micro-devices), **ubiquitous computing** (embedding microprocessors in everyday objects to communicate without human interaction), **quantum computing** (harnessing the power of atoms and molecules to perform memory and processing tasks), **5G broadband networks** (50-fold speed increases and 1000-fold data volume improvements), **geo-location** (the process of determining the location of an entity by means of digital information processed via the Internet), **near-field communications** and **beacons** (short-range wireless technology that connects devices), **inductive charging** (electromagnetic wireless charging of devices, micro-devices and nano-devices), **spatial sensing** (real-time detection, measuring, mapping and analysis of objects in relationship to the environment), **computer vision** and **pattern recognition** (training computers to gain high levels of understanding from digital images and videos and recognizing patterns and regularities in the data), **natural language processing** and **speech recognition** (the ability of a computer program, machine or intelligent agent to understand and respond to human speech), **data mining** and **predictive analysis** (using advanced algorithms to analyze large databases to make predictions about unknown future events), **machine learning** (systems that can learn and teach each other), **transfer learning** (machine “reasoning” that takes lessons learned from past human experiences and applies it digital domains), **deep learning** (an artificial intelligence technique allowing machines to extract patterns from big data in the same manner that the human brain does), **robotics** (automated machines capable of movement), **telepresence** and **telechairs** (operating machines remotely to sense and create an effect or control), **nanobotics** (also called nanomachines, nanoids, nanites and nanomites are microscopic self-propelled machines with a degree of autonomy and reproductive capability at the molecular level), **chatbots** (web robots that run automated tasks or simulate conversations with users), **mechatronics** (technology combining electronics and mechanical engineering), **memetics** (machines that can create memes to mimic cultural traits and ideas), **biometrics** (agents that can identify and track biological traits), **smart cards** (credit card-like devices that can send and store personal and identifying material), **blockchains** (distributed digital economy public ledgers), **fintech** (financial technology oriented to transforming incumbent financial institutions and corporations), **multifactor credentialing** (automated authentication and identification of crowds, individuals and intelligent agents), **emotive surveillance** and **management** (systems that analyze and manage emotions), **identity management** (controlling user access and restoring damaged online identities), **anonymity networks** (networks that enable users to block or trace data and identities), **ambient intelligence** (when formerly dumb or mute objects are given the ability to communicate), **artificial intelligence** (or AI, intelligent algorithms and agents that will augment human interactions), and **intelligence agents** (AI agents that replace or supersede the need for human intervention and actions).

The NTR will revolutionize labor forces, economies and nations via the emerging digital economy. The Digital Economy is an economy that is based on digital and networked technologies, which is increasingly intertwining and preempting today's traditional economy.

- The **E-Commerce Economy** is the buying and selling of goods and services, or the transmitting of funds or data, via digital networks. These business transactions occur as business-to-business, business-to-consumer, consumer-to-consumer or consumer-to-business.
- The **Sharing Economy** community's vision of the new economy involves sharing underutilized or idle assets via mobile devices, redefining the value of ownership and upending major industries like transportation, accommodation, and logistics.
- The **On-Demand Economy** is a business model where consumer demand is satisfied by near real-time provisioning of goods and services.
- The **App/Bot/AI Economy** community's broad view emphasizes automation of daily mundane tasks via smart algorithms and artificial intelligence agents that reduce the need for human intervention and increase leisure time for more productive pursuits.
- The **Platform Economy** community sees the digital economy from a network platform business model where mega-corporations exploit network effects to garnish greater and greater degrees of influence and control of major segments of society and the global economy.
- The **Gig/Contingent Workforce Economy** community's focus is on creating an employment landscape that provides an opportunity for workers in the future economy where part-time and temporary workers outnumber full-time workers with standard workforce agreements.
- The **Data-Driven Economy** community's mindset involves the exploitation of storage, search, capture, query, transfer, sharing, visualization and analysis of zettabytes of Big Data as a way to create a new digital economy.
- The **Internet of Everything Economy** community looks at the digital ecosystem from the perspective that tens of billions of connected things will exert significantly more influence than the billions of connected people.

The NTR will create or dismantle tens of millions of businesses and billions of jobs globally. Countries with a forward-looking national NTR strategy will garnish the bulk of the newly emerging digital jobs and businesses. There are 176 transformative NTR platform companies worldwide, each with a market valuation of over \$1 billion, worth a total of \$4.3 trillion.²²⁴ China and the United States dominate with 64 and 63 major platform companies respectively. U.S. platform companies are foundational in terms of innovation and transformation. U.S. foundational platform companies created the innovative and disruptive digital platforms on top of which other firms develop complementary technologies, systems, processes and services.

To a large extent, China's platform companies are built on U.S. foundational platforms. However, unlike their U.S. counterparts, China's platform companies are applying NTR-related technology, systems, processes and services within a government-backed strategic framework to mass-produce small businesses and jobs in order to raise 700 million Chinese rural poor out of poverty. To a lesser extent, these types of strategies are being promulgated in many other parts of the world. From a

²²⁴ The Center for Global Enterprise, The Rise of the Platform Enterprise: A Global Survey, January 2016, http://thecge.net/wp-content/uploads/2016/01/PDF-WEB-Platform-Survey_01_12.pdf

Jobenomics perspective, U.S. policy-makers and platform-CEOs need to concentrate America's exceptional NTR abilities on developing a state-of-the-art, network-centric ecosystem that will enable Americans to become self-sufficient and competitive in the emerging global digital economy.

America is blessed to be the home of NTR platform giants like Apple, HP, Facebook, Google, CISCO, Amazon, Microsoft, eBay and dozens of other NTR companies. While U.S. NTR giants are making great technical advancements in communication, media and entertainment, foreign countries in Asia and Europe are using U.S. technology to develop their labor forces and economies to a much greater degree than in the United States. As corporate citizens, U.S. NTR companies need to assume a much greater role in developing their domestic workforce that is capable of competing and prospering in the emerging global digital economy. From a Jobenomics perspective, NTR CEOs should take the lead (i.e., the responsibility) for creating a minimum of 10 million net new U.S. jobs within the next decade via the creation of network-centric small, micro and self-employed American businesses.

If Tim Cook turned Apple's creative energy to creating NTR-optimized e-business devices, tens of millions of more Americans (and billions of people around the world) could be given the opportunity to build a business. If Mark Zuckerberg used Facebook to monetize social networks, tens of millions of new careers could be created. If CISCO's Chuck Robbins will spend a small portion of time and effort developing the Internet of Business as compared to the Internet of Things, millions of new businesses could be created. The same is true of Jeff Bezos and Amazon, Satya Nadella and Microsoft, Sundar Pichai and Google, Ginni Rometty and IBM, as well as the rest of the American NTR CEOs. Together, these companies could create untold numbers of new U.S. jobs and microbusinesses that would mitigate the erosion of the middle-class, provide new career paths for the digital generation, and create meaningful income opportunities and livelihoods for the evergrowing contingent workforce.

With the proper focus and leadership, an American NTR national initiative can create millions of new small businesses and tens of millions of jobs. Left unattended, unstructured and unplanned, the NTR is likely to render half of the U.S. workforce obsolete in the near future. The NTR could produce tens of millions of net new U.S. jobs and millions of small businesses. On the other hand, via automation, the NTR has the potential to obsolete tens of millions of existing jobs. A national NTR strategy is needed to maximize labor force gains and minimize labor force losses.

(4) Impact of the emerging digital economy. As discussed in the previous section, the Digital Economy has eight distinct but interconnected communities: (1) Electronic/Mobile Commerce Economy, (2) Sharing Economy, (3) On Demand Economy, (4) Apps/Bot/AI Economy, (5) Platform Economy, (6) Gig/Contingent Workforce Economy, (7) Data-Driven Economy, and (8) Internet of Everything Economy. Today, the Electronic/Mobile Commerce Economy is the community that is most recognized and understood. The Gig/Contingent Workforce Economy is almost invisible to the American public and the least understood. By 2030, most of today's economic and technical experts look to the Internet of Everything Economy as the force majeure. Jobenomics disagrees. Given current trends and stockpiles of cash, the Platform Economy is likely to dominate the global economic landscape with hegemonic power afforded to interlocking mega-platform conglomerates.

Predicting the digital economy at this early stage is merely a guessing game. The only reality known today is that the economy is in a massive state of transition due the combined effects of the emerging NTR and the digital economy.

A digital economy conducts transactions via digital networks that connect workers, customers, businesses and governments. A digital economy is often characterized by a much greater percentage of professional, self-directed, entrepreneurial, contingent workforce owners and employees. Digital economy work can be full-time or part-time, and may be the primary source of income or a supplemental source.

The digital economy provides a global network that allows individuals, organizations and governments to access information, interact, communicate, collaborate, and provide products and services. Digital products and services include a vast repository of digitized products (news, video, music, data, information, knowledge, etc.), financial transactions (e-government, e-business and e-commerce), social networking (Facebook, Twitter, Instagram, etc.), and networked physical goods (e.g., Internet of Things).

The digital economy consists of various components including: government (policy and regulation), infrastructure (internet, networks, telecom and electricity), providers (digital service, content, information and knowledge workers), technology (R&D, processes and systems) and e-commerce (business-to-business, business-to-consumer, consumer-to-consumer and government to business/consumer). To achieve maximum productivity, these components must operate efficiently and collectively.

Today, the U.S. economy is a hybrid economy that is approximately 95% traditional and 5% digital as a percent of GDP.²²⁵ However, the U.S. digital economy is growing at 20% per year and is likely to be the dominant economy by mid-century based on a number of governmental, economic, technological and societal factors that can be managed but not controlled. As shown, global competition for digital economic dominance has already begun and, by many accounts, the United States is not competing as well as one would expect given the U.S. dominance in enabling NTR research, development, technologies, systems, processes and services.

U.S. Bureau of Economic Analysis (BEA) more narrowly defines the digital economy in terms of Internet and related information and communications technologies (ICT). Notwithstanding, the economic impact has been substantial. From 2006 to 2016, the BEA estimates that the U.S. digital economy real value-added grew at an average annual rate of 5.6%, outpacing the average annual rate of growth for the overall economy of 1.5%. In 2016, the digital economy was a notable contributor to the overall economy—it accounted for 6.5% (\$1.2 trillion) of current-dollar GDP (\$18.6 trillion), 6.2% of current-dollar gross output, 3.9% of employment, and 6.7% of employee compensation. When compared with traditional U.S. industries, the digital economy ranked just below Professional, Scientific and Technical Services that accounted for 7.1% (\$1.3 trillion) of current-dollar GDP, and just

²²⁵ Statista, Share of the internet economy in the gross domestic product in G-20 countries in 2016, <http://www.statista.com/statistics/250703/forecast-of-internet-economy-as-percentage-of-gdp-in-g-20-countries/>

above Wholesale Trade that accounted for 5.9% (\$1.1 billion) of current-dollar GDP. In 2016, the U.S. digital economy supported 5.9 million jobs, or 3.9% of total U.S. employment (150.3 million).²²⁶

As shown below, retail e-commerce sales from the top-10 leading countries almost doubled from \$1.1 trillion in 2014 to \$2.1 trillion in 2017 according to Statista, a leading online, market research and business development company headquartered in Hamburg, Germany.²²⁷

Top 10 Countries Ranked by Retail E-Commerce Sales in 2017



- China e-commerce sales represented 57% (\$1.2 trillion) of the total \$2.1 trillion 2017 sales. The United States came in second place with 20% (\$432 billion) of the total. The United Kingdom came in third with 6% (\$121 billion) of the total.
- Per capita, the United Kingdom came in first with \$1,834 per capita, followed by the United States with \$1,331, followed by Canada with \$958. China is in 8th place with \$857 per capita, which is impressive since China is still a developing country.²²⁸

Not shown,

- Even more impressive is the fact that China's rate of e-commerce retail sales growth increased 156% from 2014 to 2017, followed by Canadian sales growth of 53% and U.S. sales growth of 45% during the same period of time.

²²⁶ U.S. Bureau of Economic Analysis, Working Paper, Defining and Measuring the Digital Economy, 15 March 2018, https://bea.gov/digital-economy/_pdf/defining-and-measuring-the-digital-economy.pdf

²²⁷ Statista, Leading countries ranked by retail e-commerce sales from 2014 to 2019 (in billion U.S. dollars), <https://www.statista.com/statistics/377624/leading-countries-retail-e-commerce-sales/>

²²⁸ "Worldometers, Countries in the world by population (2017), <http://www.worldometers.info/world-population/population-by-country/>

- Statista projects that from 2017 to 2019, China's e-commerce sales will grow by **63%** to an annual sales total of \$2.0 trillion in 2019. The United States e-commerce sales growth is projected at **24%** for a total of \$535 billion in 2019.
- By 2019, retail e-commerce sales from the top-10 leading countries are projected to be \$3.1 trillion. Over the 5-year period from 2014 to 2019, the average annual e-commerce sales growth rate for these 10 countries is projected to be 35%. 35% is an amazing statistic considering the growth forecast for 2018 is only 1.9% for advanced economies and 4.8% for emerging and developing countries, as forecast by the International Monetary Fund's July 2017 World Economic Outlook Update.²²⁹ **If these statistics are correct, e-commerce sales are projected to beat GDP growth in advanced economies by a factor of over 18-to-1.**

According to eMarketer, a research firm, worldwide retail products and services sold on the internet will account for 8.6% of the total retail market worldwide for a value of approximately \$2 trillion. By 2019, retail e-commerce is projected to increase to 12.8% for a value of \$3.6 trillion. The average growth per year ranges from 18.7% to 22.7% growth.

Regarding "the true economic impact" of the digital economy according to a 2017 report produced by Oxford Economics and Huawei, "digital spillover happens when technology accelerates knowledge transfer, business innovation, and performance improvement within a company, across supply chains and amongst industries, to achieve a sustainable development economic impact." These knock-on spillover effects are central to understanding "the true economic impact" of technology and should be included in any meaningful assessment of the size of the digital economy.²³⁰ The Oxford/Huawei Spillover Report estimates that:

- In 2016 the worldwide digital economy was \$11.5 trillion, or **15.5% of global GDP**.
- By 2025, the digital economy is expected to grow to \$23 trillion, or **24.3% of global GDP**.
- The **digital economy averages 18.4% of GDP in advanced economies**, ranging from a high of 35% in the United States to low of 10%. The digital economy averaged **10% of GDP in developing economies**. China's share has trebled from 4% of GDP in 2000 to 13% in 2016.
- **Compared to traditional global economic growth, the digital economy is growing 2.5-times faster with 6.7-times better return on investment.**

While Jobenomics could reference numerous other sources, McKinsey, Statista, Oxford/Huawei data indicates that the digital economy is greatly outpacing and producing more bang-for-the-buck than the traditional economy. Therefore, it is very important that policy-makers, decision-leaders, and corporate-execs seriously consider the rapidly growing digital economy when making decisions regarding investment of precious taxpayer and shareholder funds.

²²⁹ International Monetary Fund's 2017 World Economic Outlook Update, July 2017, <https://www.imf.org/en/Publications/WEO/Issues/2017/07/07/world-economic-outlook-update-july-2017>

²³⁰ Digital Spillover, Measuring the true impact of the digital economy, Huawei and Oxford Economics, http://www.huawei.com/minisite/gci/en/digital-spillover/files/gci_digital_spillover.pdf

Differences between the Old and New Economies

	Traditional Economy Orientation	Digital Economy Orientation
Technology	Analog	Digital
	Industrial	Informational
	Tangible	Conceptual
	Labor-Intensive	Knowledge-Intensive
Business	Corporate	Individual
	Long Timelines	Short Timelines
	Mass-Produced	Custom-Made
	Relationship-Focused	Task-Focused
Governance	Centralized	Decentralized
	Ordered/Structured	Collaborative/Freewheeling
	Hierarchical	Flat
	Fiat Currencies	Digital Currencies

A digital economy's orientation is significantly different than the traditional economy in terms of technology, business and governance.

From a **technology** perspective, today's traditional economy has an industrial/analog/physical/product-based orientation as opposed to tomorrow's digital economy's informational/digital/virtual/knowledge-based orientation.

From a **business** perspective, in today's traditional business economy, corporations are oriented to maintaining corporate cultures, long timelines, mass production and relationship-focused transactions and leadership. Emerging digital businesses will be more oriented towards individuals, shorter timelines, customized services and products and task-focused transactions and leadership.

From a **governance** perspective, in today's traditional economy, governance is oriented to meeting goals defined by performance standards defined by corporate leaders and accomplished by hierarchical, structured and stratified teams. In a digital economy, governance is oriented to task-focused managers of dispersed and networked teams and individuals collaboratively working on defined tasks with shorter-timelines and less cognizance of goals other than accomplishing the task at hand.

As more and more NTR technologies, systems, processes and services are incorporated, the difference between the old and new economy will become more profound. Cloud computing provides a good example of how a single NTR technology can quickly transform traditional organizations into digital organizations.

In less than a decade, the cloud has gone from a distant vision to the business mainstream. One-third of 200 surveyed senior traditional corporate executives said that cloud computing has a

“transformative impact” on their business.²³¹ According to an Oxford Economics survey, a key benefit to cloud computing is the flexibility to start new businesses and close down old businesses. Over the next three years, the majority of these 200 corporate executives plan to make “moderate-to-heavy” cloud investments and increase migration of core traditional business functions into the cloud.

If a single NTR technology can create such big impact, one can only imagine the impact of incorporating three dozen other NTR technologies that will transform traditional businesses into hybrid e-businesses. Also imagine the transformative impact that e-commerce will have on small businesses and contingent workers, and the impact that e-government will have on enhancing bureaucratic efficiency and transparency.

The emerging digital economy will favor contingent work over full-time work. As traditional corporations embrace the digital revolution, the full-time workforce is likely to shrink to a fraction of its current size as corporations outsource greater amounts of full-time work to full-time equivalent (FTE) work to the contingent workforce.

Network-centric corporations are already exhibiting this trend. For example, Google (Alphabet Inc. Class A) has a market capitalization of \$754 billion with 75,000 full-time workers compared to General Electric’s market cap of \$129 billion with 295,000 full-time workers. While General Electric may have over five times as many indirect workers as Google, Google has enabled millions of contingent workers and contingent businesses that are engaged in global e-commerce and other NTR-related occupations. Another good example is a General Motors/Uber comparison. GM’s market cap is \$52 billion and employs 180,000 workers. Uber’s estimated worth is \$51 billion with 12,000 full-time employees and an estimated 1,000,000 contingent workers (mainly drivers) worldwide with approximately half the number in the United States.

(5) Automation of the labor force. While the NTR can create tens of millions of American jobs, it can also obsolete tens of millions of American jobs. As more and more routine manual and cognitive jobs are displaced, the contingent workforce is likely to expand proportionally. Automation will slowly supplant cognitive work task by task giving rise to “centaurs” (a combination of human operators, and intelligent agents and smart machines). Smart machines (that communicate with humans) and intelligence agents (that learn human behavior) are entering the cognitive workforce at a greater and greater rate. Today, these automated machines/agents need human support to perform most tasks. However, they can perform enough complex tasks to reduce the need for full-time human labor, thereby giving rise to centaurs where contingent human workers will provide input as needed or warranted.

The NTR is not today’s version of the 1980/90s Information Technology Revolution (ITR) 2.0. While both the ITR and NTR incorporate revolutionary technology, the NTR portends to be significantly more intrusive than its earlier and more benign ITR cousin. ITR tools were designed to **assist**

²³¹ Oxford Economics, The Cloud Grows Up, February 2015, http://www.sap.com/bin/sapcom/en_us/downloadasset.2015-02-feb-25-23.the-cloud-grows-up-oxford-economics-and-sap-pdf.bypassReg.html

mankind's productivity via rule-based computation of routine-tasks. NTR agents are designed not only to augment, but also **replace** human endeavor via automation of non-routine tasks. As stated earlier, the NTR represents a perfect storm of technologies that emulates human form, attributes and intelligence. Not only does the NTR have the ability to create tens of millions of net new American jobs, it has the ability to eliminate tens of millions of American jobs via automation.

As skilled labor becomes less available or too costly, employers are turning to automation in order to augment, displace or replace the traditional workforce. While automation has been replacing routine manual labor tasks for decades, as evidenced by factory floor robotics, emerging NTR technologies, systems, processes and services are replacing non-routine cognitive tasks, skills, jobs and occupations at greater and greater rates.

By 2025, automated algorithms and smart machines could take on tasks equivalent to 140 million knowledge workers, equating to a global economic impact/savings of up to \$6.7 trillion annually. Knowledge work automation is possible by only three of the three dozen NTR technologies: increased computer processing speeds and memory, machine learning and enhanced machine/human interfaces (such as speech recognition and other forms of biometric readers).²³²

U.S. Occupations Subject To Computerization

Source: Oxford University, The Future of Employment: How Susceptible Are Jobs To Computerization?

0% = not computerizable, 100% = fully computerizable

Probability of Computerization	Sample U.S. Occupations (from 702 Occupations)
0% to 9%	Executives, supervisors, doctors, therapists, scientists, engineers, designers, lawyers, clergy, teachers, instructors, trainers, advisors, social workers
10% to 20%	Chefs/cooks, chemists, technicians, hairdressers, air traffic controllers, pilots, firefighters, electricians, physician assistants
20% to 29%	Middle managers, computer occupations, analysts, concierges, engineering technicians, sales representatives, middle school teachers
30% to 39%	Actors, medical assistants, investigators, editors, flight attendants, bailiffs, surveyors, interpreters/translators, upholsterers, plumbers
40% to 49%	Judges, health and medical technicians, law clerks, electronic repairers, economists, historians, computer programmers, dispatchers
50% to 59%	Court reporters, product promoters, leather workers, commercial pilots, teacher assistants, cost estimators, transit police, personal financial advisors
60% to 69%	Jailers, meat packers, ticket agents, pipe layers, building inspectors, stock clerks, librarians, janitors, bus drivers, mail carriers, dental hygienists
70% to 79%	Airfield operators, laundry workers, carpenters, broadcast technicians,

²³² McKinsey Global Institute, Disruptive Technologies: Advances that will transform life, business, and the global economy, Page 40, May 2013, https://www.sommetinter.coop/sites/default/files/etude/files/report_mckinsey_technology_0.pdf

	archivists, painters, bartenders, machine and computer operators
80% to 89%	Attendants, bellhops, cashiers, tool makers, security guards, meter readers, power plant operators, drillers, conservation workers, real estate agents, construction laborers, cartographers, bakers, stonemasons, technical writers
90% to 100%	Inspectors, appraisers, bookies, tour guides, station operators, pharmacy technicians, insurance sales agents, retail sales, butchers, accountants, auditors, waiters, welders, messengers, paralegals, assemblers, clerks, receptionists, gaming dealers, cashiers, real estate brokers, tellers, umpires/referees, loan officers, tax preparers, underwriters, telemarketers

According to a 2013 Oxford University study on computer automation “about 47% of total U.S. employment is at risk over the next two decades”.²³³ If Oxford’s estimates are correct, out of the 151 million U.S. workers, 71 million jobs could be at risk. It is incumbent on policy-makers, decision-leaders and NTR CEOs to plan now to mitigate this risk to the greatest degree possible.

The Oxford University study regarding the effects of computer automation on the American labor force is the first major effort to quantify what recent technological advances may mean for future employment and the labor force. Oxford analyzed 702 occupations from the U.S. Department of Labor. This Jobenomics chart above, derived from Oxford data, shows the probability of computerization of 100 occupations arranged from 0% (not computerizable) to 100% (fully computerizable).

A job is considered to be “exposed to automation” or “automatable” if the tasks it entails allows the work to be performed by a computer, even if a job is not actually automated. For example, technology has progressed to the point where secretarial and cashier jobs can be automated, but corporations and retail stores still employ approximately 6 million administrative assistants and cashiers in the United States.

The NTR’s impact will be felt across all industries that will become less labor intensive as NTR technologies, systems, processes and services are assimilated, which is happening at greater rates causing large swaths of the U.S. labor force to become less competitive against their mechanical and digital counterparts. A McKinsey Global Institute (MGI) report that showed the 44% of U.S. firms that reduced headcount during the Great Recession did so via automation.²³⁴

In the future, contingent workers will likely provide machines with the wherewithal to replace a substantial percentage of the human labor force with cheaper and more efficient mechanical forms of labor. A recent poll on the impact of technology on employment and earnings of leading academic economists conducted by the Chicago Initiative on Global Markets, 43% of the respondents agreed

²³³ Oxford University, *The Future of Employment: How Susceptible Are Jobs To Computerization?*, 17 Sep 2013, http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdfhttp://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

²³⁴ McKinsey Global Institute, *An economy that works: Job creation and America’s future*, June 2011, file:///C:/Users/CHUCK/Downloads/MGI_US_job_creation_full_report.pdf

with the statement that “information technology and automation are a central reason why median wages have been stagnant in the US over the past decade, despite rising productivity,” whereas, only 28% disagreed or strongly disagreed with the statement.²³⁵

The Oxford study also acknowledges that political and sociological forces will likely restrict many of these jobs from actually being computerized. Historical objections to automation of factory floor manual labor eventually gave way to free-market forces. At the dawn of the Industrial Revolution (England 1811-16), Luddites tried to organize and destroy factory automation to preserve standard jobs. Today’s Luddites maybe able to slow the rate of transformation but the economics of automation will eventually defeat techno-pessimists who resist disruptive technologies and change.

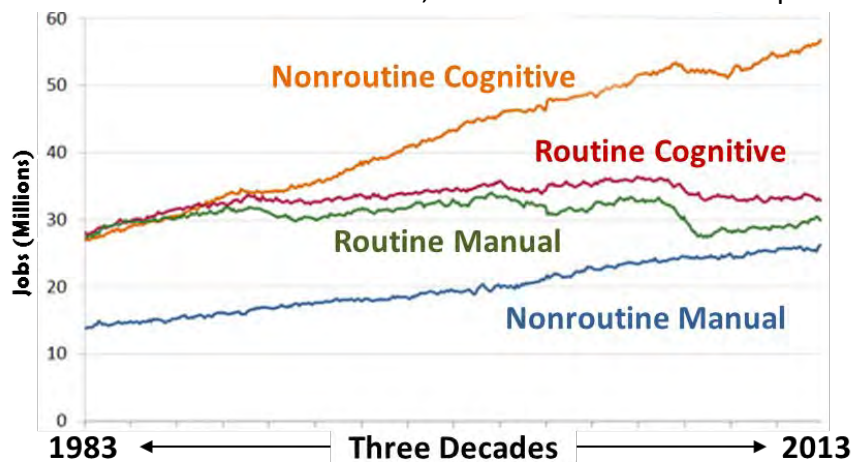
In cooperation with Citi Global Perspectives and Solutions, Oxford University conducted two subsequent studies in 2015 and 2016 that addressed computer automation in greater detail.^{236and237}

The February 2015 Oxford/Citi study reaffirmed the 2013 study probability that 47% of the US labor force is at a high risk of automation. It also assigned the probability that 33% of U.S. workforce is at a low risk of automation (namely the jobs that are highly creative and require social and cultural skills) and the remaining 20% at a medium risk of automation.

As reported by the 2015 study, “the dominant narrative now characterizing how global labor markets are responding to technological change is one of job polarization: the fact that employment growth has been most robust at the highest and lowest ends of the skills spectrum. Middle skill jobs, in contrast, contain the highest concentration of routine tasks and are thus relatively easy to automate.”

U.S. Employment by Type of Work

Source: Federal Reserve Bank of St. Louis, Census Bureau Current Population Survey



²³⁵ Polanyi’s Paradox and the Shape of Employment Growth, by David, H. Author, MIT, NBER and JPAL, 3 September 2014, Page 5, <http://economics.mit.edu/files/9835>

²³⁶ Oxford Martin School and Citi Global Perspectives & Solutions, Technology At Work: The Future of Innovation and Employment, February 2015, http://www.oxfordmartin.ox.ac.uk/downloads/reports/Citi_GPS_Technology_Work.pdf

²³⁷ Oxford Martin School and Citi Global Perspectives & Solutions, Technology At Work v2.0: The Future Is Not What It Used to Be, January 2016, http://www.oxfordmartin.ox.ac.uk/downloads/reports/Citi_GPS_Technology_Work_2.pdf

A report published by the U.S. Federal Reserve Bank of Kansas City, agrees that the U.S. labor force is undergoing “job polarization” with declining middle-skill cognitive and manual routine jobs compared to increasing higher-skill cognitive and manual nonroutine jobs as shown.²³⁸ The Fed believes that the most likely drivers of job polarization are automation and offshoring, as both these forces lower the demand for middle-skill occupations relative to high-skill occupations. Jobenomics includes the rising contingent workforce as a major factor as standard full-time jobs are giving way to temporary part-time and task-oriented work.

Job polarization is a primary cause for the vanishing American middle-class. Per the Fed’s report, “Over the past three decades, the share of middle-skill jobs in the United States has fallen sharply. Middle-skill jobs are those in which workers primarily perform routine tasks that are procedural and repetitive. The decline in the employment share of middle skill jobs has been associated with a number of sweeping changes affecting the economy, including **advancement of technology**, outsourcing of jobs overseas, and contractions that have occurred in manufacturing. As the share of middle-skill jobs has shrunk, the share of high-skill jobs has grown, and that trend has drawn considerable attention. Less well known is the fact that the share of low-skill jobs has also risen.”²³⁹

From a Jobenomics perspective, low-skill jobs are the easiest to automate, whereas medium-skilled jobs are the easiest to bifurcate into task-oriented work that can be performed by a combination of humans and machines. While the NTR is creating new positions for high-skilled workers, it is causing increased competition for medium and low-skilled workers who are increasingly being replaced by artificially intelligent algorithms and machines. Increased competition causes workers to accept lower wage jobs or forcing medium and low-skill workers into the contingent workforce or out of the labor force entirely. As discussed in detail in the Jobenomics Unemployment Analysis, the number of able-bodied adults that voluntarily have departed the U.S. labor force has grown from 68 million to 95 million citizens over the last sixteen years, and the number of people working part-time or in other “non-employee” contingent jobs is now 40% of the employed workforce.

The major reason for concern regarding computer automation and other NTR-related technologies is that these advancements benefit the few rather than the many. While NTR has produced remarkable achievements like the iPhone, Google, eBay, Facebook, Skype and a myriad of other advancements in genome and autonomous systems, median wages have stagnated in about half of all OECD countries since 2000. Unlike 19th Century Industrial Revolution innovations that created gains for both producers and workers, the NTR has benefited mainly the producers and is displacing workers via the revolution in network technology. In other words, while the digital age has been a blessing to consumers, it is changing the world of work in ways that may make a growing share of workers worse off.

The January 2016 Oxford/Citi study took a deeper dive into the effects of automation not only in the United States but the rest of the world. Building on the Oxford’s original work showing 47% of the

²³⁸ Federal Reserve Bank of St. Louis, Jobs Involving Routine Tasks Aren't Growing, 4 January 2016, <https://www.stlouisfed.org/on-the-economy/2016/january/jobs-involving-routine-tasks-arent-growing>

²³⁹ Federal Reserve Bank of Kansas City, The Vanishing Middle: Job Polarization and Workers’ Response to the Decline in Middle-Skill Jobs, <https://www.kansascityfed.org/publicat/econrev/pdf/13q1tuzemen-willis.pdf>

U.S. workforce at risk, recent data from the World Bank suggests the risks are higher for other countries. Equivalent figures for India are 69% and 77% for China. As compared to the developed world, emerging and developing economies have a much higher rate of low-skilled workers that are more susceptible to automation.

As labor-intensive industries succumb to more automated-intensive industries, middle-income countries like China and India will face a major dilemma inasmuch as more automation will be required to compete internationally. The major downside to these countries is the likelihood that they may have to reverse labor force gains that recently raised hundreds of millions of Asians out of poverty. In addition, many emerging economies with large low and medium-skilled populations are especially vulnerable to the so-called “middle income trap”, where a country gets stuck at a level of development out of poverty without the wherewithal to elevate to levels of more advanced economies.

China created its economic miracle via labor-intensive industries that required low and medium-skilled labor. Over the last two decades, China lifted 700 million people out of poverty largely by state-controlled labor-intensive industries in urban areas. Today, China is considered a middle-income country with a per capita income of \$7,600, compared to \$54,600 for the United States.²⁴⁰ Over the last five decades only a few countries (Japan, Israel, South Korea and Singapore) have been able to escape the middle-income trap and evolve to the high-income club. NTR automation is likely to make the jump even harder since it advantages smaller high-skilled nations and disadvantages larger low-skilled nations. In terms of manufacturing, computer automation incentivizes companies to move facilities closer to consumers, which could reduce the offshoring trend. 22% of the study respondents believe that North America has most to gain from automation, while 24% believe China has the most to lose.

Within the United States, there is a wide disparity between metropolitan areas in regard to automation. Cities like, Boston, Washington DC, Raleigh, New York, San Francisco are considered low risk, while, Fresno, Las Vegas, Greensboro, Harrisburg and Los Angeles are considered higher risk cities. Generally speaking, diversified, rich, highly-educated cities are least exposed. The cities that are most exposed are older single industry centers replete with poorer and lower skilled workers. Cities with a high concentration in information, communication and network-centric industries are the best prepared to embrace the upsides of NTR automation and the up-skilling that these industries produce for their labor forces. The most promising industries for job creation are in information technology, automotive, robotics, 3D printing, health and medical, which collectively will generate over 50% of all new American jobs. The bulk of these jobs will be in small businesses and microbusinesses, which is the sweet spot for non-core contingency businesses like independent contractor, consultants and high-skill contract labor.

76% of the 2016 Oxford study respondents consider themselves as “techno-optimists” compared to 21% who see themselves as “techno-pessimists”. From a Jobenomics perspective, this is an extremely important statistic. Too often, pundits overstate the extent of machine substitution and

²⁴⁰ World Bank, GDP Per Capita, 2011-2015, <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

ignore the positive aspects of human/machine partnership in terms of increased productivity, earning potential and skilled labor demand.

The introduction of machines to the labor force has not historically hurt the labor force. The machine-smashing Luddites certainly did not foresee the massive labor force expansion caused by the industrial revolution in the 1800s. Agricultural machines displaced tens of millions of farmers and farmhands but created the food services industry. Mass-produced automobiles displaced skilled artisans but led to an explosion in transportation and commerce related industries. Power tools displaced construction workers but made residential and commercial buildings more affordable and the creation of vastly more construction jobs. The Information Technology Revolution (ITR) of the late 20th Century created the information age and the billions of new jobs.

On the other hand, a high percentage of economists believe that while automation has not historically reduced employment, the disruptive power of the NTR makes future artificially intelligent systems vastly superior to their simpleton automated forerunners. Highly intelligent machines and software are likely to displace many more humans than the new jobs they create.

Popular opinion maintains that highly intelligent machines and software will displace mainly low-skilled workers. This opinion is wrongheaded—high-skilled and highly-paid workers are equally vulnerable to displacement. A recent MIT Technology Review article entitled “Goldman Sachs Embraces Automation, Leaving Many Behind” examined the emerging relationship between machines and humans at Goldman Sachs.²⁴¹

Since year 2000, Goldman’s New York securities trading desk downsized its 600 traders to only 2 people via the miracle of artificial intelligence (machines) and the addition of 200 computer engineers (humans). Globally, Goldman figures that 4 highly-paid (\$500,000+/year) traders can be replaced by 1 centaur (combination smart algorithm and a computer engineer). Goldman is now looking beyond its security trading sector to its investment banking sector which deals with corporate mergers, acquisitions, IPOs and investment portfolio management. According to MIT, investment bankers average \$700,000 per year. In the IPO arena alone, Goldman “has already mapped 146 distinct steps in any initial public offering of stock, and many are ‘begging to be automated’” according Marty Chavez, Goldman Sachs’ Chief Financial Officer and former Chief Information Officer. In other words, Goldman is looking to automate processes and tasks in lieu of automating individual positions.

The 2016 Oxford/Citi study calculates that “between 2002 and 2012, 33 legacy jobs were lost for every new digital job that was created.” The 2015 Oxford/Citi study cited three primary reasons why the NTR is likely to be different from previous technology revolutions: (1) the pace of change has accelerated; (2) the scope of technological change is increasing; and (3) unlike innovation in the past, the benefits of technological change are not being widely shared — real median wages have fallen behind growth in productivity and inequality has increased.²⁴²

²⁴¹ MIT Technology Review, Vol. 120/No. 3, May/June 2017, Goldman Sachs Embraces Automation, Leaving Many Behind.

²⁴² Oxford Martin School and Citi Global Perspectives & Solutions, Technology At Work v2.0: The Future Is Not What It Used to Be, Technology Is Impacting Media Employment, Page 79, January 2016, http://www.oxfordmartin.ox.ac.uk/downloads/reports/Citi_GPS_Technology_Work_2.pdf

With a proper U.S. national strategy, that currently does not exist, the NTR can replace jobs lost to automation via the creation of new small business and career paths. Jobenomics agrees with the 2016 Oxford/Citi report recommendations on the top four policy responses to the risks of automation impacting labor and wealth distribution are (1) invest in education, (2) encourage entrepreneurship, (3) fund active labor market policies that help people find jobs, and (4) fund research that enables innovation and enhances employment.

In May 2016, OECD researchers (Melanie Arntz, Terry Gregory and Ulrich Zierahn) conducted a comparative analysis of the Oxford 2013 study, which yielded significantly different results regarding the “risks of computerization”.²⁴³ Compared to the Oxford study that looked at occupations as a whole, the OECD 2016 study looked at single-job tasks within the occupation. As a result, the OECD researchers concluded that while many of the occupational tasks within an occupation may be automated, the entire occupation may not be subject to automation. Using this approach, the OECD researchers concluded, on average across the 21 OECD countries, only 9% of jobs are automatable.

In other words, “occupations labelled as high-risk occupations often still contain a substantial share of tasks that are hard to automate.” While Jobenomics concurs, Jobenomics continues to assert that computer automation will lead to large-scale job reductions as entire occupations are reorganized into computer-based-tasking and human-based-tasking. Automation will slowly supplant work task by task giving rise to “centaurs” (a combination of human operators, and intelligent agents and smart machines).

In March 2017, as part of a United Kingdom (U.K.) Economic Outlook assessment regarding the potential impact of automation on the U.K. and other major economies, PWC concluded that the automation threat to the U.K. economy is as significant as the BREXIT threat (the British Exit from the European Union).²⁴⁴

The PWC analysis refuted the OECD 2016 analysis and suggested “that up to 30% of UK jobs could potentially be at high risk of automation by the early 2030s, lower than the U.S. (38%) or Germany (35%), but higher than Japan (21%). The risks appear highest in sectors such as transportation and storage (56%), manufacturing (46%) and wholesale and retail (44%), but lower in sectors like health and social work (17%).” The PWC also concluded that for high school or lower level individuals the risk of automation in the U.S. is as high as 46%, whereas the risk to people with undergraduate degrees or higher is around 12%.

²⁴³ OECD, OECD Social, Employment and Migration Working Papers, The Risk of Automation for Jobs in OECD Countries A Comparative Analysis, 14 May 2016, <http://www.oecd-ilibrary.org/docserver/download/5jlz9h56dvq7-en.pdf?expires=1492307069&id=id&accname=guest&checksum=D4CE12E98A688118F0E4ECDF3BC9D5BF>, and http://www.oecd-ilibrary.org/social-issues-migration-health/the-risk-of-automation-for-jobs-in-oecd-countries_5jlz9h56dvq7-en

²⁴⁴ PWC, UK Economic Outlook, Will robots steal our jobs? The potential impact of automation on the UK and other major economies, March 2017, <http://www.pwc.co.uk/economic-services/ukeyo/pwc-uk-economic-outlook-full-report-march-2017-v2.pdf>

A 2017 study conducted by the Massachusetts Institute of Technology Media Lab used the same occupational data as Oxford to measure the “expected job impact from automation” on 380 cities and towns in the United States.²⁴⁵ Similar to the 2013 Oxford Study methodology, the MIT Media Lab rank-ordered 481 BLS occupations from the most resilient to the most vulnerable.²⁴⁶

According to MIT, small cities and towns are more likely to lose jobs to larger urban centers that have an abundance of managerial and technical professions, which are less subject to automation from robotics and artificial intelligence. Large cities also harbor more innovative workers that use cutting-edge technologies. Cities with less than 100,000 people are more subject to automation since they have a higher percentage of routine manual and cognitive workers. Smaller cities have proportional more jobs that are routine clerical work, such as cashier and food service jobs, which are more susceptible. However, there are exceptions. For example, Las Vegas has a large population (633,000) “but its economy is very dependent on the gambling industry, much of which will probably be automated.”²⁴⁷

Jobenomics agrees with Oxford/Citi/OECD/PWC/MIT studies with the following caveats. Rather than investing in education, invest instead in skills training and certification as opposed to degree based education. While degree-based programs are absolutely necessary for many citizens, it is not an affordable or timely path for many at the bottom of America’s economic pyramid or entrepreneurs who are focused on a particular innovative opportunity. Jobenomics also asserts that the focus ought to be on business creation as the primary means to create occupations that will satisfy next-generation business opportunities, align the workforce with new labor market realities with emphasis on the growing contingent workforce and developing new industries in the emerging energy and network technology revolutions.

As history has demonstrated, technological innovation initially has a destructive effect as automated systems replace labor, but as new industries are established, employment expands along with wage growth. Some believe that the NTR may be different from an industry standpoint. Jobenomics does not concur. A proper national strategy, led by visionary and patriotic corporate leaders, entrepreneurial contingent workforce professionals and government strategic planners, could transform the U.S. labor force and economy for generations to come. To be successful, this strategy would have to maximize productivity and prosperity of both the standard and contingent workforce, as well as achieving a proper balance between the existing traditional economy and the emerging digital economy.

The business world has already started the replacement process. With the advent of computers and personal digital assistants, most businesses have mostly eliminated the secretarial workforce. Today, semantic (thinking) websites know our shopping and buying habits and modern e-commerce is rapidly upending traditional brick-and-mortar retailing. Intelligence agents are now entering the

²⁴⁵ Massachusetts Institute of Technology Media Lab, Small cities face greater impact from automation, Relating City Trends to BLS Jobs, Pages 44– 55,.21 September 2017, <https://arxiv.org/abs/1705.05875>

²⁴⁶ Massachusetts Institute of Technology Media Lab, Small cities face greater impact from automation, Cities Ordered by Expected Job Impact from Automation, Pages 37 – 44,.21 September 2017, <https://arxiv.org/abs/1705.05875>

²⁴⁷ MIT Technology Review, In These Small Cities, AI Advances Could Be Costly, 23 October 2017, <https://www.technologyreview.com/s/609076/in-these-small-cities-ai-advances-could-be-costly/>

scene. Got a question, need a direction or need a solution? Just ask Apple's Siri, Amazon's Echo or IBM's Watson for the answer.

When artificial intelligence approaches human intelligence, humans will be compelled to turn more decision-making to intelligence agents. Hypothetically, machines will eventually mature from general-intelligence to the level of human-intelligence at the point of technical "singularity" when machines become as cognitive as humans. Many experts believe that intelligence agents will achieve singularity as early as mid-century. However, in several critical domains, such as the worldwide financial system, singularity will occur much sooner.

(6) Shift from full-time, to part-time and task-oriented labor. Via the NTR, the emerging digital economy, automation, outsourcing and job polarization, many traditional full-time jobs will be dissected into discrete tasks, which in turn will be addressed by temporary teams and virtual organizations staffed by a hybrid workforce consisting of standard workers, contingent workers and artificially intelligent systems.

Today's software can divide complex jobs into smaller tasks, automate the routine work, and then recruit contingent workers through online network hubs to perform non-routine work. As automated systems learn human skills, these increasingly intelligent systems will assimilate anthropomorphic traits in order to perform more and more complex non-routine cognitive and manual tasks.

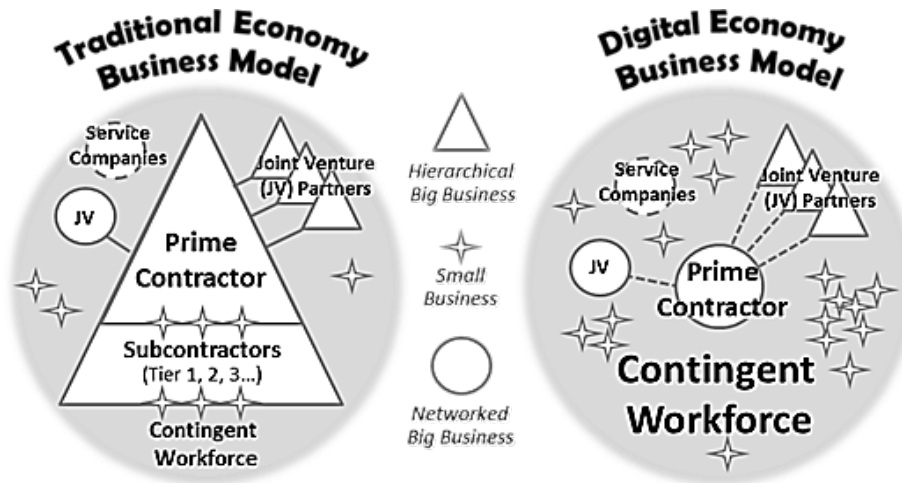
Team collaborative and management tools will further create "contextual" work environments that rapidly form, perform, and then reform to address subsequent tasks. Micro jobs, micro labor and micro tasks are becoming more common. Brick-and-mortar edifices designed to house full-time employees are giving way to temporary offices, mobile computing and home-based operations—environments ideally suited for a contingent workforce. Savings in infrastructure, utility and transportation costs are subsequently shifted from the employer to the employee or nonemployee.

According to an annual four-year report and survey of 7,000 business executives in 130 countries, the Deloitte Global Human Capital Trends 2016 report states that 92% of the executives see a need to redesign their organizations from a hierarchical managerial model to "highly empowered teams, led by a breed of younger, more globally diverse leaders. To lead this shift toward the new organization, CEOs and HR leaders are focused on understanding and creating a shared culture, designing a work environment that engages people, and constructing a new model of leadership and career development."

Deloitte attributes the four forces driving the demand to reorganize and redesign institutions: demographic upheavals, digital technology, rate of change and a new social contract. Over 80% of surveyed executives, across a wide range of public and private industry sectors, stated that they are in the process of restructuring or have already completed the process.²⁴⁸

²⁴⁸ Deloitte University Press, Global Human Capital Trends 2016, The New Organization: Difference by Design, <http://www2.deloitte.com/us/en/pages/human-capital/articles/introduction-human-capital-trends.html>

Traditional versus Digital Business Models



In the Jobenomics lexicon, as shown, tomorrow's organization will be a hybrid model that embraces both the traditional and digital business models. In a traditional business model, supervisors mandate goals to meet and achieve defined performance standards accomplished by hierarchically structured and stratified teams. While the contingent workforce is present, it usually is subordinated and a small fraction of the overall workforce in the traditional business model. In a digital business model, managers coordinate dispersed tasked-focused teams that play a much greater and influential workforce role. The formula for success for a hybrid labor force is to find the right balance between the models. Task-oriented contingent work is likely to accelerate in proportion to digital economy and e-business growth.

Contingent work will also be accelerated by the advent of online network hubs designed for task-oriented workers. Online network hubs (like Amazon's Mechanical Turk, Flexjobs, microWorkers, Fiverr, Elance and TaskRabbit) provide online labor pools usable by corporations, governments and individuals for tasks of any scale. These network hubs provide access to a highly-skilled, diverse, on-demand, scalable workforce, and correspondingly provides contingent workers a selection of millions of tasks for bid.

Similar hubs are available to contingent businesses. For example, Amazon started Amazon Launchpad²⁴⁹ for startups to launch, market, and distribute their products to hundreds of millions of Amazon customers across the globe. The program offers a streamlined onboarding experience, custom product pages, a comprehensive marketing package, and access to Amazon's global fulfillment network.

Educational institutions are also experimenting with network technology and contingent workforces. Founded and run by a former Google engineer and a recipient of support from the founder of Google and other philanthropic sources, AltSchool is a collaborative community of micro-schools that uses outstanding teachers (contingent workers), deep research, and innovative creative collaboration

²⁴⁹ Amazon Launchpad, <http://www.amazon.com/gp/launchpad/signup>

tools to offer a personalized, whole child learning experience for Generation Z. The future of business and the labor force is certainly not anything like it used to be.

(7) Cultural differences of new labor force entrants. Ethnology involves a branch of study that analyzes cultures in regard to their development, differences and relationships between various demographic groups. The ethnology of new labor force entrants will be increasingly important as 166 million NTR-savvy “Screenagers” (Generation Z, born 1996 to present, now 22 years old and younger) and “Millennials” (Generation Y, born 1980 to 1995, now ages 23 to 38) enter the workforce over the next decade, especially as it applies to the number of Screenagers and Millennials entering as contingent workers.

166 Million NTR-Savvy Screenagers (Gen Z) and Millennials (Gen Y) Will Transform the American Labor Force

Generation	Born	Age (Oldest)	Population Millions		Technology Culture	Predominant Business Asperations
Gen Z, Screenagers	1996-2018	22	95	29%	Digital	Entrepreneurial
Gen Y, Millennials	1980-1995	38	71	22%	Digital	Quasi-Entrepreneurial
			166	51%		
Gen X	1966-1979	52	62	19%	Analog/Digital	Intrapreneurial
Baby-Boomers	1946-1965	72	74	23%	Analog	Quasi-Traditional
Great Generation	1912-1945	106	25	8%	Analog	Traditional Employee
			Total U.S. Population	327	100%	

The global digital economy will be shaped mainly by the digital generation and the ideology of their mentors. Generation Zers are called “Screenagers” by Jobenomics due to the excessive amount of online screen time that these youngsters absorb. Screenagers are the ultimate digital natives who will shepherd America into the Networked Age. Currently college age and younger, Screenagers will soon be the fast-growing segment of the U.S. labor force, standing beside their digital compatriots, the Millennials, who became the largest generation in the workforce in 2015 and the largest living American generation in 2016.

Screenagers and Millennials generally prefer contingent work over traditional full-time occupations. 61% of Millennials still at “regular” jobs want to quit within two years and be entirely independent. 72% of surveyed Screenagers want to start their own business²⁵⁰. While much of this is wishful thinking, the NTR will provide many of these Millennials and Screenagers with business and traditional and contingent employment opportunities that will make their wishes come true.

²⁵⁰ Ryan Jenkins Next Generation Catalyst, 7 Emerging Millennial and Generation Z Trends For 2015, <http://ryan-jenkins.com/2015/02/05/7-emerging-millennial-and-generation-z-trends-for-2015/>, and Global Messaging, Beyond Facebook: How to Market to a New Generation, <https://www.globalmessaging.co.uk/index.php/beyond-facebook-market-new-generation/>

Millennials are now firmly embedded into the U.S. labor force and are providing a multigenerational management challenge²⁵¹ compared to their Generation X (born 1966 to 1979) and Baby-Boomers (born 1946 to 1965) counterparts who have been integrated into the traditional workforce and corporate culture established by the baby-boom generation and their forefathers. Many Millennials, who have distinct ideas about what they expect from their jobs and the reliability of long-term corporate careers, are having a hard time conforming and integrating into traditional corporate culture.

The entrance of Screenagers, who spend an average of 7 hours a day of screen time (i.e., pads, tablets, smartphones and TV), will likely compound the workforce integration challenge since these newcomers have even greater cultural differences, expectations and timelines than the Millennials. The average Screenager compulsively communicates online 10-times as much as Millennials and 100-times the baby boomer generation.

Screenager ethnology is often incompatible with today's traditional career paths. Many people think that this will change as Screenagers mature and the harsh realities of earning a living ameliorate their cultural dissimilarities. Jobenomics is not so sure. Properly structured, the digital economy can provide employment opportunities for Screenagers who exhibit cultural dissimilarities that make them a poor fit for the traditional workforce.

To a large degree, Baby-Boomers dominate the U.S. economy in terms of wealth and control. The handoff of wealth and power to Generation X is relatively straightforward due ethnological similarities and expertise in the traditional industrially-based economy. The transition of responsibility and control to Millennials is proving to be more of a management challenge than originally envisioned. The plethora of new disruptive digital age technologies, that few older generation managers truly comprehend upends, the management hierarchy since the underlings understand e-business and e-commerce mechanics more than their supervisors.

Integration of Screenagers into the U.S. labor force will be even more problematic. Not only will Gen Zers have a better grasp of new network and digital technologies, they will have more difficult time articulating the intricacies of incorporating these technologies into corporate systems, processes and practices. As most grandparents would reluctantly admit, maintaining a productive dialogue with their Screenage grandchildren is often a difficult to arduous encounter. Not only do today's teenagers labor to maintain eye contact but they are predisposed to multi-tasking as opposed to linear conversation making—the mainstay of traditional corporate cultures.

For the most part, Screenager ethnology is not compatible with traditional corporate mores. Nor, will Screenagers likely adapt to the established ways of doing business. However, the emerging digital economy provides ways integrate digital-savvy Screenagers into business as well as establish new independent contingent workforce businesses that can respond to part-time and task-oriented work.

²⁵¹ Business News Daily, Despite Skeptics, Millennials Taking Control At Work, 4 September 2013, <http://www.businessnewsdaily.com/5039-millennials-management-positions.html>

Regarding development, differences and relationships, Generation Z's ethnology is vastly different than established generations. Unlike the anti-establishment hippies of the 1960s that eventually yielded to the status quo, the state of economic, technical and social affairs of the late 20th Century no longer exists. After watching their Generation X parents struggle to make ends meet, most Screenagers have a different American dream that is not defined by conditions that shaped previous generations. Teenage Screenagers are more likely to identify with the beliefs of online associates than parents, relatives, pastors or bosses. For the most part, adherence to traditional corporate values, hierarchies and behavior are incompatible with Screenage cultural norms. Whether or not Screenage norms can accommodate corporate norms over time is questionable.

Their smartphone (or pad) is a Screenager's ultimate friend and companion. Nomophobia (the irrational fear of being without a connected device) is common amongst digitally-addicted Screenagers. Even the loss of a cellular signal or battery power is enough to derail most of today's teenagers who have to continually "manicure" their online identities to maintain connectedness and inclusiveness within their peer groups. FOMO is a Screenage term that means "fear of missing out" if their online connectedness is disrupted for even a short period of time.

Compared to older generations, Generation Z feels that social media is a safer place to express opinions, ideas and objections. The anonymity afforded in cyberspace makes this a true statement. Oftentimes, social media heightens states of dislocation, loneliness, anxiety and depression as the distance between a Screenager's manicured persona and their real identity widens.

Screenage-ism's greatest oxymoron involves the need for safe spaces. Constantly-observed online personas artificially create a feeling of safety that does not exist in either the real world. Online safe spaces are really not safe. Segregated safe spaces in today's colleges and universities are not only safe but create isolated and intolerant student communities. Sadly, many distraught teenagers realize that safe spaces do not exist even in the virtual world as evidenced by rising tide of online bullying. Life itself is not safe. Perhaps, this is the reason why Screenager (ages 12-22) suicide is the second leading cause of death and is increasing at epidemic levels, according to The Jason Foundation, an organization dedicated to the prevention of youth suicide.²⁵²

The emerging digital economy—from introducing new network and digital technology into business or creating new independent digital enterprises—provides a beacon of hope for introverted techies.

The penchant for a Screenager's often obsessive use of smartphones, tablets and a multitude of other connected devices is a positive attribute from a digital economy perspective. Multi-tasking is also an attribute in the fast-moving world of electronic and mobile commerce. According to the National Gen Z Research Study 2018 by Impact 360 Institute in Partnership with Barna, success is a high priority for Gen Zers. Moreover, "two thirds want to finish their education (66%), start a career (66%) and become financially independent (65%) by age 30."²⁵³ The emerging digital economy provides a path to satisfy these needs—at least in part.

²⁵² The Jason Foundation, Facts & Stats, <http://jasonfoundation.com/youth-suicide/facts-stats/>

²⁵³ Impact 360 Institute in Partnership with Barna, Gen Z, <http://www.whoisgenz.com/>

Even retailers see the value of shifting spending away from baby boomers to capture the attention of Generation Z consumers. According to eMarketer Retail, “65% of retailers said they plan to increase marketing spend targeting Gen Z (13- to 19-year-olds).”²⁵⁴ Not only is this a good bet from a future generation buying perspective, but also from a diversity standpoint.

Today’s, Generation Z is the first American generation that is a minority-majority (52% non-white and growing rapidly given the low replacement birth rates of the white community). Minority consumers are now a mainstay of the American economy. Blacks and Hispanics spend more than \$2.5 trillion or 20% of total U.S. consumption (\$12.7 trillion).

In addition to increased consumption, minority entrepreneurs are starting microbusinesses at far greater rates than Whites. The Census Bureau performs a Survey of Business Owners twice each decade.²⁵⁵ The 2011 Survey was conducted for business owners in 2007 and the 2015 Survey for 2012 owners. From 2007 to 2012, All U.S. “Total Firms” grew at 2%, White-owned firms decreased - 4%, and All Minority-owned firms increased by 39%, which is incredible considering the austere times and onerous lending environment from financial institutions. During this time period, Hispanic-owned firms grew at 47%, followed by Black-owned at 35% and Asian-owned at 25%.

While traditional full-time W-2 standard workforce agreements are ill-suited for typical Screenagers, part-time 1099 contingent workforce agreements in the digital economy are ideally suited for tech-savvy entrepreneurs. Compared to the traditional economy, the digital economy is more racially, ethnically, gender and socially diverse.

Today, more Generation Z females are enrolled in postsecondary education and entering the workforce in greater numbers than their male counterparts. Contrary to common knowledge, the rate of employment growth and revenue of women-owned businesses has outpaced the U.S. economy and male-dominated businesses for the last three decades. In a gender-neutral digital economy, women can compete globally from home-based businesses in ways never before possible. Jobenomics emphasizes Generation Z women-owned-businesses over women-in-business. While there is nothing wrong with women pursuing opportunities with large established institutions, Jobenomics believes that many women will find greater opportunity and fulfillment by creating their own small and self-employed businesses that are tailored to their needs, lifestyles and expectations.

Rather than trying to force-fit new labor force entrants into the baby boomer-oriented legacy labor pool, it is prudent to seek solutions that recognize the realities of changing workforce attitudes and help newcomers to productively pursue their unique self-interests to obtain self-sufficient lifestyles. As advocated by Adam Smith, the forefather of today’s classical free market economy, when individuals pursue their self-interest, they indirectly promote the greater good of society by

²⁵⁴ eMarketer Retail, Retailers to Decrease Market Spend on Boomers, Seniors, 28 February 2018, <https://retail.emarketer.com/article/retailers-decrease-market-spend-on-boomers-seniors/5a970c19ebd4000744ae414a?ecid=NL1014>

²⁵⁵ U.S. Census Bureau, Survey of Business Owners, <https://www.census.gov/econ/overview/mu0200.html>

producing vital goods, services and tax revenues for society. Accordingly, digital natives should be afforded the opportunity to be self-directed in the emerging digital economy.

Jobenomics contends that micro and self-employed business creation is a viable way to accommodate the expanding contingent workforce and deal with the issue of cultural dissimilarities with new labor force entrants. Screenagers and Millennials represent demographic groups with high motivation and great potential for micro and self-employed business growth.

Today, China is trying to replicate its economic success by promoting micro and self-employed businesses with the rural poor. According to recent government figures, the value of Chinese micro and small business loans were \$3.5 trillion²⁵⁶ compared to \$0.6 trillion in the United States.²⁵⁷ In addition to government-sponsored initiatives and financial incentive programs, Chinese companies are aggressively facilitating micro and small business creation.

Alibaba, a Chinese e-commerce company, was founded “to champion small businesses, in the belief that the Internet (digital economy) would level the playing field by enabling small enterprises to leverage innovation and technology to grow and compete more effectively in the domestic and global economies”.²⁵⁸ Today, Alibaba underwrites approximately 250,000 microbusinesses per year. Other Chinese NTR companies (Jingdong, Tencent, Baidu, NetEase, Amazon China, et al) are doing the same.

If leading U.S. technology companies were inclined to help U.S. contingency workers create micro and small businesses in support of filling the 6 million job openings and seizing emerging ETR/NTR employment opportunities, America could put tens of millions of young people to work as well as creating millions of small and self-employed businesses.

Given these seven trends, Jobenomics forecasts that the contingent workforce will continue to rise and eventually overtake today’s traditional workforce as early as 2030. More importantly, the nature and character of the U.S. labor force, business and the economy is evolving at an ever increasing rate. More attention needs to be given to maximizing productivity and income security for the contingent workforce.

²⁵⁶ Reuters, China pushes for more small business lending despite bad loans rising, 8 May 2015, <http://www.reuters.com/article/2015/05/08/us-china-economy-idUSKBN0NT0O320150508>

²⁵⁷ U.S. Small Business Administration, Small Business Lending in the United States 2013 (Published December 2014), Table B. Value of Small Business Loans Outstanding by Loan Type and Size through June 2014, <https://www.sba.gov/sites/default/files/2013-Small-Business-Lending-Study.pdf>

²⁵⁸ Kauffman Foundation, The Importance of Startups in Job Creation and Job Destruction, Last Paragraph, 9 Sep 2010, <http://www.kauffman.org/what-we-do/research/firm-formation-and-growth-series/the-importance-of-startups-in-job-creation-and-job-destruction>

Workforce Education and Training Challenge

The Father of American Education, Horace Mann, stated that “Education then, beyond all other devices of human origin, is the great equalizer of the conditions of men, the balance-wheel of the social machinery.” While Jobenomics agrees, the educational paradigm required for yesteryear’s workforce development may not be appropriate for today’s labor pool.

Today the U.S. labor force is increasingly characterized by income inequality, an eroding middle class and growing numbers of contingency workers that traditional degree-oriented educational programs have not been able to help. More skills-based training and certification programs are needed.

The bifurcation of American society into haves and have-nots, skilled and unskilled, and hopefuls and the hopeless is a major educational and training challenge. To those at the top of the American socioeconomic pyramid, the old paradigm of “get a degree to get a job and get a better degree to get a better job” is more important than ever. To those at the bottom of the same pyramid, more workforce, technical and social skills training are needed to stem the increasing exodus to welfare and alternative lifestyles. Getting a postsecondary associate or baccalaureate degree is a bridge too far for many living close to the poverty level, or for primary and secondary school underachievers.

The Difference between Education and Training. Jobenomics National Grassroots Movement focuses on small business and job creation for those most in need at the base of America’s socioeconomic pyramid. Jobenomics asserts that pre-primary through secondary education is a must for all citizens. However, due to the slow-growth economy, the scarcity of jobs and ethnology of many students, earning a degree is not worthy of pursuit since degrees no longer guarantee a livable wage or a viable career path. In addition, the cost in time and money for an advanced education is often unavailable for those struggling to make ends meet. Consequently, Jobenomics asserts that as opposed to degree-oriented education, skills-based training is the fastest way to get the most people prepared for workfare in the shortest time possible.

From a Jobenomics perspective, understanding the difference between education and training is fundamental to U.S. labor force development. Education is foundational and generally measured by tenure. Training is specific and measured by what one can do once completed. Educational degree-oriented programs are measured in years and are usually expensive. Training programs are often as short as weeks or months, and are relatively inexpensive.

Education is defined as the process of imparting or acquiring general knowledge, developing powers of reasoning and judgment, and generally of preparing intellectually for mature life. Education generally involves learning theory. In the United States, there are four levels of education: pre-primary, primary, secondary and tertiary.

- Pre-primary education includes kindergarten, nursery schools, preschool programs and child/day care centers.
- Primary education refers to 1st through 9th grades.
- Secondary education refers to the last four years of high school (9th through 12th grade).

- Tertiary education, also called postsecondary, refers to academic pursuit undertaken after high school. Postsecondary undergraduate programs, generally include associate and bachelor (baccalaureate) programs. Postsecondary post-baccalaureate pursuits generally include masters and doctorate programs.

Primary, secondary and postsecondary educational programs are degree-oriented. Primary and secondary education are compulsory (required by law), whereas pre-primary and postsecondary education is not. Jobenomics believes that free pre-primary education should be available to all but not compulsory. In regard to postsecondary education, Jobenomics contends that too many youth are being encouraged to attend college for the wrong reasons. Luring them with free tuition without a reasonable path to future employment is antithetical to good labor force policy.

Training involves teaching a person a particular skill, knowledge or type of behavior that is related to specific competencies. Training has targeted goals of improving an individual's capability, capacity, productivity and performance. While some training programs are degree-oriented (such as technical colleges), most training programs (such as skills training, on-the-job training, occupational training, apprenticeships and internships) are certificate-oriented. Jobenomics believes that significantly more skills-based training certification programs should be offered starting at an early age and supplemented by government means-tested funding programs as needed to achieve maximum attendance. Jobenomics contends that this would be a wise use of taxpayer money if skills-based training programs are tied to economic and employer prerequisites.

For people seeking careers, degree-oriented postsecondary programs are usually the best choice. For the underprivileged, unskilled and poorly educated segments of society, certificate-oriented skills-based training provides the most effective way to get a good job, the first step towards a meaningful career.

Evolution of American Education. Horace Mann's greatest achievement was making education affordable to average citizens who could not afford to send their children to school by instituting taxes to create "common schools" in Massachusetts. Heretofore, education was available mainly to the rich. Common schools were such a success that they rapidly spread to other states.

The Industrial Revolution in the late 1800s created a need for more specialized education and was the foundation for the state-run university system and the rise of a "credentialed" society. To a large extent today, the American psyche maintains that workforce eligibility depends on degrees and diplomas. Degrees from elite universities are still perceived to be the proper path to desirable jobs.

The Information Technology Revolution of the 1980s and today's Network Technology Revolution are redefining the educational paradigm in the same way that the Industrial Revolution redefined secondary and postsecondary education standards of yesteryear. As a result of the transformative nature of these technology revolutions, universities around the world are beginning to recognize that over-specialized, mass-produced, degree-oriented programs may not be able to provide job skills that students and businesses need or want to succeed in today's economy.

Today's students are digital natives who are largely self-taught from countless hours on the internet. A great percentage of these young workforce entrants view industrial-oriented career paths with a high degree of skepticism.

In 2014, Laureate Education, the world's largest higher education network with more than 850,000 students worldwide, commissioned Zogby Analytics to survey 27,000 postsecondary students on how universities could best meet their needs. Based on their survey, students said that they need a more accessible, flexible, innovative and job-focused education. More than 70% think that career-oriented skills, as opposed to subject matter, are required. 61% think that most courses offered by universities need to be taught by industry experts as opposed to tenured academics. 41% want to be able to earn specialized certificates in addition to degrees.²⁵⁹

As a result of this survey, Laureate and Zogby introduced a groundbreaking index to track student attitudes about the future of higher education. According to the 2015 Index, 80% of students believe that the primary purpose of education is to improve employment prospects, and 96% want universities to foster entrepreneurialism as opposed to academia.²⁶⁰

Likewise, American businesses are increasingly dissatisfied with the lack of applied-knowledge, problem-solving, critical-thinking and communication skills of postsecondary school graduates. To fill the gap, more and more corporations conduct their own postsecondary school and post-college training. According to the Georgetown University Center on Education and the Workforce, while colleges and universities spend \$407 billion annually on postsecondary education, employers spend \$342 billion on postsecondary school and post-college training.²⁶¹ Based on these statistics, degree-based college and university programs are not providing employment-ready graduates.

Even the Association of American Colleges and Universities seems to agree with student and business dissatisfaction. According to recent Association report, "The ongoing digital revolution has created a complex and interconnected ecosystem that is fundamentally reshaping how we learn and communicate. Yet, despite its transformative potential, this digital ecosystem has so far had less of an impact on formal education than on other sectors of our society". Furthermore, the report's authors propose that networked and adaptive systems "re-bundle" higher education by connecting learning experiences to new integrative contexts for transformative learning.²⁶²

²⁵⁹ Zogby Analytics, The University of the Future: The Laureate/Zogby Global Students Poll, 9 June 2014, <http://www.zogbyanalytics.com/news/459-the-university-of-the-future-the-laureate-zogby-global-students-poll>

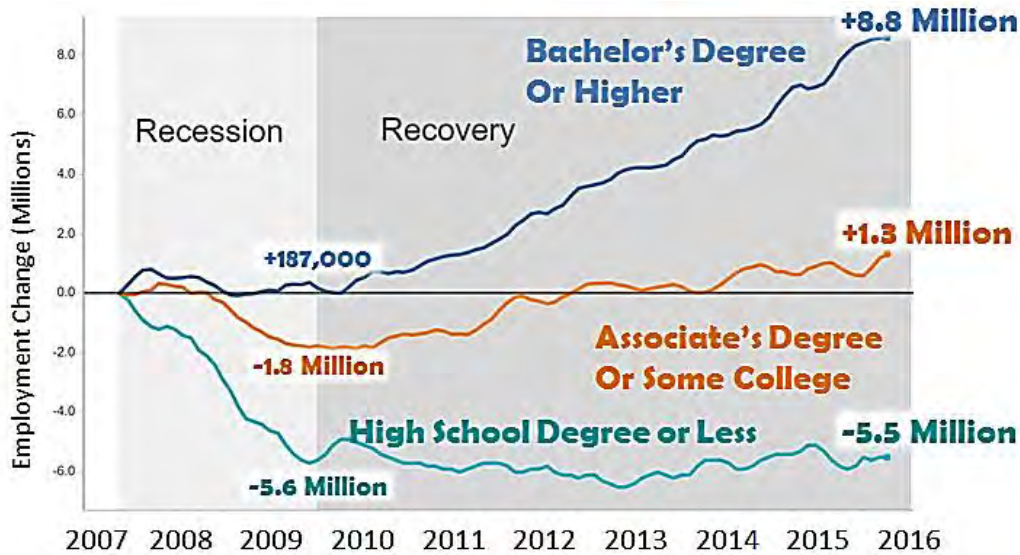
²⁶⁰ Zogby Analytics, 2015 Laureate/Zogby Global Student Confidence Index, May 2015, <https://www.laureate.net/Thought-Leadership/~media/Files/LGG/Documents/Thought%20Leadership/Laureate%20Zogby%20Global%20Student%20Confidence%20Index.ashx>

²⁶¹ Georgetown University Center on Education and the Workforce, U.S. Spending On Post-Secondary Education And Training Reaches \$1.1 Trillion, 4 February 2015, <https://cew.georgetown.edu/wp-content/uploads/2015/02/Training-Press-Release-2.4.14.pdf>

²⁶² Association of American Colleges & Universities, Open and Integrative: Designing Liberal Education for the New Digital Ecosystem, 16 June 2016, <https://secure.aacu.org/store/detail.aspx?id=GMSDIG>

U.S. Employment by Type of Degree

Source: Georgetown University Center on Education and the Workforce



The U.S. Employment by Type Degree analysis was developed by the Georgetown University Center on Education and the Workforce. It shows the value of having a postsecondary Degree compared to an associate's degree or some college, and a high school degree or less during the 2007-2009 Great Recession and the following recovery period.²⁶³

According to the report, over the last decade (2007 to 2016), graduates with a bachelor's degree, or higher, added 8.8 million overall jobs since the beginning of the Great Recession. Undergraduates with some college or an associate's degree added 1.3 million jobs. Individuals with a high school diploma or less lost 5.5 million jobs during the same time period. In other words, having some college did not significantly enhance a person's employment prospects and having a high school degree meant even less.

The answer to this employment challenge is not by having everyone attend college and earn a bachelor's degree. If everyone had a bachelor's degree, it would depreciate the value of having a college degree and undermine the worth of finishing high school.

The answer to today's employment challenge is creating more small businesses that can employ people with either low skills or high skills. Since the vast majority of Americans at the bottom of the U.S. socioeconomic pyramid are clustered around the lower skill levels, skills-based training is a more viable alternative for workforce and economic development.

Postsecondary Education Enrollment, Costs and Student Loans. According to the U.S. Department of Education, total undergraduate enrollment in degree-granting postsecondary institutions was 17.5

²⁶³ Georgetown University, Center on Education and the Workforce, America's Divided Recovery, College Haves and Have-Nots 2016, <https://cew.georgetown.edu/wp-content/uploads/Americas-Divided-Recovery-web.pdf>

million in 2017, an increase of 37% from 2000, and 2.9 million post baccalaureate students, an increase of 36% from 2000.²⁶⁴

Of the 17.5 million undergraduate students:

- 78% go to public institutions and 22% private institutions
- 62% are full-time students and 38% part-time students
- 60% are enrolled in 4-year institutions and 40% in 2-year institutions
- 56% are female and 44% are male

Of the 2.9 million undergraduate students:

- 48% go to public institutions and 52% private institutions
- 57% are full-time students and 43% part-time students
- 58% are female and 42% are male

Total U.S. Fall Enrollment in Degree-Granting Postsecondary Institutions

Source: U.S. Department of Education, National Center for Education Statistics

Decade	Undergraduates			Postbaccalaureate		
	Enrollment (Millions)	Enrollment Growth	Growth Rate	Enrollment (Millions)	Enrollment Growth	Growth Rate
1980	10.5	-	-	1.6	-	-
1990	12.0	1.5	14%	1.9	0.2	15%
2000	13.2	1.2	10%	2.2	0.3	16%
2010	18.1	4.9	37%	2.9	0.8	36%
2017	17.5	-0.6	-3%	3.0	0.0	0%
2026 Est.	19.3	1.9	11%	3.3	0.3	11%

The great surge to degree-granting postsecondary institutions (i.e., colleges and universities) occurred during the 2000 to 2010 time period, which was characterized by two recessions, losses of over 8.7 million American jobs and the massive influx of 5.7 million new students—a growth rate between 36% and 37% as highlighted in green above. Despite significant political rhetoric of the American progressive movement that everyone should be afforded a college education, enrollment dropped between 2010 and 2017 by as much as 3% as highlighted in red. By 2026 the U.S. Department of Education forecasts a resurgence of postsecondary enrollment by 11%, but Jobenomics suggests that is prediction is overly optimistic due to decreasing foreign enrollment, sticker shock of massive college debt and the lack of evidence that a college education is a viable gateway to a good job.

²⁶⁴ U.S. Department of Education, National Center for Education Statistics, Undergraduate Enrollment, https://nces.ed.gov/programs/digest/d16/tables/dt16_303.70.asp, and Postbaccalaureate Enrollment, https://nces.ed.gov/programs/digest/d16/tables/dt16_303.80.asp

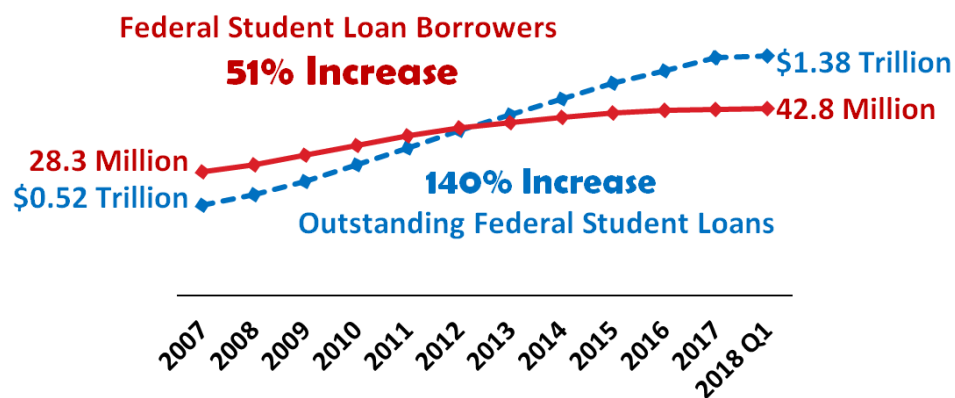
The aforementioned Georgetown study reports that not only did the people at the top of the educational pyramid get jobs, they captured the vast majority of the good jobs — full-time jobs that pay more than \$53,000 per year with benefits, such as employer provided health insurance and retirement plans. The Georgetown study also cautions students to seriously weigh the benefits verses the costs in getting these “good” jobs.

The average student loan debt is around \$30,000, but with rising tuitions, \$50,000 is a more reasonable figure for future graduates, and over \$150,000 for elite university baccalaureate programs. For many at the bottom of America’s economic spectrum, getting a postsecondary student loan is perceived as the only way to move up the socio-educational pyramid—often a great cost that may or may not be fiscally prudent.

According to the Board of Governors of the Federal Reserve System’s Report on the Economic Well-Being of U.S. Households in 2016 - May 2017, 30% of American adults report that they borrowed money to pay for expenses related to their own education, including 17% who currently owe money on these loans. Per the Fed’s report, “While education debt is often in the form of student loans, this is not the exclusive form of borrowing to pay for higher education expenses. Among respondents who report that they currently owe money for their own educational expenses, 94 percent report owing money on student loans, but 20 percent have education-related credit card debt, 5 percent have a home-equity loan or line of credit used for education expenses, and 4 percent have education debt of some other form.”²⁶⁵

According to the National Center for Education Statistics, in academic year 2014–15 (latest data), postsecondary institutions spent \$536 billion. Total expenses were \$336 billion at public institutions, \$182 billion at private nonprofit institutions, and \$18 billion at private for-profit institutions.²⁶⁶

Federal Student Loan Program



²⁶⁵ Board of Governors of the Federal Reserve System’s Report on the Economic Well-Being of U.S. Households in 2016 - May 2017, Education Debt and Student Loans, <https://www.federalreserve.gov/publications/2017-economic-well-being-of-us-households-in-2016-education-debt-loans.htm>

²⁶⁶ National Center for Education Statistics, Fast Facts, How much do colleges and universities spend on students? <https://nces.ed.gov/fastfacts/display.asp?id=75>

According to the U.S. Department of Education, in 2007, total student debt and student loan recipients were \$0.52 trillion and 28.3 million respectively. As of Q1 2018, outstanding student loans total \$1.38 trillion (an all-time high, up 165% from 2007), with 42.8 million federal student loan borrowers (also an all-time high, up 51% from 2007).²⁶⁷ The rate of growth is projected to continue to increase at a rate of 8% per year. If correct, there will be 79 million student loans totaling \$2.5 trillion by 2026.

From a Jobenomics standpoint \$2.5 trillion seems unreasonably high due to the flattening of student loan borrowers (shown above in red); the rise of low cost, on-line systems like MOOCs (massive open online courses); and increasing preference to skills-based training and certification programs over degree-based education. However, if the Progressive Movement gets its free, or greatly subsidized, college education proposals enacted, \$2.9 trillion could be a conservative number since the debt would be shifted from the student to the taxpayer.

62% of all surveyed Americans support making public universities, colleges and community colleges tuition-free for anyone who attends.²⁶⁸ During the recent Presidential election campaign, both Democrat Party candidates, Hillary Clinton and Bernie Sanders, supported tuition-free enrollment.

According to the Clinton's campaign website, families with an income up to \$85,000 today, rising to \$125,000 by 2021, would pay no tuition at in-state 4-year public colleges and universities. Community college students would also pay no tuition. Current borrowers would be able to refinance loans at current rates, never having to pay back more than 10% of their income. All remaining college debt would be forgiven after 20 years. The Clinton Plan would cover more than 80% of all U.S. families. The Clinton Plan would also create an additional \$25 billion fund will support historically black colleges and universities, Hispanic-serving institutions, and other minority-serving institutions. Social entrepreneurs and those starting new enterprises in distressed communities would be eligible for up to \$17,500 in loan forgiveness. Parents with PLUS loans will be able to refinance at current rates and students with children would be afforded childcare assistance.²⁶⁹

If tuition-free supporters get their way, the total cost of public postsecondary education (\$324 billion per year) will shift to taxpayers, which equates to half the annual amount spent on the U.S. Armed Forces. However, many argue that tuition-free postsecondary education could be fully paid for by limiting certain tax expenditures for high-income taxpayers.

Jobenomics contends that high-income taxpayers should pay more than they currently are, but their payments should be tied to specific workforce and business development goals, actionable milestones and workfare requirements. Most high-income taxpayers have business backgrounds and a work ethic.

²⁶⁷ U.S. Department of Education, Office of Federal Student Aid, Federal Student Aid Portfolio Summary, July 2016, <https://studentaid.ed.gov/sa/about/data-center/student/portfolio>

²⁶⁸ Bankrate, Clinton floats college tuition plan. Will it fly?, 7 July 2016, <http://www.bankrate.com/financing/saving-money/clinton-floats-college-tuition-plan-will-it-fly/#ixzz4G5qxNK5y>

²⁶⁹ Hillary, Making college debt-free and taking on student debt, retrieved 1 August 2016, <https://www.hillaryclinton.com/issues/college/>

Based on Jobenomics discussions with a number of high-income earners, they are not averse to giving, but greatly prefer philanthropy over charity. Teaching a person to fish for a living is highly preferable to the daily giving of fish. Moreover, many high-income earners are philanthro-capitalists. Philantrocapi-talism applies for-profit capitalist objectives, such as private property and ownership, to address poverty and unrest. Many philanthro-capitalists told this author that micro-business loans and equity financing could be readily obtained for the right initiatives and projects. Jobenomics has micro-business loan commitments for several of its city initiatives in the \$100 million range.

Tuition-free postsecondary education supporters also argue that free tuition will help enroll and graduate more people, and therefore pay for itself via increased government taxes and economic growth. While this argument is true due to the higher earning potential of graduates with bachelor's degrees, it understates the length of the payback period, the degree of economic impact of graduates with unemployable credentials, the negative impact on people who with less than a postsecondary degree, and the deleterious impact of the ever increasing number of discouraged low-skilled workers who voluntarily leave the workforce for public assistance and the underground economy.

From a Jobenomics perspective, while it is beneficial to get a college degree for high paying and high growth rate occupations, it is equally important to gain the skills needed to get a job. While a degree is still considered an advantage, the right degree can make a big difference in getting a meaningful job or being underemployed, which is the case for many college graduates.

Not all degrees are created equal. According to another recent Georgetown Center on Education and the Workforce study, the risk of unemployment among recent college graduates depends largely on their major. Entry-level salaries for many graduates (such as those majoring in art-related career fields) are \$30,000, which is less than what they can get on welfare in HI, DC, CT, NJ, RI, VT, NH, MD, CA, WY, OR, MN, NV, WA, ND, NM, DE and equal to benefits provided by a dozen other states.²⁷⁰

Not all degrees lead to good jobs. In fact, many lead to **under**employment. According to a recent PayScale (a pioneer of one of the world's most advanced compensation platform) study, nearly half of American workers identify themselves as underemployed. Women are more likely to consider themselves underemployed than men, 49% and 43%, respectively. College degrees that are most likely (50%+) to lead to underemployment are: Criminal Justice (62%), Business Management and Administration (60%), Health Care Administration (58%), General Studies (55%), Sociology (53%), English Language and Literature (52%), Graphic Design (52%), Liberal Arts (50%), Education (50%) and Psychology (50%).²⁷¹

Since about half of all new jobs projected by the BLS in the next decade are in these or related occupations, it may be safe to assume that half of all graduates will be underemployed—assuming they find a job at all. Even more disturbing, PayScale reports that workers with some college education but no degree are more likely to be underemployed than a worker with only a high school

²⁷⁰ Georgetown Center on Education and the Workforce, Hard Times: College Majors, Unemployment and Earnings: Not All College Degrees Are Created Equal, <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/Unemployment.Final.pdf>

²⁷¹ PayScale, The Underemployment Big Picture, <https://www.payscale.com/data-packages/underemployment>

or GED degree, 57% versus 52% respectively. 41% percent of MBA degree holders reported being underemployed, and of those almost 90% are not using their education in their current job, the highest percentage of any degree holders PayScale surveyed. Medical doctors are the lowest level of underemployment at 30% overall.²⁷²

For last year's college graduates, the employment and underemployment picture is much bleaker than it was prior to the Great Recession.

According to the Economic Policy Institute, despite an improving economy, 2015 grads still face an uphill climb. For young college graduates, the unemployment rate is currently 7.2%, compared with 5.5% in 2007, and the underemployment rate is 14.9%, compared with 9.6% in 2007. "The high share of unemployed and underemployed young college graduates and the share of employed young college graduates working in jobs that do not require a college degree underscore that the current unemployment crisis among young workers did not arise because today's young adults lack the right education or skills. Rather, it stems from weak demand for goods and services, which makes it unnecessary for employers to significantly ramp up hiring." To make matters worse, the higher cost of education has grown far more rapidly (more than doubled over the last two decades) "far more rapidly than median family income, leaving students with little choice but to take out loans which, upon graduating into a labor market with limited job opportunities, they may not have the funds to repay".²⁷³

Employment in the Largest U.S. STEM Occupations

Source: BLS 2015 Occupational Employment Statistics (latest data)²⁷⁴

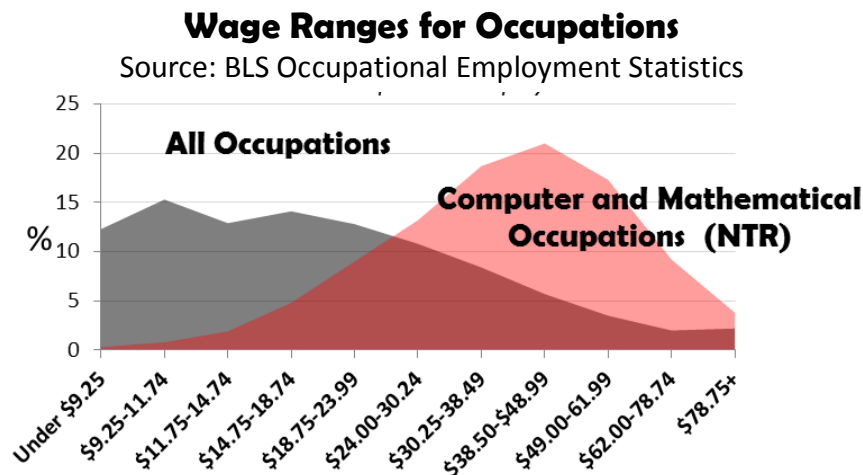


²⁷² PayScale, Underemployment Report, <http://www.payscale.com/data-packages/underemployment> and <http://www.payscale.com/data-packages/underemployment/education-level>

²⁷³ Economic Policy Institute, The Class of 2015, Despite an Improving Economy, Young Grads Still Face an Uphill Climb, 27 May 2015, <http://www.epi.org/publication/the-class-of-2015/>

²⁷⁴ BLS, Occupational Employment Statistics, STEM occupations: past, present, and future, Seven out of the ten largest STEM occupations were computer related, 1 January 2017, <https://www.bls.gov/spotlight/2017/science-technology-engineering-and-mathematics-stem-occupations-past-present-and-future/home.htm>

Graduates educated in liberal arts are far more likely to be underemployed than those educated in Science, Technology, Engineering and Math (STEM). STEM degrees related to the NTR and the emerging digital economy are projected to capture approximately 4 million of the 9.8 million new jobs projected by the BLS. Furthermore, STEM degrees related to computer and mathematical (NTR-related) occupations will provide higher salaries and greater number of jobs as compared to other occupations.



From a Jobenomics perspective, more discipline is needed to prepare postsecondary students for current job openings by industry and the emerging employment opportunities created by the energy and network technology revolutions. Education in STEM-related subjects, especially those closely associated with the emerging digital economy will be especially important in revitalizing the U.S. labor force and economy.

Skills-Based Training and Certification Programs. With such a rapid rise in costs and demand for a postsecondary education, poorly educated and unskilled workers at the bottom of the U.S. educational and socioeconomic pyramid are getting farther and farther behind. At some point having a baccalaureate degree will be the new standard for employment replacing today's high school diploma or equivalent General Educational Development (GED) certificate.

If tuition-free college education policies are adopted, the gap between the educated and uneducated will widen even further—likely leading to even greater high school dropouts and voluntary workforce departures. Moreover, only 44% of college and university students complete their college education, putting them behind the power curve in today's tepid labor market.

According to the Economic Policy Institute, despite an improving economy, 2015 high school grads also face an uphill climb in today's tepid labor market. For the Class of 2015 high school graduates, the unemployment rate is currently 19.5%, compared with 15.9% in 2007, and the underemployment rate is 37.0%, compared with 26.8% in 2007 prior to the Great Recession. The slow pace of the post Great Recession recovery means that high school graduates have to compete with more-experienced

workers in “suboptimal labor market conditions, resulting in stagnant wages and limited job opportunities”.²⁷⁵

Yesteryear’s degree-oriented paradigm, does not guarantee work in today’s high-tech, slow-growth economy where middle-class jobs are increasingly outsourced overseas or automated. Many citizens need short-term skills training and certification programs as opposed to longer-term degrees bestowed by postsecondary institutions. If 44% of college students drop out of college and 40% of college graduates have difficulty finding jobs, how can a high school dropout hope to find legitimate work? The answer is that many don’t.

Horace Mann also concluded that “jails and prisons are the complement of schools; so many less as you have of the latter, so many more must you have of the former.” Horace Mann, born in the 18th Century, could not have envisioned that in the 21st Century his jails and prisons quote would be as prophetic as it is today.

The United States has more people incarcerated per capita than any other nation in the world. Approximately 2.3 million Americans are incarcerated including 1,310,000 in state prisons, 646,000 in local jails, 211,000 in federal prison and 34,000 in youth detention facilities.²⁷⁶

It is highly likely that these prisoners, as well the formerly incarcerated, preferred to learn short-term criminal skills as opposed to long-term educational degrees. It is also highly likely that jails and prisons excel in advanced criminal skill training and mentoring as evidenced by the high rate of recidivism (relapsing into criminal behavior).

From a Jobenomics perspective, basic skills training targeted at high demand jobs would provide viable alternatives to lives in crime. Jobenomics offers these kinds of training programs for the formerly incarcerated. For example, Jobenomics is developing a business plan with former ex-offender community leaders for a Jobenomics Workforce Reentry Center in Phoenix, Arizona, with the goal of creating microbusinesses and jobs for formerly incarcerated, gang members and at-risk youth.

For depressed and disenfranchised communities, especially in many of the large metropolitan inner-cities, Jobenomics emphasizes three basic forms of skills training: tradecraft, communication and small business creation.

- First priority is tradecraft—a skill acquired through experience in a specific trade—with emphasis on skilled services. Too few workforce entrants or discouraged workers understand how they can obtain workforce skills via short-term training programs, internships and apprenticeships.
- Second priority is communications. In a business sense, communication entails the ability to express and demonstrate one’s value-proposition. Without an ability to communicate effectively, a skilled individual will have difficulty maintaining a job.

²⁷⁵ Economic Policy Institute, The Class of 2015, Despite an Improving Economy, Young Grads Still Face an Uphill Climb, 27 May 2015, <http://www.epi.org/publication/the-class-of-2015/>

²⁷⁶ Prison Policy Initiative, Mass Incarceration: The Whole Pie 2016, <http://www.prisonpolicy.org/reports/pie2016.html>

- The third priority is small business creation with emphasis on services-providing startups that can be created and implemented with short-term training, certification programs and funding. Small businesses also offer the fastest way out of poverty through employment for the unemployed and underemployed. Every city should have a community-based business generator that trains, implements and mass-produces highly-scalable small and self-employed businesses.

Job “Skill” Zones 1 Through 5

Source: O*NET²⁷⁷

Skill Level	Zone 1	Zone 2	Zone 3	Zone 4 & 5
Preparation	Little or none	Some	Medium	Considerable or extensive preparation needed. The J-CBBG will fast track these individuals who want to start a business.
Education	None, GED, High School	GED, High School	Vocational school, on-the-job experience, or associate degree	
Experience	Little or no previous skill or knowledge	Some previous work-related skill or knowledge	Previous work-related skill or knowledge	
Job Training	Few days to a few months	One to two years on-the-job experience or apprenticeships	Several years of work-related experience, on-the-job training, and/or vocational training	
Examples	<i>Taxi drivers, waiters, clerks</i>	<i>Electricians, food service managers, assistants</i>	<i>Accountants, sales managers, database administrators, teachers</i>	<i>Supervisors, managers, owners</i>

According to O*NET, the nation's primary source of occupational information on 974 occupations, a Job Zone is defined as a group of occupations that are similar in skills possessed by an individual who wants to work, how much related experience is needed to perform a task or work, and how much training/education is needed to qualify the individual for the job or task. High-skilled labor requires Zone 3-5 skills that usually are substantiated by degrees from accredited educational institutions. Lower-skilled individuals usually require Zone 1-2 skills that usually are obtained by certifications from accredited training institutions (schools and businesses).

Low skilled individuals at the base of America’s socioeconomic pyramid are often trapped between choosing a long-term path of gaining a degree (GED, high school or postsecondary) or dropping out of the labor force entirely—often public assistance or alternative lifestyles. While there is no evidence that people on welfare are lazy or immune to work, there is evidence that many welfare recipients lack the skills necessary to obtain the types of jobs that pay above-average wages, which, in turn, makes welfare an attractive option. If there is any doubt about a poor person’s willingness to work, one only has to attend an inner-city job fair. More often or not the lines are block’s long. Jobenomics recently attended a job fair in Camden, New Jersey where 5,000 underprivileged citizens filled out resumes and employment forms in 95 degree weather for 50 entry level jobs.

²⁷⁷ O*NET OnLine, Job Zones, <https://www.onetonline.org/help/online/zones>

According to a 2013 CATO Institute study²⁷⁸, “the current (U.S.) welfare system provides such a high level of benefits that it acts as a disincentive for work....Welfare currently pays more than a minimum-wage job in 35 states, even after accounting for the Earned Income Tax Credit....In 13 states it pays more than \$15 per hour.” Also according to the CATO study, one would have to make more than \$60,000 (pretax wage equivalents) in Hawaii and more than \$50,000 in Washington DC and Massachusetts to beat the level of welfare payments.

The attractiveness of the U.S. welfare system—that is decoupled from any workfare requirements as required in the most liberal European nations—often outweighs the promise of degreed-jobs that have proven to be increasingly elusive and unattainable in today’s polarized labor market. In addition, many disenfranchised individuals in financially depressed communities exhibit antiestablishment and counter-cultural attitudes that view standard work as passé, outmoded and less lucrative than they can achieve by a combination of public assistance, the underground economy, barter, alternative lifestyles and even criminal behavior.

Consequently, for unskilled, poorly educated and discouraged workers, Jobenomics is implementing short-term skills training and certification programs, which are significantly more attractive than degree-oriented programs, in order to encourage/engage/reengage individuals in workfare.

Low wages are a deterrent to workfare, thereby making welfare a more attractive alternative. To mitigate this deterrent, Jobenomics believes that being a participant in a small business startup offers an additional incentive for rapid upward mobility into management and enhanced income opportunities. This is the principle that many companies, like fast-food chains, utilize. For example, McDonalds offers a path for employees to start as crew members, who are offered a career path to advance to crew chiefs, then managers and finally to owners.

The U.S. federal Earned Income Tax Credit (EITC) program subsidizes low- to moderate-income working individuals and couples, particularly those with children. In addition to EITC, the federal government funds 126 separate welfare and social program expenditures programs targeted at subsidizing the poor, the disabled and elderly. State, county and municipal governments offer additional welfare and public assistance programs. Total U.S. welfare and social program expenditures are estimated to exceed \$4 trillion per year. Over 50 million people receive nutrition subsidies (food stamps) and another 13 million people receive public or subsidized housing assistance each year. Perhaps, it’s time for America to create more incentives and subsidizes for people who desire to become self-sufficient via workfare. A culture of self-sufficiency is vastly superior to a culture of dependency.

Subsidies should also be considered for mass-producing startup businesses, especially in depressed communities. These startup businesses would be the economic engine that could revitalize many declining urban and rural communities. To incentivize mass-production of highly-scalable startup businesses, funding should be applied to standardized training and certification programs. Easily

²⁷⁸ CATO Institute, The Work Versus Welfare Trade-Off: 2013,
http://object.cato.org/sites/cato.org/files/pubs/pdf/the_work_versus_welfare_trade-off_2013_wp.pdf

accessible low interest loan programs, like the Home Affordable Refinance Program (HARP), could be created for those who want to start and maintain small businesses. Tax and regulatory waivers instituted for the first five years after every business birth. As mentioned earlier, 79% of startups survive one-year, 50% five-years and 33% ten-years. Subsidies, loans and waivers would improve these percentages substantially, boost the economy and increase overall employment.

Conclusion. From a Jobenomics perspective, the difference between education and training is significant to U.S. workforce and small business development. Education is foundational and generally measured by tenure. Training is specific and measured by what one can do once completed. Educational degree-oriented programs are measured in years and are usually expensive. Training programs are often as short as weeks or months, and are relatively inexpensive. For people seeking careers, degree-oriented programs are usually the best choice. For the underprivileged, unskilled and poorly educated segment of society, certificate-oriented skills-based training provides the most effective path into the workforce. At the end-of-the-day, one must remember that jobs do not create jobs, businesses do, especially small businesses that employ 80% of all Americans and created 80% of all new jobs since the end of the Great Recession in 2009.

The Universal Minimum Wage Conundrum

Most people perceive that minimum wage laws apply mainly to the 4.7 million fast-food industry workers. This perception understates the serious consequences of a universal minimum wage to all businesses, the labor force and the U.S. economy. If a \$15/hour minimum wage was implemented today nation-wide and all current able-bodied Americans who can work were considered, 159 million citizens would qualify for the minimum wage threshold.²⁷⁹

According to the BLS, "In 2017, 80.4 million workers age 16 and older in the United States were paid at hourly rates, representing 58.3 percent of all wage and salary workers. Among those paid by the hour, 542,000 workers earned exactly the prevailing federal minimum wage of \$7.25 per hour. About 1.3 million had wages below the federal minimum. Together, these 1.8 million workers with wages at or below the federal minimum made up 2.3 percent of all hourly paid workers."²⁸⁰

While there is no official estimate regarding the average wage of these 1.8 million Americans, it is probably safe to assume that it is around \$6.50 per hour. A minimum wage hike to \$15 per hour would require employers to raise hourly wages by \$8.50, a 130% increase. To cover this increase, companies would have to bear the additional labor cost of at least \$31 billion per year (1.8 million x \$8.50 per hour additional wages x 50 work weeks per year x 40 hours per week = \$30.6 billion per year). Most of this burden would fall on small-businesses (1-499 employees) that employ 97 million, or 77%, of all Americans. Micro-businesses (1-19 employees) that employ 31 million, or 25%, of all Americans would be hit the hardest since these are the businesses that rely on low-cost, entry-level and unskilled labor.²⁸¹

While name brand micro-business franchises, like Starbuck's, could tolerate this increase, an average mom-and-pop shop business (or similar enterprises with less than 5 employees) probably could not. According to an analysis by Coffee Shop Startups, a small independent coffee shop owner is likely to make gross revenue of \$166,320 and net profit of \$60,000 per year based on a sale of a \$4.95 cup of coffee to 100 customers a day.²⁸² If this owner employs five full-time equivalent people, the minimum wage hike works out to be \$85,000 (5 employees x \$8.50 per hour increase x 2000 work hours per year). In addition, the cost indirect labor (transportation, cleaning, admin, etc.) is also likely to increase. The implication is clear—a universal minimum wage of \$15/hour could cripple mom-and-pop American enterprises that operate on low margins and volumes. Moreover, it would also discourage other startups to materialize. As discussed earlier, the United States is producing startup businesses at half the rate of previous decades. While well-intended, implementation of a universal minimum wage could induce significant damage to the economy, small businesses and labor force.

²⁷⁹ U.S. Census Bureau, Current Population Survey, 2015 Annual Social and Economic Supplement, PINC-05, Work Experience in 2014--People 15 Years Old and Over by Total Money Earnings in 2014, Age, Race, Hispanic Origin, and Sex, http://www.census.gov/hhes/www/cpstables/032015/perinc/pinc05_000.htm

²⁸⁰ ADP Research Institute, April 2018: ADP Employment Reports, <https://www.adpemploymentreport.com>

²⁸¹ U.S. Census Bureau, United States, Quick Facts, Businesses, Total Employer Establishments, 2016, , <https://www.census.gov/quickfacts/fact/table/US/PST045217>

²⁸² Coffee Shop Startups, How Much Do Coffee Shop Owners Make?, <https://coffeeshopstartups.com/much-coffee-shop-owners-make/>

In response to the dearth of good-paying jobs at the base of America's socio-economic pyramid, leading Senate Democrats (many 2020 Presidential hopefuls including Senators Sanders, Booker, Harris, Warren and Gillibrand) are introducing "Guaranteed Jobs" bills that would create a job for every American that wants one. These jobs would include livable wages (\$15 minimum) and generous benefit packages (health care, parental leave, etc.).

As reported by The Economist (a London-based weekly magazine-format newspaper), a University of Minnesota and The Economist analysis of BLS data found that approximately **50% of the 148 million U.S. citizens in the Civilian Labor Force (nonfarm employed and unemployed) currently make below minimum wage of \$15**. To lift these people out of their financial predicament, the proposed bills would create 10 million new infrastructure, clean energy and social assistance positions that would be funded and managed by Washingtonians. These "public employment jobs" would be in addition to the existing 22 million government employees at a cost of \$543 billion as calculated by The Center on Budget and Policy Priorities, a left-leaning Washington think tank. The Economist article states that this Democrat-sponsored legislation is a flawed idea—good politics to impress their base but bad policy—for a number of reasons.²⁸³ Jobenomics agrees.

Jobenomics endorses the concept of a livable wage, especially for enticing people to join the workforce. However, upward mobility is hampered by cutting off the low wage steps of the wage scale ladder. Fewer people will be able to climb the ladder because the first step will be much higher. Furthermore, businesses will be more motivated to automate manual and cognitive labor as opposed to hiring. McDonalds, Wendy's, and many other service-providing companies, are switching to self-ordering and automated systems to avoid the \$15 minimum wage. At the end of the day, fewer people will be hired, valuable skills training would be curtailed and upward mobility diminished.

In a Bloomberg interview with Mary Kay Henry, the President of the Service Employees International Union (SEIU, an organization of 2 million unionized service workers), Henry stated that a \$15 minimum wage would be a boon to small businesses since workers would have more money in their pockets to spend. Jobenomics agrees with this statement. Jobenomics also agrees with SEIU's recommendation to provide "job ladders and training" for low-wage earners to escape poverty. Per Ms. Henry, "We now have 10 million workers on a path to \$15 in New York and California. It will be fascinating how transformative those dollars are to economic growth in those communities."²⁸⁴

Jobenomics believes that the New York and California minimum wage efforts will be fascinating indeed, especially on the impact on small businesses. Hopefully, they will succeed. Even if they don't, they will provide valuable data and lessons learned.

²⁸³ The Economist, Guaranteeing Employ, Make Work Can't Work, 10 May 2018, <https://www.economist.com/united-states/2018/05/12/a-jobs-guarantee-is-a-flawed-idea>

²⁸⁴ Bloomberg Businessweek, Union Booster Mary Kay Henry, 20 October 2016, <http://www.bloomberg.com/news/articles/2016-10-20/union-booster-mary-kay-henry>

- According to California Governor Jerry Brown, California's new minimum wage law will increase the wage for about 6.5 million California residents which equates for a pay increase for 43% of the state's private sector workforce.²⁸⁵
- New York's minimum wage will lift the earnings of more than 2.3 million New Yorkers (29% of the state's private sector workforce) plus a 12 week paid family leave policy. According to Governor Cuomo, these policies will show the nation that New York is leading "the way forward on economic justice". Businesses in the New York metropolitan area that have high costs of living are likely to easily absorb \$15/hour, but smaller cities and rural areas with lower costs of living may not find it so easy. The New York minimum wage schedule for New York City is focused on "large business", which New York defines as businesses with a least 11 employees (employers with 11 employees are considered microbusinesses by Jobenomics) and will start \$11 an hour in 2017 and increase to \$15 by 2019. For workers outside the NYC metro, minimum wage would start at \$9.70 in 2017, grow to \$12.50 in 2021 and continue to increase to \$15 based on an "indexed schedule" determined by the State.²⁸⁶

Rather than instituting a universal minimum wage, Jobenomics prefers workforce incentives and supplements that would encourage citizens—115 million below average wage earners, 15 million unemployed and underemployed workers, 16 million new workforce entrants per year and 95million sidelined able-bodied citizens who choose not to work—to join the U.S. labor force. Incentives and supplements would include programs like a livable minimum wage in proportion to the local cost of living, temporary exemptions for internships, and a transition period to allow welfare recipients to keep a portion of their benefits as they transition to workfare. In other words, rather than funding people not to work, subsidize them to work by providing ways to bridge the gap between low wages and livable wages.

Building welfare to workfare "bridges" is only the first step. The next step involves building career paths (ladders) via certified training programs designed to quickly advance people up the initial steps of the ladder. The final step is to mass-produce highly-scalable small businesses—the employer of the vast majority of Americans, low income wage earners, new workforce entrants and the formerly unemployed—to provide meaningful ownership and long-term career opportunities for those that start their journey at the bottom rung of the ladder.

²⁸⁵ USA Today, \$15 minimum wage coming to New York, Calif., 5 April 2016, <http://www.usatoday.com/story/news/nation/2016/04/04/california-new-york-minimum-wage-hikes-signed-into-law/82617510/>

²⁸⁶ New York State, News Release, Governor Cuomo Signs \$15 Minimum Wage Plan and 12 Week Paid Family Leave Policy into Law, 4 April 2016, <https://www.governor.ny.gov/news/governor-cuomo-signs-15-minimum-wage-plan-and-12-week-paid-family-leave-policy-law>



Jobenomics State and City Initiatives

Job creation and business creation go hand-in-hand. Jobs do not create jobs, businesses do, especially small businesses that currently employ the majority of all Americans and create the vast majority of all new jobs.

The way that government and big business can plan, manage and support small business and job creation is via community-based business incubators, business accelerators and business generators.

Business incubators tend to focus high-tech, silver bullet innovations that have extraordinary growth and employment potential. Business accelerators focus on expanding existing businesses in order to make them larger and more profitable. Many cities have business incubators, usually located at or around universities or technology parks, and business accelerators that are associated with mezzanine financing institutions. The Jobenomics business generator concept involves mass-producing small and self-employed business with emphasis on lower-tech but plentiful service-providing businesses at the base of America's socioeconomic pyramid with emphasis on minority-owned, women-owned, veteran-owned, and Generation Y/Z (new workforce entrants)-owned businesses.

Jobenomics State & City Programs

Program Development/Implementation In Progress

- Jobenomics Erie Pennsylvania
- Jobenomics Las Vegas
- Jobenomics Austin (Chicago)
- Jobenomics Manatee County (FL)
- Jobenomics West Virginia

Initiative Discussion/Negotiation Underway

- Jobenomics Workforce Reentry Program Phoenix
- Jobenomics North Carolina
- Jobenomics Southern Maryland
- Jobenomics Cincinnati (OH)
- Jobenomics Charlotte (NC)
- Jobenomics Puerto Rico
- Jobenomics Buffalo (NY)

Currently Inactive

- Jobenomics Harlem/New York City
- Jobenomics Baltimore
- Jobenomics Delaware

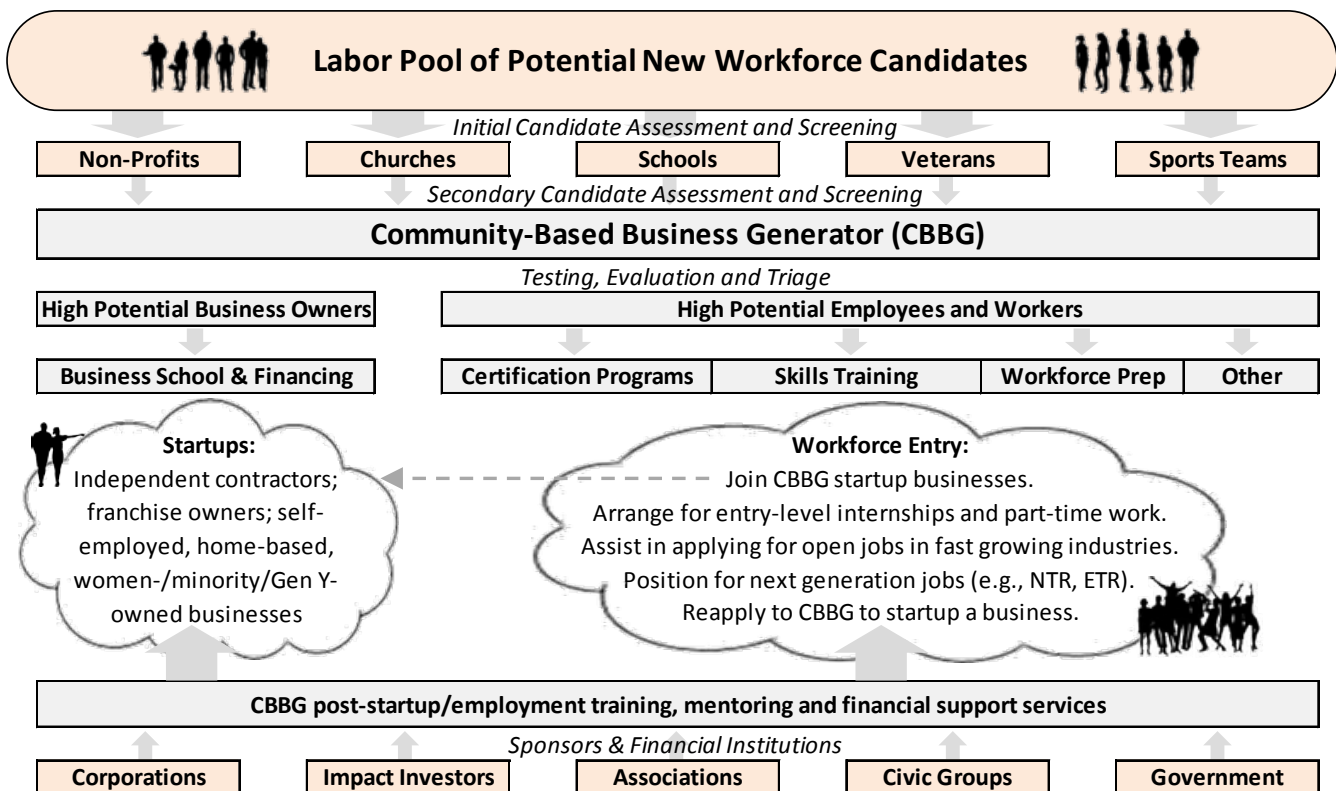
Numerous Jobenomics State and City programs are now underway as shown above with a number of other city, county, regional and state initiatives under discussion. Each of these programs incorporates Jobenomics Community-Based Business Generators as the way to mass-produce small and self-employed businesses as well as maximizing the number of jobs within targeted, often marginalized, communities. These community leaders are working with other community,

government and business leaders to develop detailed plans, with actionable milestones, for citizens who desire meaningful jobs or want to start a business.

Jobenomics Community-Based Business Generator Concept

Jobenomics Community-Based Business Generators mass-produce highly-scalable startup businesses by: (1) working with community leaders to identify high-potential business owners and employees, (2) executing a due diligence process to identify potential high quality business leaders and employees, (3) training and certifying these leaders and employees in targeted occupations, (4) creating highly repeatable and highly scalable “turn-key” small and self-employed businesses, (5) establishing sources of startup funding, recurring funding and contracts to provide a consistent source of revenue for new businesses after incorporation, and (6) providing mentoring and back-office support services to extend the life span and profitability of businesses created by the Jobenomics Community-Based Business Generators.

Jobenomics Community-Based Business Generator Concept



The process starts by using community leaders to identify high-potential job seekers. Churches, non-profits, schools, sports teams and veterans groups are a great source for identifying talent, desire and fortitude. These organizations provide the first phase of the triage process by screening and assessing high performance people who are known to them. The second stage is accomplished during onboarding that involves Jobenomics screening and assessing. The third stage uses aptitude and personality tests to determine potential career paths.

Once completed, candidates will be separated into a business leadership group or a high potential employee group for training. The leadership group will undergo management and startup business training. The employee group will undergo skills training based on the role that they will assume in the startup business (operational, technical, mechanical, financial, marketing, administrative, etc.). After the training is completed and certifications awarded, the team will commence startup operations under the guidance and assistance of the Business Generator team.



A Unique Community-Based Business And Workforce Development Process

Starting with a notional labor pool of thousands of potential candidates, Jobenomics will work with local civic organizations identify, nominate and endorse in writing the highest qualified candidates for entry into the Jobenomics Community-Based Business Generator program. This is the first stage of the due diligence and selection process.

These nominees will then be subjected to standard aptitude and attitude tests in order to identify and assist (1) those that should be sent to other educational (GED and postsecondary) or training (vocational) centers for career development, (2) those that are qualified and suitable for immediate employment with existing companies, and (3) those that have an aptitude for starting a small or self-employed business. Jobenomics Community-Based Business Generator will help all people who enter the program to find meaningful employment.

Jobenomics envisions that 25% of the nominees would seek a traditional education and training path, 25% would be hired directly by existing business who are looking for quality workers, and 50% would seek a more independent and self-sufficient route offered by a small business startup or self-employment. Of the 50% that choose the Jobenomics Community-Based Business Generator training and certification process, Jobenomics anticipates that only one-quarter of these individuals will eventually implement a small business startup or incorporate as a self-employed business.



The three-quarters that undergo but do complete Jobenomics Community-Based Business Generator process will be certified (with empirical data by professional testing and evaluation) as high-quality candidates for immediate employment or traditional education/vocational training. Anticipating this eventuality, Jobenomics has “pipeline” to connect individuals who have undergone some level of due diligence to companies that are hiring or anticipate future employment vacancies. The Jobenomics pipeline system has been operational for years with the Department of Defense and facilitated the hiring of 250,000 veterans.

The Jobenomics process focuses on preparing workers for starting a business, whether they actually start a business or use the experience to be more competitive to get a job. In today’s world, gainful employment is difficult and oriented to those that are currently employed, credentialed or highly-skilled. Conversely, a common complaint that Jobenomics often hears from companies is that they have a very hard time (1) finding good people who want to work, (2) who have the right attitudes and aptitude for work, and (3) who have workforce credentials, experience or related skills.

Every nominee that enters the Jobenomics process will start a self-employed business, which can be incorporated in a matter of weeks, and undergo elementary business training. The reason for setting up a small business is to make them more competitive in today’s job market. Many employers prefer to “try before they buy.” An incorporated self-employed individual can position themselves for subcontract or contingent work (1099) as a prelude to standard full-time work (W2). Even if a self-employed individual never receives an income as a self-employed business, that individual can present themselves with credentials (Employer ID Number, website, business card and skills resume) that better prepares and aligns them with the business community. In addition, Jobenomics will provide additional credentials regarding the individual’s workforce aptitude, skills and suitability tailored to the specific hiring opportunity. Jobenomics credentialing, along with letters of recommendation from the nominees’ sponsoring organization, will greatly distinguish the individual from the masses of unemployed, new or returning workforce entrants.

Today, the United States does not have standardized national, state or local processes to create or mass-produce startup businesses. The U.S. startup process is largely ad hoc. By instituting a community-based (all jobs are local) standardized, repeatable and scalable process to mass-produce startup businesses, millions of new establishments could be created across America. By being part of a small business team, team members will be motivated to grow the business in order to make it more profitable, which facilitates upward mobility, higher wages, better benefits, potential equity positions, and, perhaps most importantly, a sense of camaraderie and purpose.

Job creation is the number one issue facing the U.S. in regard to economic growth, sustainment and prosperity. Jobs do not create jobs, businesses do, especially small businesses that currently employ 80% of all Americans and created 80% of all new jobs since the end of the Great Recession.

Unfortunately, America is focused on big business and government employment solutions that have not been very effective growing the U.S. labor force. In fact, the U.S. labor force is in a state of decline as evidenced by the eroding middle-class and the transformation from standard full-time to part-time and contingency workers. With the next fifteen years, Jobenomics forecasts that the contingent workforce will replace traditional full-time workforce as the dominant force of labor in the United States—a trend that is largely unknown to policy-makers and the American public.



Jobenomics asserts that the four demographics with the highest need and growth potential include women, minorities, new workforce entrants, and the large cadre of financially distressed citizens who want to work or start a business. These demographics are ideally suited for accommodating the growing contingent workforce and attracting new labor force entrants that often do not share the same employment dream of older generations.

Jobenomics believes that new small, emerging and self-employed businesses could create 20 million new jobs within a decade, if properly incentivized and supported. Notwithstanding filling the 6 million open U.S. jobs positions, the emerging Energy Technology Revolution (ETR) and the Network Technology Revolution (NTR) could create 20 million net new American jobs within a decade given proper leadership and support.

Using the Jobenomics Community-Based Business Generator process of mass-producing highly repeatable and scalable “turn-key” small and self-employed businesses, America writ large could create tens of millions of jobs that would transform the U.S. labor force, middle-class and economy as well as providing hope and jobs for marginalized urban and rural American communities.

From a Jobenomics perspective, understanding the difference between education and training is fundamental to U.S. labor force development. Education is foundational and generally measured by tenure. Training is specific and measured by what one can do once completed. Educational degree-oriented programs are measured in years and are usually expensive. Training programs are often as short as weeks or months, and are relatively inexpensive. For people seeking careers, degree-oriented programs are usually the best choice. For the underprivileged, unskilled and poorly educated segment of society, certificate-oriented technical skills-based training provides the most effective way to getting a good job, the first step towards a meaningful career.

The Hope Collection (<http://thehopecollection.org/>) is a strategic partner in the Jobenomics National Grassroots Movement for skills-based training and lifelong applied learning. Together the Jobenomics-Hope team is focused on providing skills-based training and certification programs for those at the bottom of America’s socio-economic pyramid with special emphasis on inner-city contingency workers.

The Jobenomics Hope Collection team includes the leading, nationally-accredited, skills-based training and certification institutions in the United States. The Hope Collection’s **9,000 online skills-based training and certification programs** are oriented to creating “careers within a year” in Health and Wellness, Performing and Fine Arts, Family Issues, Development and Housing, Technology/Energy/Communications, Faith Based Leadership, Education, Food and Nutrition. Accredited training and certification providers include nationally-recognized organizations including: 360Training (<http://www.360training.com>), ExpertRating (<http://www.expertrating.com/>), Lake Technical College (<http://www.laketech.org/>) and the American Institute of Small Business (<http://www.ed2go.com/business>) to deliver the Jobenomics Community-Based Business Generator skills-based training and certification programs.

The Hope Collection’s cloud-based Virtual Value Interactive Network (VVIN, a data base management system) is used by tens of millions of people around the globe, managed by the Hope Resource and Research Center (www.RRCenter.org) and accessed free by Jobenomics members via Optimize My



Life (<http://www.optimizemylife.org/>). Optimize My Life also provides a myriad of other free programs and coaching, education and marketplace services.

To reiterate, 40% of all American workers are in the contingent workforce. In the inner-cities across America, the percentage of contingency workers is much higher due to depressed industries and low-skilled workers. While Jobenomics-Hope training prepares and supplies workers to standard full-time employers, which are in short supply in most inner city communities, the main emphasis has to be on preparing workers for higher-paying non-core contingent work as skilled part-timers, consultants, freelancers, self-employed businesses and independent contractors.

Today's changing global marketplace produces employees who can be business owners at the same time. Such an environment turns costs to cash, equity and donations that support the causes of their choice and pay for a government to secure and facilitate the environment for the common good. Through its high-tech virtual incubator and high-touch community centers, the Jobenomics Hope team is providing both a virtual and hands on network to facilitate the process. Each Jobenomics member will have access to proven tools to build their estates in concert with others who are doing the same, while funding the support systems to facilitate and sustain the community.

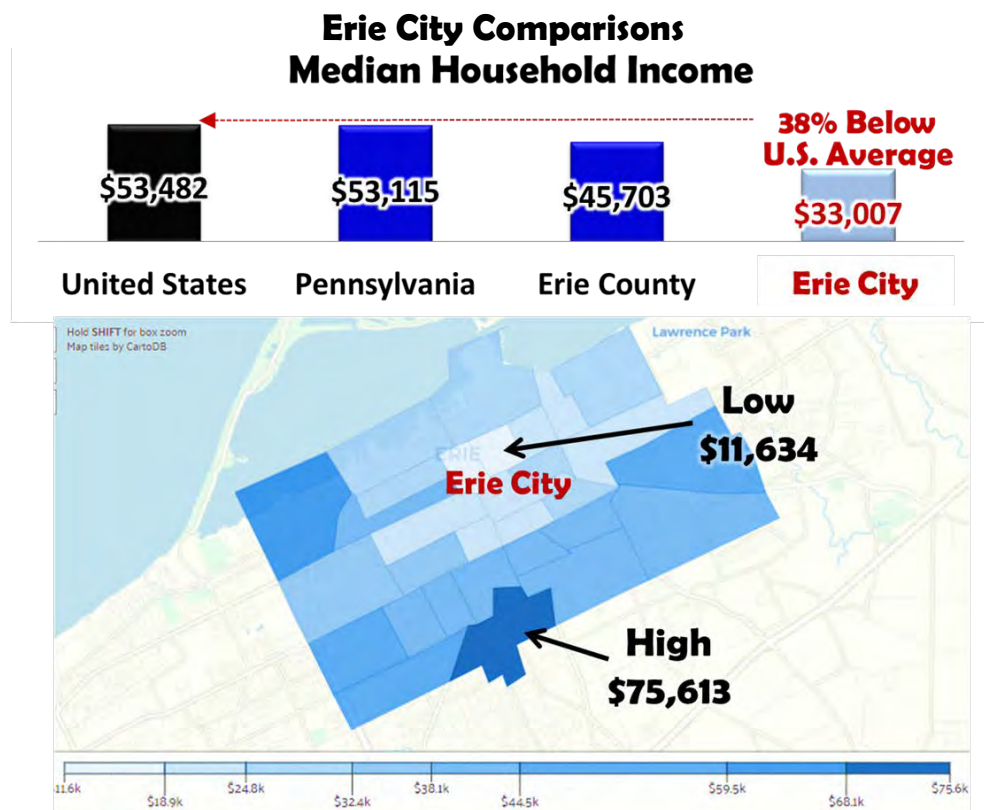
The Hope Resource & Research Center (HRRC) is a for-profit subsidiary of The Hope Collection that is supported by the VVIN data base, project management system that organizes and sustains "affinity groups" such as business owners, workers, veterans, first responders, extended families of each group, generational population groups (Baby Boomers, Millennials etc.), marginalized groups (ex-offenders, disabled, abused etc.) as well as geographical groups. The HRRC will provide both initial training as well as "lifelong applied training" that will update worker and business skills throughout their lifetime. The Community-Based Business Generator will provide local ICT (information, communications and technical) and hands-on support to the HRRC.

The Jobenomics Hope concept for lifelong applied learning, continuous career advancement and micro-business development incorporates a "duplex" micro-financing economic model for the contingent workforce and family members of the standard (full-time employed by corporations) workforce.

A duplex micro-financing economic model provides skilled-based training in multiple arenas that can then be incorporated for individuals and their family into an "S" Corporation/Family Limited Partnership structure. An S Corporation is a special type of corporation frequently used by self-employed and micro-businesses that allows shareholders to avoid double taxation by the IRS. Family Limited Partnership (FLPs) is type of partnership designed to centralize family business or investment accounts, and frequently used to move wealth from one generation to another. FLPs pool together a family's assets into one single family-owned business partnership in which family members own shares. As part of the Duplex, each person/family member's S Corp can use the HRRC's "e-Pantry in the Cloud" online shopping to convert purchases into a double digit tax-sheltered investment account. This investment account can be then reinvested into other equity-building opportunities (stock market, IRA/Keogh funds, insurance and charitable trusts, etc.) to build net worth as well as retirement and education accounts.

Jobenomics Erie

Jobenomics Erie's focus is on mass producing micro-businesses and jobs with an emphasis on inner-city Erie minorities, veterans, women, new workforce entrants and other hopefuls who want a job, career or those who are entrepreneurial enough to start their own small or self-employed business. Jobenomics Erie can offer **9,000 skills-based training and certification programs** to create careers within a year. As described in this document, the Jobenomics Erie team is committed to building hundreds of micro-businesses over the next five years that will produce **3,500 net new direct jobs** with livable wages and viable long-term careers for these demographics. If one assumes that each direct position will generate two to three times (3-times is the national average for service-providing industries and 5-times for goods-producing industries) as many indirect and induced jobs, the total employment impact could equate to a total between **10,500 to 14,000 new jobs** for Erie. This amount of job creation is highly dependent on the level of community enthusiasm, involvement, and support rendered to the fledgling Jobenomics Erie Program. 10,500 new jobs, at an average annual salary of \$50,000, **would equate to an economic impact of \$525 million per year**, which would transform inner-city Erie and greatly benefit the entire metropolitan area economically as well as reducing poverty and crime levels that depress Erie's overall quality of life.



Over the last several years, Erie members of the Jobenomics National Grassroots Movement started building momentum for a Jobenomics Erie initiative. On 24 January 2017, a long-time and enthusiastic Jobenomics supporter, Tim Tassick, hosted a Jobenomics conference at the Seibenbuerger Club in Erie with Chuck Vollmer as the keynote speaker. Per Vollmer's Seibenbuerger Club presentation, compared to the United States, Pennsylvania, and Erie County, Erie City is falling

further and further behind in terms of wealth, income, jobs and population growth. According to U.S. Census Bureau median household income data, the average Erie family makes 38% below the average American family. In Erie's inner-city, the average family makes an earned income of a measly \$6,741, which is 87% below national income. As a result of these disparities, the inner-city is experiencing increasing blight, unemployment, crime, and homelessness.

Over one hundred community leaders, concerned citizens and news media attended the Seibenbuerger Conference. The response to a potential Jobenomics Erie initiative was extremely positive, and community leaders volunteered to champion a Jobenomics Erie initiative. These volunteers included not only Tim and his team, but another long-term Jobenomics supporter and serial entrepreneur, Kim Burney, an Erie resident. Kim volunteered to be a Jobenomics Erie coordinator and build the Jobenomics Erie website and social media platform. She also brought the principals of Climate Changers, Inc. (Bishop Curtis Jones and Fred Williams) into the fold. Likewise, Tim engaged John Kowalezyk, the Founder, and Director of the Veterans Miracle Center Erie. Meetings also ensued with other community groups that pledged support. As a result of these meetings, this Jobenomics Erie Program was created. This Program is a "living program" subject to modification by Erie community-leaders, decision-makers and investors. Community support is essential to implementation.

Jobenomics Erie Intends to Reverse the Employment Decline

Employment Trends

Erie Metropolitan Statistical Area (MSA)



The Erie Metropolitan Statistical Area labor force decreased 5.5% from peak employment in August 2008 and experienced no-growth over the last 5-years. While comparable Census Bureau data is not readily available for Erie City and inner-city neighborhoods, anecdotal evidence suggests that the employment decline is much worse.

While Jobenomics supports big business and government job creation efforts, its principal focus is on highly-scalable startup and self-employed businesses. The reason is straightforward. Existing economic, business and workforce development organizations are focused mainly on attracting big business or major infrastructure development projects as the principal source of job creation. Jobenomics Erie supports these endeavors but believes that small businesses are the engine of any

economy. Today, 80% of all Americans are employed by small businesses that produced nearly 80% of all new jobs so far this decade. Since the beginning of this decade, micro businesses with less than 19 employees created 1.4-times more jobs than large institutions with over 1,000 employees, or 3,863,000 versus 2,739,000 new jobs respectively.

Moreover, startup businesses are the seed corn of the U.S. economy. Without the planting and fertilization of these seedlings, the fields of American commerce will remain fallow. According to a Kauffman Foundation analysis and study of the BLS/Census Bureau Business Dynamic Statistics data, net job growth occurs in the U.S. economy only through startup firms, and, counter to conventional wisdom, existing firms are net job destroyers. Furthermore, during recessionary years, job creation at startups remains stable, while net job losses at existing firms are highly sensitive to recessionary business cycles. The Kauffman study also stated that most city and state government policies that look to big business for job creation are doomed to failure because they are based on unrealistic employment growth models. “It’s not just net job creation that startups dominate. While older firms lose more jobs than they create, those gross flows decline as firm’s age. On average, one-year-old firms create nearly 1,000,000 jobs, while ten-year-old firms generate 300,000. The notion that firms bulk up as they age is, in the aggregate, not supported by data.”

Erie Metropolitan Area Job Gains/Losses by Industry

Job Lossers and Gainers			
Metropolitan Statistical Area Nov 2006 to Nov 2016			
10-Year Employment Change		10-Year Percentage Change	
-4,500	Manufacturing	-48%	Information (Non Internet)
-2,100	Professional and Business Services	-18%	Manufacturing
-1,000	Information (Non Internet)	-17%	Professional and Business Services
-500	Construction, Mining, Logging	-10%	Construction, Mining, Logging
-500	Government	-3%	Government
-300	Trade, Transportation, Utilities	-2%	Other Services
-100	Other Services	-2%	Financial Activities
-100	Financial Activities	-1%	Trade, Transportation, Utilities
2,200	Leisure and Hospitality	15%	Education and Health Services
3,800	Education and Health Services	19%	Leisure and Hospitality

-3,100 Net Loss

As shown above, recent U.S. Bureau of Labor Statistics data supports Kauffman’s claim that “existing firms are net job destroyers” in Erie. Of the ten private sector industries in Erie, eight out of ten had job losses over the last decade. The only two Erie industries that had employment gains were in low-wage sectors of Leisure and Hospitality (that mainly consists of food services and bars) and Education and Health Services.

For Erie to grow, it must look at startups in emerging industries in energy, agriculture and the digital economy. Erie must also establish a routinized process to mass-produce and sustain startup businesses. Jobenomics is working with numerous communities and national organizations regarding implementing Jobenomics Community-Based Business Generators to mass-produce small and self-



employed businesses for women, minorities, new workforce entrants (Gen Y/Z), veterans and other socioeconomically-challenged citizens.

Jobenomics Erie Goal: 3,500 New Direct Jobs within 5-Years

Jobenomics Erie Program	Direct Jobs (est. 5 Years)	% of 3,500 Job Goal
Community-Based Business Generator	1,550	44%
Staffing	50	1%
Direct-Care	600	17%
Digital Economy	500	14%
Renewable Energy & Technical Trades	400	11%
Urban Agriculture	650	19%
Micro-Farms (150)	450	13%
Controlled Agriculture Center	200	6%
Urban Mining	550	16%
eCyclingErie	50	1%
Light Industry	200	6%
Transportation & Logistics	300	9%
Workforce Re-Entry Center	750	21%
Ex-Offenders	300	9%
Would-Be-Offenders	300	9%
Disabled (PTSD) & Homeless Veterans	150	4%
Total	3,500	100%

Jobenomics contends that the antidote to declining job growth is mass-producing startup businesses. Mass production of startup businesses is central to the Jobenomics Erie Program, which focuses on business development in the most blighted innercity neighborhoods where it is most needed and impactful. The ultimate goal of the Jobenomics Erie program is to create hundreds of micro-businesses that will generate 3,500 new direct (not including indirect and induced jobs) employment opportunities with livable wages and viable long-term careers for these demographics over the next five years. Direct employment refers to employment directly related to the production of Erie goods and services. As a result of direct employment, indirect employment is also generated in businesses that supply goods and services to the direct workforce, such as administrative and logistics jobs indirectly supporting the direct workforce. Induced employment occurs when peripheral jobs (e.g., food, accommodation, entertainment, etc.) are created by the spending of the direct and indirect workforce. If one assumes each direct position will produce two to three times as many indirect and induced jobs, the total employment impact will equate to a total of 10,500 to 14,000 new jobs for Erie and the Erie Metropolitan Area. The national average direct-to-indirect/induced ratio is 3-times for service-providing industries and 5-times for goods-producing industries.

Jobenomics Erie will be built on a two existing and well-respected Erie programs that serve inner-city Erie's most socially and financially challenged communities. The Total Change Re-Entry Program, developed by Climate Changers, a 501c3, addresses the challenges ex-offenders, gang members, and at-risk youth by providing comprehensive skills and reentry programs. Veterans Miracle Center Erie, a 501c3, serves veterans by providing counseling, services, new clothing, products, housewares to those in need free of charge. The Jobenomics Erie Program will introduce four new initiatives to



accelerate these programs as well as expanding their outreach to other Erie demographics with the greatest need and highest potential.

The four new Jobenomics initiatives include: (1) a Jobenomics Community-Based Business Generator to identify, train, certify high-potential candidates for existing employment opportunities and mass-producing new micro-business in direct-care, digital economy, renewable energy and technical trades, (2) a Jobenomics/ACTS Freedom Farms Urban Agriculture initiative that will employ advanced indoor hydroponics and vertical farming technology to produce 150 one-acre urban micro-farms and a large 100,000 square foot indoor controlled agriculture complex using state-of-the-art hydroponic and vertical agriculture technology, (3) a Jobenomics Urban Mining initiative based on proven eCyclingUSA technology for reclaiming high-value material from electronic waste and using the profits to fund ongoing and additional Jobenomics Erie programs, and (4) a Jobenomics Workforce Re-Entry Program to create micro-businesses and jobs for formerly incarcerated, gang members and at-risk youth in order to reduce crime, deter social unrest and provide meaningful career opportunities to those who are often shunned, excluded or isolated from mainstream society. Each of these four new Jobenomics initiatives will be presented in detail in this document. Additional, documentation and detailed business and financial plans are also available. The Jobenomics Erie team plans to roll-out our program by April 2017, see www.JobenomicsErie.com for information and updates on our progress.

Community leadership and support will be paramount to the success of Jobenomics. Jobenomics is currently servicing a dozen similar initiatives in other cities and states. What makes Jobenomics Erie unique is the fact that Climate Changers and Veterans Miracle Center are both established and highly-respected organizations. Both organizations stepped up to lead Jobenomics Erie, not as a peripheral endeavor, but as a primary mission. Both organizations deal with the financially-distressed and under-served members of the Erie community. They understand that even the most disenfranchised and disheartened people at the bottom of America's socioeconomic pyramid can accomplish great things if they have hope, a clear path, proper mentoring and support.

Current Erie Metropolitan Area Employment

Largest to Smallest Employers		
Metropolitan Statistical Area Nov 2016		
%	Jobs	Industry
23%	29,700	Education and Health Services
17%	21,600	Trade, Transportation, and Utilities
16%	20,300	Manufacturing
13%	16,500	Government
11%	14,200	Leisure and Hospitality
8%	10,200	Professional and Business Services
5%	6,300	Financial Activities
5%	6,000	Other Services
3%	4,500	Construction, Mining, Logging
1%	1,100	Information (Non Internet)
130,400 Total Nonfarm Employment		

55%



The Erie metropolitan area currently employs 130,000 citizens. 55% of all Erie jobs are concentrated in three industrial sectors: Education and Health Services; Trade, Transportation and Utilities; and Manufacturing. These areas will receive particular attention. While only 3% of the overall employment picture, Construction will also receive attention inasmuch as many of the Jobenomics Erie programs, such as Jobenomics Erie Freedom Farms (described next), will produce significant amount of construction jobs associated with building homes and assembling large greenhouses (6,000 square feet) as well as demolition of derelict homes and building on the new micro-farm sites.

Many of the initial candidates are likely to prefer working for existing companies rather than going through the Jobenomics process. Anticipating this, Jobenomics will implement a “pipeline” to connect these individuals who have undergone some level of due diligence to companies that are hiring. Consequently, the Jobenomics management team includes a nationally recognized leader who developed such a pipeline system that has matched 250,000 veterans with companies. This system is ideally suited for matching Jobenomics candidates to local employment vacancies.

Erie County Top 50 Employers, Q2 2016

Rank	Employer	Rank	Employer
1	General Electric Company	26	Wegmans Food Markets Inc
2	Erie Indemnity Co	27	Voices for Independence
3	UPMC Hamot	28	Lakeshore Community Services Inc
4	State Government	29	Erie Homes for Children & Adults
5	Wal-Mart Associates Inc	30	Saint Mary's Home of Erie
6	Saint Vincent Health Center	31	McDonald's Restaurants of PA Inc
7	Federal Government	32	Infinity Resources Inc
8	School District of the City of Erie	33	Dr. Gertrude A. Barber in Home Services
9	Erie County	34	Scotts Dev Co/Scotts Splash Lagoon
10	Dr. Gertrude A Barber Center Inc	35	Waldameer Park Inc
11	Presque Isle Downs Inc	36	Welch Foods Inc
12	Millcreek Township School District	37	Port Erie Plastics Inc
13	City of Erie	38	Pleasant Ridge Manor
14	Lord Corporation	39	Stairways Behavioral Health
15	Country Fair Inc	40	Associated Clinical Laboratories LP
16	Plastek Industries Inc	41	C A Curtze Company
17	Pennsylvania State University	42	Lowe's Home Centers LLC
18	YMCA of Greater Erie	43	Northwest Bank
19	Gannon University	44	Lake Erie College of Osteopathic Medicine
20	Regional Health Services Inc	45	Harbor Creek School District
21	Millcreek Community Hospital	46	Career Concepts Staffing Services Inc
22	PA State System of Higher Education	47	Parker White Metal Co Inc
23	Mercyhurst University	48	Presbyterian Homes Inc
24	Saint Vincent Med Ed & Research Inst	49	Fort LeBoeuf School District
25	The Tamarkin Company	50	Sarah A Reed Children's Center



According to the Pennsylvania Department of Labor & Industry, these are the top 50 Erie County employers in 2016. Jobenomics Erie will approach each of these companies and attempt to arrange a technical training program based on their needs. In many cases, these companies will provide their trainers to train highly-screened, high-potential and endorsed candidates by the Jobenomics Erie Community-Based Business Generator. Equally crucial to prospective hiring companies, candidates will have their own incorporated business, which will give the hiring company a choice to subcontract them as 1099 contingency workers (depending on IRS rules) or to employ them as full-time standard W-2 workers. As mentioned, many employers prefer to try before buy. The recent growth in 1099 workers (IRS Form 1099-MISC used by independent contractors) suggests a massive transition from full-time to contingent work this decade.

America's labor force is in a state of transition from a standard full-time workforce to a contingent workforce that consists of part-time, temporary, contract labor, independent contractors, consultants and freelancers who are called "contingency workers." Today, 40% of all American workers are in the "contingent workforce." In the inner-cities across America, the percentage of contingency workers is much higher due to depressed industries and low-skilled workers.

The Department of Labor Bureau of Labor Statistics (BLS) defines the contingent workforce as the portion of the labor force that has "nonstandard work arrangements" or those without "permanent jobs with a traditional employer-employee relationship." The ever-growing non-standard contingent workforce will consist of over 50% of the U.S. labor force overcoming today's standard full-time workforce during the next decade. According to a recently released Harvard study, from February 2005 to November 2015, almost all employment growth (9.7 million) in the U.S. labor force occurred in the contingent workforce (9.4 million) as opposed to the standard labor force.

The contingent workforce is comprised of two categories: "**Core**" and "**Non-core**" Contingency. Since anecdotal evidence suggests that the vast majority of inner-city Erie residents are contingency workers, Jobenomics Erie will endeavor to minimize the core contingent workforce and maximize the non-core workforce.

Core contingency workers include part-time workers, agency temps, direct-hire temps, on-call workers and laborers and contract company workers. Core contingency workers are often low wage earners that have nonstandard work arrangements out of necessity (involuntary workers) and are often subject to exploitation. The government views core contingent workers as a liability since these workers often receive lower wages compared to "standard workers" and are not entitled to traditional employer-provided retirement and health benefits. Consequently, core contingent workers rely on government retirement, health benefits and other means-adjusted assistance programs to a much greater degree than the standard workforce. Low wage earning core contingency workers are the group most likely to become discouraged, quit looking for work and voluntarily depart the labor force.

Non-core contingency workers include independent contractors, self-employed workers and standard part-time workers who work fewer than 35 hours per week. Non-core contingency workers seek nonstandard work agreements as a matter of choice (voluntary workers). Jobenomics views the non-core workforce as a positive and growing economic force. Most next-generation workforce

entrants (Generation Z's digital natives) are not seeking traditional employer-employee relationships and prefer self-employment in the so-called "digital" economy. It is also important to note that the number of incorporated self-employed businesses has grown by 35% since the year 2000, giving credence to the notion that non-core contingent businesses are an essential faction of the U.S. labor force and the overall economy—a faction that is neither well reported nor understood.

According to many labor force experts, new workforce entrants (e.g., Generation Z "Screenagers" and Generation Y "Millennials") prefer contingent work over standard work for reasons including self-direction, variety, flexibility and skill development. In addition, Screenagers and Millennials exhibit a general disillusionment with traditional corporate social compacts and promises that have proven to be short-lived with older generations. Screenagers and Millennials also understand that conventional workforce growth is highly dependent on a robust economy, whereas contingent workforce growth is more resistant to economic fluctuations.

The rise of the contingent workforce is not unique to the United States. Furthermore, contingent work is being embraced by foreign policy-makers to a greater extent than in America. Japan serves as a good example. Japanese contingent workers (called non-regular workers) accounted for up to 50% of younger Japanese workers and 40% of the total Japanese labor force in 2014, up from 10% in 1990.

From a Jobenomics perspective, understanding the difference between education and training is fundamental to U.S. labor force development. Education is foundational and measured by tenure. Training is specific and measured by what one can do once completed. Educational degree-oriented programs are measured in years and are usually expensive. Training programs are often as short as weeks or months and are relatively inexpensive. For people seeking careers, degree-oriented programs are usually the best choice. For the underprivileged, unskilled and poorly educated segment of society, certificate-oriented technical skills-based training provides the most effective way to getting a good job, the first step towards a meaningful career.

The Hope Collection is a strategic partner in the Jobenomics National Grassroots Movement. Together the Jobenomics-Hope team is focused on providing skills-based training and certification programs for those at the bottom of America's socio-economic pyramid with special emphasis on inner-city contingency workers.

To reiterate, 40% of all American workers are in the contingent workforce. In the inner-cities across America, the percentage of contingency workers is much higher due to depressed industries and low-skilled workers. Jobenomics Erie estimates that Erie's inner-city workforce is overwhelmingly contingent workers. While empirical data is not available, inner-city Erie's contingent workforce could be as high a 90% based on the fact that inner-city household income is 87% below the national average (\$6,741 versus \$53,482). While Jobenomics-Hope training prepares and supplies workers to standard full-time employers, which are in short supply in Erie, the main emphasis has to be on preparing workers for higher-paying non-core contingent work as skilled part-timers, consultants, freelancers, self-employed businesses and independent contractors.

The Hope Collection team includes the leading, nationally-accredited, skills-based training and certification institutions in the United States. The Hope Collection's **9,000 online skills-based training**



and certification programs are oriented to creating “careers within a year” in Health and Wellness, Performing and Fine Arts, Family Issues, Development and Housing, Technology/Energy/Communications, Faith-Based Leadership, Education, Food and Nutrition.

Direct Care Program. Jobenomics Erie also calls for the creation of a Direct-Care Center as part of an overall Direct-Care Initiative focused on health care, behavioral care (mental health, chronic diseases and lifestyle changes such as dealing with obesity and drug abuse) eldercare and childcare. A Direct-Care Initiative would provide in-home services from local small, micro and self-employed businesses managed by community-based direct-care centers equipped with the latest information systems connected to a network replete with remote sensing, telehealth, real-time teleconferencing and mobile phone direct-care apps.

A number of factors are expected to lead to job growth in direct-care technology development as well as direct-care business and job creation: (1) growing population, (2) longer life expectancy, (3) chronic and age-related disease growth, (4) improved service-providing technology and (5) increasingly generous health care, social assistance and welfare programs.

Today, direct-care jobs are primarily funded through public funds. A direct-care initiative, designed around a community information and coordination center, could be paid by clients who need some assistance to retire at home or working families who can’t afford the high cost of daycare.

According to the Bureau of Labor Statistics, in-home personal care service sector is projected to increase by 1.3 million jobs (a 70% growth rate compared to 14% for all U.S. occupations) from 2010 to 2020 with a median pay of approximately \$20,000. While \$20,000 is well below the \$33,000 median salary for all occupations, it is attractive to new workforce entrants, retirees who need supplemental income and contingent workers who often work multiple part-time jobs as a matter of choice. By incorporating home-based, self-employed businesses, Erie residents can take advantages of business-related tax breaks as well as operating various part-time jobs to increase annual and family income.

Community-based direct-care centers will also help establish and manage home-based health care, eldercare and childcare businesses. By 2020, assisted-living facilities are projected to have a 17 million bed shortfall for elderly and disabled baby boomers—in-home eldercare services by home-based caregivers could solve the assisted-living shortage. Today, only 8% of childcare arrangements are conducted in a caregiver's own home. This percentage could be expanded significantly and safely if managed by a Direct-Care Center. Affordable childcare is a significant issue for female-headed households in inner-city Erie, suburbs and the region.

Mass-producing self-employed, home-based childcare businesses that are safely managed could have a significant impact on homebound mothers. More mothers could have home-based childcare businesses to supplement their income. More mothers could be emancipated from the home to pursue other occupational pursuits. Childcare skills are natural for mothers who are or have raised children. Jobenomics believes that mothers should be afforded the opportunity to monetize these skills. Micro and self-employed businesses are ideally suited to provide direct-care, either on full-time or part-time basis. These businesses are relatively easy to start.

In addition to training and certifying basic caregiving skills, a Direct-Care Center would provide proper regulatory oversight and quality control. The Direct-Care Center would also work with larger established businesses that offer services higher up the skills chain. Small and self-employed companies can provide services at a lower cost than larger enterprises, which is extremely important to the elderly and parents who cannot afford the price of current caregiving services.

Digital Economy Program. Jobenomics focuses on producing businesses and jobs related to the fast-growing digital economy as opposed the slower-growing traditional economy. The traditional economy is advancing at a sclerotic 2% annual rate compared to the digital economy's 15% and 20% growth rate. Consequently, Jobenomics Erie's Community-Based Business Generator will provide education, training and certification programs in the fastest growing elements (communities) within the emerging digital economy with emphasis on Erie's Generation Y (Millennials, ages 22 to 37) and Generation Z (Screenagers, age 21 and younger)—Erie's "digital natives".

The global digital economy will be shaped mainly by the digital generation and the ideology of their mentors. Generation Z, called Screenagers by Jobenomics due to the excessive amount of time online screen time that youngsters absorb, are true digital natives. These digital natives will shepherd Erie and Pennsylvania into the Digital Economy. Currently voting age and younger, Screenagers will soon be the fast-growing segment of the U.S. labor force, standing aside their digital compatriots, the Millennials, who became the largest generation in the workforce in 2015 and the largest living American generation in 2016.

From a Jobenomics perspective, there are at least seven unique but intertwined economic communities within the Digital Economy. The **E/M Economy** consists of electronic and mobile commerce that is transforming economies, government, business, and society via a network and digital technology, systems, processes and services. The **Sharing/On-Demand Economy** is a new wave of peer-to-peer, access-driven businesses that are characterized by the ability of individuals to rent or borrow goods rather than buy and own them or to quickly fulfill consumer demand via the immediate provisioning of goods and services. The **App/Bot/AI Economy** refers to the range of economic activity surrounding intelligent web-based applications. Apps (applications) are the digital interface through which we live, work and play and the primary way we engage with media, brands and ultimately with each other. A bot, also known as a web robot, an internet chatbot or simply bot, is an interactive, artificial intelligence-driven software application that runs automated tasks or simulates a conversation to deliver text-, voice- or video-based information to a user via a networked device. Artificial intelligence (AI) is the intelligence exhibited by machines or software that can do things usually done by people. The **Platform Economy** encompasses NTR-enabled social, business and government activities. Currently, the platform economy is defined by the major players in the industry such as Apple, Google, Facebook and other major network-centric corporations. A **Gig/Contingent Workforce Economy** is an environment in which temporary positions are common and organizations contract with independent workers for short-term engagements. A **Data-Driven Economy** involves accessing and exploiting information and knowledge contained in big-data pools to maximize operational efficiencies and reduce costs. The **Internet of Everything Economy** brings together people, process, data, and things to make networked connections more relevant and

valuable than ever before—turning information into actions that create new capabilities, richer experiences, and unprecedented economic opportunity for nations, businesses and individuals.

The goal of the Jobenomics Erie's Community-Based Business Generator Digital Economy program is to identify, educate, train, certify startup small and self-employed business that will be well positioned for Erie's digital natives that are interested in pursuing a career in the areas like E/M-Commerce Economy, Sharing/On-Demand Economy and the Gig/Contingent Workforce Economy.

As compared to the traditional economy, according to digital economy experts, the digital economy is at least one hundred times easier to create and has ten times the number of innovators that can innovate at one-tenth the cost. Also, digital startups are much faster than traditional startups, which can create an exciting opportunity for those that can capitalize on the momentum of the emerging digital economy.

Half the top quartile of highest paying jobs in America involves coding skills, a skill that often takes less than a year to get trained and certified. Over the last five years, demand for data analysts (a relatively easily-certified ability involving evaluating sales figures, market research, logistics, or transportation costs) has increased by almost 400% in nearly every industry. Within the data analyst field, data visualization (any effort to help people understand the significance of data by placing it in a visual context) has zoomed by over 2,500%.

Renewable Energy and Technical Training Programs. Renewable energy is one of the highest growth areas in today's economy. Jobenomics' 160-page Energy Technology Revolution Report is a unique energy technology report since it looks at the U.S. energy ecosystem from a business and job creation perspective. Jobenomics asserts that the Energy Technology Revolution is likely to produce millions of small and self-employed businesses and tens of millions of net new U.S. jobs.

Jobenomics Erie initial skills-based training and certification efforts will focus energy surveys, energy audits (assessment of the energy needs and efficiency of a building or buildings), and weatherization (the practice of protecting a building and its interior from the elements and building modifying the building to reduce energy consumption and optimize energy efficiency).

Pennsylvania Power and Light (PPL) has a generous Home Energy Assessment and Weatherization rebate program that makes these occupations viable for relatively low-skilled Jobenomics Erie Community-Based Business Generator candidates that are interested in the trades-related jobs. Jobenomics is also working with investment institutions that are willing to provide micro-business loans that would equip a trained and certified candidate with the right tool and a truck necessary to start a business.

Jobenomics Erie Renewable Energy and Technical Training Program will also evaluate Erie's renewable energy employment potential across the renewable energy spectrum with initial emphasis on solar installation and maintenance services. Note: in addition to renewables, Mr. Steve Grueber is an expert in fracking and energy waste management and will evaluate Erie's



employment potential in these industries considering Erie's central location to the Marcellus Shale formation. Other examples of renewable energy services include: energy efficiency, energy conservation, Energy-as-a-Service (EaaS), energy assurance, energy security, and disaster preparedness and recovery. Energy efficiency serves as an excellent example as a potential Jobenomics Erie training program. Energy efficiency is one of the fastest growing American service industries.

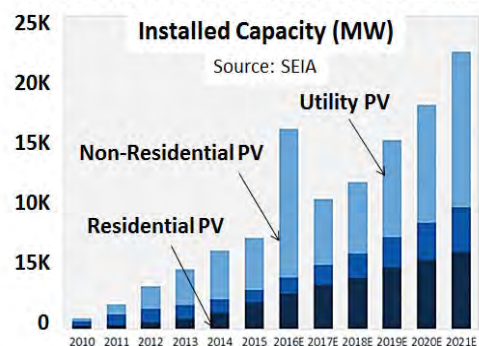
Today, energy efficiency is a multi-billion dollar industry with the potential to grow much higher. According to the American Council for an Energy-Efficient Economy, "robust investment in energy efficiency could save \$1.2 trillion by 2020, and the United States could create 1.3 to 1.9 million jobs by 2050 through the deployment of energy-efficient technologies." Similarly, the Alliance to Save Energy projects 1.3 million jobs by 2030.²⁸⁷ According to The Solar Foundation, the solar industry is creating jobs nearly 20-times faster than the overall U.S. economy.

Distributed and dispersed electrical generation installation services are likely to provide a significant percent of the number of future jobs and startup businesses created by Jobenomics Erie. Distributed and dispersed generation technologies generate electricity near the particular load they are intended to serve—at the point-of-consumption. Generating power at the point-of-consumption eliminates cost, complexity, interdependencies, and inefficiencies associated with transmission and distribution.

- *Distributed generation* entails using many medium-sized solar, wind or natural gas generators that provide power to local (as opposed to long-distance) consumers in cities, towns, universities, industrial parks, and government buildings. These medium-sized generations can be used on-grid or off-grid.
- *Dispersed generation* refers to small generating units that serve individual homes or businesses. These units (fossil fuel turbines, fuel cells, small wind and solar PV generators) are small enough to fit in garages or on rooftops and are usually off-grid unless connected to net-metering systems. Dispersed generation includes micro-units that are embedded components of other systems from electronic devices, water heaters, traffic cameras, cell towers and even electric cars. These micro-units are often off-grid.

The most feasible distributed and dispersed electrical generation installation services are likely to involve solar photovoltaics (PV). According to the U.S. Solar Market Insight Report, 2015 Year in Review, published in conjunction with the Solar Energy Industries Association (SEIA), the U.S. is on the verge of the 1-millionth solar installation milestone. As shown, anticipating a threat of the federal Solar Investment Tax Credit (ITC) expiring at the end of 2016, developers and EPC (Engineering, Procurement, and Construction) companies filled their pipelines with projects

U.S. Solar PV Installation Forecast



that caused a large pump in installed capacity in 2016. Now that this threat is largely abated, SEIA forecasts robust growth through 2021. Also, the SEIA projects that the solar installation industry will add “hundreds of thousands of well-paying solar jobs will be added in the next few years benefiting both America’s economy and the environment.”

Solar PV devices use semiconducting materials to convert sunlight directly into electricity. There are currently two solar PV technologies in production: crystalline silicon and thin film. Almost 90% of the world’s photovoltaics today are based on some variation of crystalline silicon. Crystalline solar panels are the most commonly used silicon for residential and small-scale applications. Crystalline panels are more expensive than thin film but are space-efficient and long-lasting. Thin-film solar cells are less expensive since they are mass produced, whereas crystalline panel production is more labor intensive. In comparison to crystalline silicon panels that are hard, opaque and heavy, thin-film technology is flexible, lightweight and translucent, which makes it ideal for customized applications.

1st generation silicon solar panels and 2nd generation solar thin-film technologies are restrained by the Shockley-Queisser limit of 34% power efficiency (the amount of sunlight power turned into electricity), whereas 3rd generation multi-layer solar cells may be able to approach efficiencies near 86%. Consequently, next-generation solar systems are likely to be much more efficient and significantly cheaper than current 1st generation solar panels. From a Jobenomics standpoint, each next generation of new solar technologies will produce a significant number of new small installation businesses and jobs as more and more commercial and residential buildings adopt new technologies to replace older less efficient systems. More importantly, more efficient 2nd and 3rd generation solar is likely to make solar PV viable in less-sunny locations, like Erie.

Solar PV technology is evolving to the point that it can be embedded in roof shingles or peel-and-stick thin-film solar cells. This will allow easy applications to buildings and structures, such as windows, without the cost of cumbersome mounting mechanisms. One-third of today’s PV generation is owned by third-party private companies that provide solar electricity or equipment to generate electrical power to building-owners and tenants, typically with little or no upfront costs. With net-metering, every building owner would constitute a micro-business that provides supplemental or emergency power to the grid as needed. Millions of renewable power micro-businesses would embody a “virtual grid” that could alleviate America’s multi-trillion dollar national grid modernization headache.

Initial Jobenomics Erie Renewable Energy and Technical Training Programs will be designed and led by Mr. Joe Sarubbi who is a national trainer-of-trainers expert. Joe Sarubbi is a project manager for two national Department of Energy initiatives, the Solar Instructor Training Network (SITN), and Grid Engineering for Accelerated Renewable Energy Deployment (GEARED).

The goal of the SITN was to grow the capacity of individuals with solar skills to support the rapid growth of the solar industry. Under Joe’s leadership, a team of nine Regional Training Providers partnered with nearly 500 community colleges, and over 1,000 instructors received training. During the five-year span over 30,000 individuals received solar training throughout the United States. He is also working with a large consortium of major universities and utilities to grow the technological

expertise and human capacity of Power Systems Engineers to support distributed generation and smart-grid technologies.

Joe Sarubbi with President Obama and Mrs. Biden at TEC-SMART



As a Board Member of the North American Board of Certified Energy Practitioners (NABCEP), Joe Sarubbi advises cities, states and numerous institutions regarding energy workforce development. Mr. Sarubbi was the main architect of New York State's TEC-SMART, America's first totally integrated Training and Education Center for Semi-Conductor Manufacturing and Alternative and Renewable Technologies, and in 2009 was honored by the visit of President Obama in which the President recognized his work as a "model program" for other states and cities to emulate.

A long-term objective of the Jobenomics Erie team is to work with municipal and Pennsylvania officials to develop a similar TEC-SMART facility in Erie as a future extension of the Jobenomics Erie Renewable Energy and Technical Training Program efforts.

Urban Agriculture

Jobenomics Erie Program		Direct Jobs (est. 5 Years)	% of 3,500 Job Goal
Urban Agriculture		650	19%
	Micro-Farms (150)	450	13%
	Controlled Agriculture Center	200	6%

Urban Agriculture Program. Jobenomics Erie Freedom Farms will be part of the Jobenomics Urban Agriculture Initiative featuring state-of-the-art indoor controlled agriculture technology including hydroponic and vertical growing systems. Jobenomics Erie Freedom Farms will consist initially of one large (100,000 square foot) controlled agriculture center and 150 veteran-owned, micro-farms that can be located on as little as 1/2 acre lots. The annual gross revenues of Jobenomics Erie Freedom Farms is anticipated to be around \$30 million/year by the fifth year of operation and employing 650 people. The average salary for the micro-farmer is anticipated to be \$60,000 per year.

Urban agriculture, urban farming or urban gardening is the practice of cultivating, processing, and distributing food in or around a village, town or city. Urban agriculture can also involve animal husbandry, aquaculture, agroforestry, urban beekeeping and horticulture. Forward-thinking city



planners are looking for vertical agriculture to take root in abandoned buildings, warehouses, empty lots and high rises. Urban agriculture grows fruits and vegetables year-round in facilities that are often in the same neighborhood as the restaurants and retailers they supply.

Urban agriculture also repurposed unused buildings and spaces occupying previously neglected warehouses, underutilized rooftops and other vacant areas. More and more cities and citizens are recognizing the important role that urban farms play in community development, economic growth, and environmental sustainability. For example, the City of Detroit believes that urban agriculture is the single-best industry to revitalize their inner-city and plans for Detroit to be the national leader in urban farming. In this regard, U.S. Senator Stabenow (D-Mich.) introduced the Urban Agriculture Act of 2016 as part of the next national five-year farm bill in 2018. Stabenow's proposal includes expansion of federal financial assistance, research, education and mentorship for urban farmers, and a new urban agriculture office within the Department of Agriculture.

The Jobenomics Erie Urban Agriculture Program will initially consist of a large indoor controlled agricultural center and a hundred or more satellite micro-farms located throughout Erie City. The center and micro-farms will use state-of-the-art vertical hydroponic growing systems as well as energy and resource-saving technology systems (such as solar, wind and geothermal power) tailored to Erie based on the footprint, crop varieties, water availability, climate conditions and local energy costs.

Hydroponics is the fastest growing sector of both rural and urban agriculture. As population increases and arable land declines due to poor land management, people are turning new technologies like hydroponics to create additional channels of crop production. Hydroponics is so efficient; many believe it could move beyond a niche market and become a solution for food insecurity in the United States and Erie.

Jobenomics is partnered with ACTS Freedom Farms of America (FFA, www.ACTSFFA.com) to produce over 100 sites (locations), each with an average of 250 highly-scalable micro-farms (25,000 total) employing over 100,000 net new jobs in the next five years. Programs initiated under Jobenomics will be known as Jobenomics Freedom Farms. ACTS Freedom Farms business plan is one of the most comprehensive (thousands of pages long) business plans ever examined by Jobenomics. The business plan also includes partnership agreements with the world's largest suppliers of state-of-the-art vertical farming and hydroponic systems, technology, supplies and supply chains.

Jobenomics Freedom Farms initial projects focus on veteran-owned businesses—one of the primary focus areas of Jobenomics. Erie is being positioned to be one of the first five projects. The other four locations are sited in the state of Washington, California, and Mississippi (2). The Erie site will be known as Jobenomics Erie Freedom Farms.

Vision: Jobenomics Erie Freedom Farms is a solution to local, national and global food shortage utilizing controlled-environment agriculture including state-of-the-art vertical farming and hydroponic systems and technology.

Mission: Driven to provide a live-work environment for veterans and other diverse social groups by providing an uplifting, supportive and self-sustaining hope for the future.



Unique Value Proposition: Jobenomics Erie Freedom Farms will respond to local and regional organically-grown food shortages. In addition, Jobenomics Erie Freedom Farms will apply innovative controlled environment agricultural technologies that address the world's food shortages, which requires a 70% food production increase by 2050, incorporates best practices in natural resource allocation, responds to supply chain, food safety, food security, and food quality assurance issues while creating sustainable agricultural communities, micro-businesses, and careers.

Business Model and Strategy: ACTS Freedom Farms and Jobenomics Freedom Farms combine numerous for-profit and non-profit entities in a collaborative effort to meet demands, supply solutions, and create jobs. Both Freedom Farm programs are dedicated to re-investing the majority of its revenues to expand micro-farming across rural and urban America, and ultimately internationally, with its primary focus on providing hope and sustainable careers for individuals and families who need it the most.

Consequently, Jobenomics Erie Freedom Farms will execute a farm management strategy for (1) homeownership combined with an agricultural career, (2) corporate-owned hydroponic commercial growing operations, and (3) contracted privately-owned and privately-operated micro-farms to create high yield, high-quality food production, and sustainable growth.

Products and Services: Jobenomics Erie Freedom Farms live-work strategies address challenges of qualified workers, operational complexity, start-up and energy costs, and crop price volatility. Home ownership in conjunction with sustainable jobs and state-of-the-art systems provide innovation, career development, and operational excellence. Cost-effective renewable energy and proprietary growing systems easily tailor crop selection to specific climate and cultural needs resulting in high yield, year-round nutritionally superior, pesticide and herbicide free, fruit and vegetables at premium prices. In contrast, grocers and farm markets offer similar products without assurance of consistent supply.

Technologies/Special Know-How: ACTS FFA is partnered with proven hydroponic manufacturers with favorable long-term lease/purchase options, on-site set-up, training, ongoing support and advanced technology. ACTS FFA's commercial growing systems are simple to use, easy to maintain, and adaptable to climatic regions for optimum crop production. Solar, wind and hydro-electric renewable energy are incorporated, reducing operating costs. Live-work micro-farm communities provide reliable labor partners committed to operational excellence. ACTS FFA offers participant's home ownership and career development setting ACTS FFA apart from other hydroponic growers in production capabilities and social impact.

Markets: ACTS FFA concept creates social appeal and global brand acceptance, enhancing international distribution opportunities. ACTS FFA serves the requirements of both the fresh and processing markets domestically and for export. Fresh market outlets include government, hotel, boutique eateries, gourmet markets, grocery, and restaurant chains. Crops grown for processing are produced under contract with processing firms. Initially, production strategies focus on the economic importance of tomatoes, potatoes, and lettuce for the U.S. market. ACTS FFA will target Canada, Japan, Taiwan, S. Korea, Mexico, and many other countries around the world as the top foreign buyers of vegetable exports.

Distribution Channels: Collective crop yields are regionally marketed through normal wholesale and retail distribution channels. Brokers/wholesalers provide access to major buyers, including government, supermarket, restaurant chains, upscale markets and fine restaurants that source continuous supplies of high quality grown produce. Retail distribution includes company-owned stores and contracted vendors. Global demand for premium priced, quality produce creates unlimited international distribution opportunities.

Competition: The U.S. market's development of vertical hydroponics implementation lags considerably behind other developing countries around the world. Only 15 commercial-scale vertical farms exist in the United States and none on the scale of ACTS FFA. International food production deficiency will minimize threats from competition considering the vast amount of food that will be needed. ACTS FFA partnerships with recognized global hydroponics leaders and alignments with major R&D programs assure our ability to secure the leadership role in the industry.

Outlook: The hydroponic industry expanded from \$1 billion in 2005 to \$9 billion in 2015. This rapid growth indicates that controlled-environment agriculture is poised to be a major producer in the U.S. food supply chain. Higher yields, lower inputs, improved soil and water quality, natural resource allocation, renewable energy use, and food safety are compelling forces for continued growth. A rise in organic production, birth of urban agriculture, undercover growing, growth of small operations, environmentalism and global awareness positively affect the hydroponic industry outlook.

Jobenomics Erie Freedom Farms will focus on the most blighted inner-city communities that are in need of revitalization, employment and nutrition. According to the Erie County Department of Health, "Having access to affordable, healthy food is important for physical, mental and emotional health. Erie County has ten food deserts – areas where at least 1/3 of residents live more than 1 mile from the nearest grocery store or supermarket."

Jobenomics Erie Freedom Farms will consist of one large (100,000 square foot) controlled agriculture center and 150 micro-farms that can be located on as little as 1/2 acre lots. There is no lack of inexpensive homes, buildings and vacant lots in inner-city Erie. As of February 2017, 400 new projected foreclosures (shown) are projected at an average cost of \$50,000 for the residence and lot. Similarly, Erie has a number of vacant 100,000+ square foot warehouses, dilapidated and underutilized buildings along major interstate highway systems, ports and railyards that could be instrumental for exporting organically-grown, pesticide, herbicide and GMO-free produce and other agricultural products (e.g., flowers) to other metropolitan areas (e.g., Buffalo, Pittsburgh, Chicago and New York City) as well as internationally.



Through a master-planned live-work agricultural community, Jobenomics Erie Freedom Farms will start with 150 veteran-owned micro-farms. The reason for starting with veterans are (1) they deserve special attention due to their service, (2) veterans have exhibited a work ethic in a team environment, (3) veteran skills and character traits have been well documented and vetted, and (4)

veterans have access to Veterans Administration loans for homeownership. Once established, Jobenomics Erie Freedom Farms plans an additional 100 micro-farms to non-veterans.

master-planned live-work agricultural community will be managed and sourced by ACTS FFA The Jobenomics Erie Freedom Farms master-planned live-work agricultural community will be managed and sourced by ACTS FFA. Approximately 50% of the community will be privately-owned by the micro-farmers.



The 100,000+ square foot controlled agricultural center (AG Core) will be owned by ACTS. Jobenomics Erie Freedom Farms will receive a small percentage (TBD) of the operations. Crops grown for processing will be produced under contract with processing firms. Fresh market outlets include government, hotel, boutique eateries, gourmet markets, grocery, and restaurant chains as well as international markets.



Each micro-farm will consist of the land and home (1,500 of to 2,500 sf owned by the veteran, estimated cost \$85,000) and a leased state-of-the-art hydroponic and vertical



agriculture 6,000 square foot greenhouse that will be equipped and supplied by AG Core along with requisite supplies and equipment for sustainable operations (estimated cost \$250,000). It is estimated that with the first year of operation, the veteran farmer will be able to earn an annual salary of \$60,000 after paying micro-farming expenses. Since it will only require approximately 20-hours per week to operate the micro-farm, the farmer will be free to pursue additional income opportunities at AG Core or other part-time businesses.

Erie Veteran-Owned Firms

Source: U.S. Census Bureau (2012)

	Erie City	Erie County
Total Firms	6,280	18,667
Men-owned firms	55%	58%
Women-owned firms	31%	30%
Minority-owned firms	16%	7%
Veteran-owned firms	8%	9%
Number of Veteran-owned firms	471	1,639

The Jobenomics Erie Community-Based Business Generator will be available for additional training and certification from not only the veteran, but their spouses and children. It is not inconceivable for the micro-farms collective household income to exceed \$100,000 per year, which would be a dramatic increase of inner-city Erie's \$6,741 current median household income. Equally important is

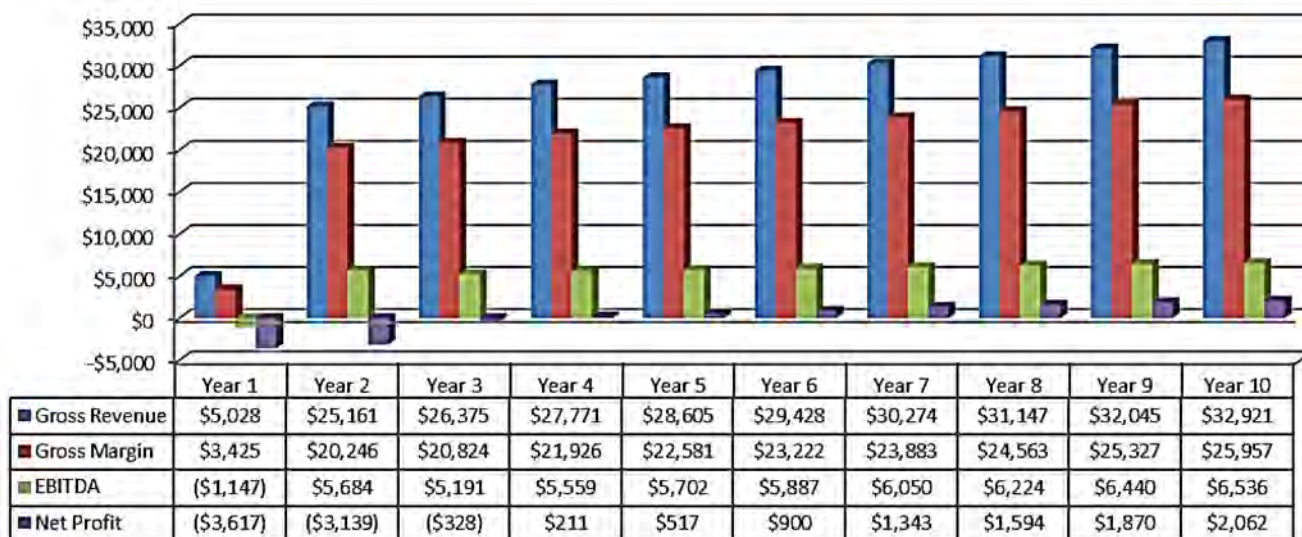
the dramatic effect that increased micro-farm wages will have on the inner-city indirect and induced workforce that will be able to grow accordingly.

Veterans Miracle Center (VMC) was chosen to lead Jobenomics Erie's veterans-related programs as well as Jobenomics Erie Freedom Farms. VMC has extensive relationships with national, state and regional veteran's organizations. VMC also has experience with Erie's veteran population, which is extensive. Today, both Erie City and Erie County have a robust veteran-owned business population, 471 and 1,639 respectively. Consequently, Erie has a culture of veteran-owned businesses that can nurture the significant growth of other veteran-owned businesses. VMC provides, free of care, new furniture, appliances and household supplies for veterans, which will be an important addition to the Jobenomics/ACTS Freedom Farms program to provide modern, energy efficient homes for participating Jobenomics Erie Freedom Farm veteran participants.

The ACTS Freedom Farms of America business plan contains 100+ pages of detailed information, supported by nearly 500 due diligence documents on the cloud, which include more than 5,000 pages of industry, government, financial, scientific, and third-party confirmation of business plan assumptions and statements. All materials will be made available to people interested in pursuing a collaborative venture and who can show "proof of funds" capable of participating in the funding solutions sought.

Jobenomics and ACTS FFA develop a preliminary Jobenomics Erie financial plan based on an initial 100 inner-city, veteran-owned micro-farms and conversion of a 100,000 square foot building for the core controlled indoor agricultural center. This plan is available for the Jobenomics Erie leadership team's review and modification. When complete the Jobenomics Erie leadership team will negotiate a contract with ACTS FFA to begin operations.

Jobenomics Erie Freedom Farms Estimated Financials (in 000s) AG Core + 100 Micro-Farms



Jobenomics Erie Freedom Farms Estimated Financials (in 000s) For 1 Micro-Farm



These two preliminary financial summary charts show the gross revenues, gross margins, EBITDA (Earnings, Before, Interest, Tax, Depreciation, Amortization), and net profits for AG Core (the entire Jobenomics Erie Freedom Farms operation) and the projected sales, gross margins, shared profits and farmer earnings for one micro-farm.

- For AG Core, revenue will ramp up from \$5M at the end of the first year of operation to \$33M by year ten. After the first year, AG Core will produce a positive EBITDA. ACTS FFA believes these to be conservative numbers and do not include a number of ancillary income producing opportunities.
- For the micro-farmer, the second year of operations should produce annual earnings of \$39,000 rising to \$56,000 by year ten. It is important to note, that since the micro-farmer will be incorporated as an S Corporation, many of the farmers normal living expenses will be included in the cost of operations, thereby making his equivalent income much higher (estimated in the \$65,000 range).
- The veteran micro-farmers will be required to use their VA-loans to finance the purchase of land and home. The 6,000 square foot greenhouse provided by ACTS FFA can be either purchased or leased. Lease costs are likely to be the preferred method, and the rates will be low and tailored to a successful start as well as follow-on operations.
- Profits from the micro-farm will be split 50%/50% between the farmer and AG Core, which will be responsible for providing the farmer with the necessary supplies and sales of the farmer's agricultural products. Similar to a franchising operation, ACTS FFA will be responsible for training, resourcing and setting actionable goals and quality standards for products produced.

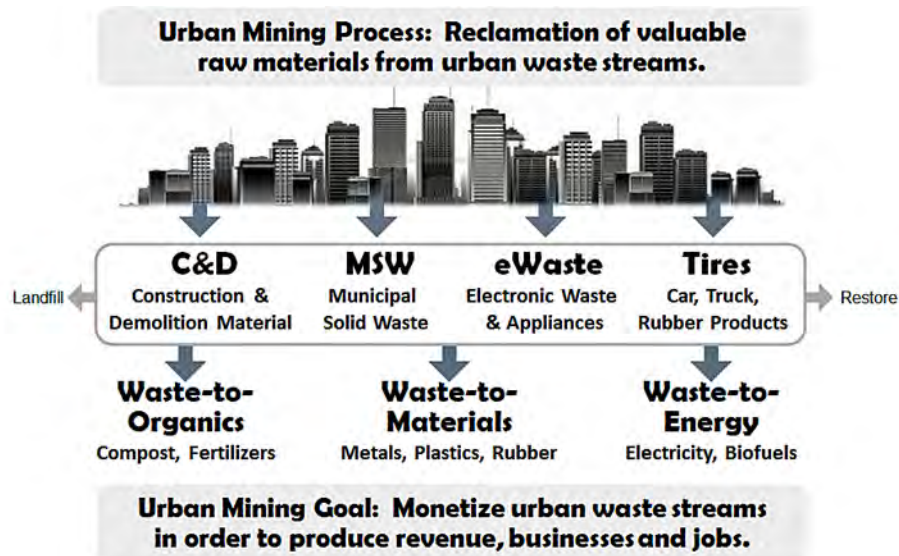
According to ACTS preliminary financial models, a total of \$13.5 million will be needed to fund Jobenomics Erie Freedom Farms depending on a number of assumptions of the ACTS AG Core team with limited input from Erie. Funding will likely consist of government grants and private sector debt (loans) or equity (ownership) financing. While ACTS FFA can provide some of these investment dollars, the local community needs to shoulder the bulk of the initial investment, if for no other reason to show intent and community support. ACTS FFA has detailed plans and committed

resources for four U.S. sites, which are all rural communities. Jobenomics Erie Freedom Farms is the first urban agriculture project. However, a number of other rural and urban communities have expressed interest in being one of the initial ACTS FFA projects and have shown significant local support to attract such an effort.

Jobenomics Erie’s Urban Mining Program. Jobenomics Erie’s Urban Mining Program goal is to create 550 new jobs within the next 5-years. More importantly, Jobenomics Erie’s Urban Mining Program could generate sufficient profits, which will be applied to funding other Jobenomics Erie skills-based training and certification programs.

Jobenomics Erie Program	Direct Jobs (est. 5 Years)	% of 3,500 Job Goal
Urban Mining	550	16%
eCyclingErie	50	1%
Light Industry	200	6%
Transportation & Logistics	300	9%

By the end of the 2nd operational year, Erie officials and investors should have an excellent understanding of the revenue generating phase of the Jobenomics Erie’s electronic waste (eCyclingErie) materials reclamation facility (MRF, pronounced “murf”). eCyclingErie is expected to be operational at the end of the Year 1, produce \$1.1 million of net income (profit) in Year 2, \$3.8 million in Year 3, and as much as \$11.9 million in Year 4. This level of profitability will cover MRF operating costs, retire a significant portion of investor debt, pay for costs of additional Jobenomics Erie skills-based training and certification programs, and provide for micro-business loans for startup businesses.



One of the four Jobenomics national-level initiatives involves urban mining. Urban mining is defined as a process of reclaiming organic combustible and inorganic non-combustible materials from waste streams including municipal solid waste (MSW), construction and demolition material (C&D), electronic waste (e-waste), tires and other waste streams. Combustible materials are comprised of carbon-based matter that has caloric value, which can be converted to marketable products via

waste-to-organic and waste-to-energy technologies. Non-combustible elements can be reclaimed via waste-to-material technology. Every U.S. community should consider urban mining to (1) reclaim valuable raw materials and metals, (2) reduce toxic landfilling and exporting of waste, (3) mitigate environmental pollution associated with traditional surface and subsurface mining operations, and (4) produce revenue for local business and job creation.

Jobenomics' Urban Mining Initiative (UMI) helps communities monetize high-value waste streams to create jobs and fund local small business generation efforts. As part of UMI, Jobenomics established eCyclingUSA™ (www.eCyclingUSA.com) to reclaim high-value metals from electronic waste streams and use profits to fund Jobenomics Community-Based Business Generators.

Compared to other goods-producing industries (manufacturing, construction, and mining), light industry is usually less capital intensive, more environmentally friendly and typically uses low cost materials to produce items of relatively higher value. Light industry is ideally suited for the ex-offender labor force. Consequently, the Jobenomics eCyclingUSA team plans to develop light industries that are associated with an advanced technology electronic waste (e-waste) materials reclamation facility.

Pictures of an Operational Advanced Technology MRF



Advanced Technology MRF Generated Raw Materials

eScrap & Electronics

Waste Electrical and Electronic Equipment



Copper **Plastics** **Aluminum** **Iron** **Gold** **Silver** **Palladium & Other Precious Metals**

Refrigerators, Air Conditioners

Containing Air Polluting Refrigerants



Copper **Plastics** **Aluminum** **Iron**

TV/PC Tubes

Cathode Ray Tubes



Glass **Metals** **Plastics**
Including Lead & Mercury

equipment (servers, racks, vending machines, hardware, etc.); and C&D scrap associated with demolished buildings (wiring, HVAC systems, water heaters, ducting, lighting, large appliances, etc.).

Compared to organic material, inorganic electronic-waste (e-waste) materials have (1) much higher monetary value, (2) greater contribution to mitigation of greenhouse gas emissions and energy conservation of virgin metals and minerals, and (3) higher business and employment potential.

eCyclingErie. The Jobenomics Erie and its eCyclingErie team will initially focus on e-waste only (no large appliances or industrial equipment) MRF and related logistics (collection, transportation, and warehousing). This initial \$4 million MRF (not including purchase or lease of a building) is designed to employ up to 50 MRF personnel and as many as 300 people involved in collection, warehousing, and transportation operations. eCyclingErie can generate annual profits of up \$11.9 million per year on a 3-shift per day, 300 day per year operation.

Entry-Level 3-5 Tons Per Hour eCyclingUSA/URT Equipment & Options



For Estimating Purposes Only
12 December 2016



E-Scrap Equipment	Throughput Description	Price @ \$1 = 1.3€	Electrical Power	Sq. Ft.	Labor	Comments
URT SDA; WEEE (E-Scrap) Step I & II	3-5 tons/hr	\$2,817,433	160kW 480V 60Hz	1250	15	Without Optical Sorting Device
URT CRT, PC, Printer & Cartridge	400 pieces/hr	\$673,769	30kW 480V 60Hz	750	12	Line within Cutting Device
Cable/Wire Shredder/Separation	0.3 tons/hr	\$323,054	85kW 480 60Hz	50	2	-

URT Equipment **\$3,814,256**

25,000 Sq. Ft. Building



Truck Scale



Containers



Optional Facility/Equipment	Price	Electrical Power	Sq. Ft.	Labor	Comments
25,000 Square Foot Building with 40' Height (Building \$235,000, concrete slab \$160,000, erection cost \$505,000; buildout \$330,000, HVAC/fixtures \$30,000, architectural and engineering \$85,000, IT/telecom \$80,000, furniture/miscellaneous \$150,000). Assuming basic utilities are already available at site.	\$1,575,000	Standard	1 to 3 acres	-	Large enough for refurbishment and reuse activities, expansion room to handle future large appliances (e.g., refrigerators, etc.), classrooms, conference room and break room. Elegant enough for a showplace to attract customers and grants.
Truck Scale	\$150,000	Standard		2	-
Storage and Collection Containers (10 20-yard containers \$8,000, 10 40-yard containers \$16,000)	\$24,000	N/A		5	Can buy used or leased
Handling Equipment (Forklifts, Handling Devices, Pickup Truck, Semi-Trailer Truck & Roll-Off Trailer)	Rent	N/A		9	Can buy used or leased

Optional Equipment **\$1,749,000**

Total Labor **45** Estimated

Total Equipment **\$5,563,256**

eCyclingUSA Fee (6%) **\$333,795**

Total Cost \$5,897,051 Including New Building

Jobenomics/eCyclingUSA will provide eCyclingErie with a turnkey system using proven European technology currently operational in over 100 cities around the world. The eCyclingErie e-waste MRF can be operational within 12 months of contract award.

The MRF will be located in an inner-city industrial area in Erie that is zoned for light industrial manufacturing. The MRF does not produce any harmful emissions so permitting should not be an issue. eCyclingErie is considering a wide variety of vacant, dilapidated and underutilized buildings along the Erie railyards that could be instrumental importing electronic waste from other metropolitan areas like Buffalo, Pittsburgh, Chicago and New York City. The old Erie Mill and Press Company building is an example of the type building that could be used for eCyclingErie as well as related light industrial projects that can use low-cost raw materials from eCyclingErie (such as model plastic products and plastic trek decking) as well as the ACTS Freedom Farms Erie Controlled Agriculture Center.

An entry-level startup 3-5 tons/hour plant will cost approximately \$4 million for equipment and \$2 million for building and land, which can be leased instead of being purchased. Funding for the plant will be mainly provided by private sources with limited funding from government (building/road enhances, grants, HUD Section 3 financing, bonds, etc.). eCyclingUSA's German partner (UNTHA Recycling Technologies, URT) can arrange low-interest rate financing up to 70% of the equipment cost for accredited private sector investors via the German Export Bank's Euler Hermes program.

1-Shift Operation Feedstock Requirements



40 Tons Per Day
(2 Shipping Container Equivalents)

\$ Value of e-Waste Raw Materials

For Estimating Purposes Only

5 Tons Per Hour, 1-Shift Operation, 300 Days Per Year

Feedstock: Computers, Consumer Electronics, Small and Large Appliances

Metal/Material	% of e-Waste	\$s per Metric Ton*	\$/Ton (2204 pounds)	Total \$/Year (5 tons/hour x 8 hour/day x 300 days/year)
Iron/Steel (Fe)	20%	\$ 195	\$ 39.00	\$ 468,000
Copper (Cu)	5%	\$ 4,430	\$ 221.50	\$ 2,658,000
Aluminum (Al)	20%	\$ 1,300	\$ 260.00	\$ 3,120,000
ABS Plastics	10%	\$ 1,675	\$ 167.50	\$ 2,010,000
Other Plastics/Foam	40%	\$ 287	\$ 114.80	\$ 1,377,600
Computer Components	5%	\$ 2,466	\$ 123.31	\$ 1,479,766

Source: Jobenomics, eCyclingUSA 100%

Revenue** \$ 11,113,366

Cost of goods sold \$ 7,327,000

Operating expenses \$ 2,660,000

*Scrap prices as of 3 December 2016

**Does not include grants, tax incentives or tipping fees

Net Income \$ 1,126,366

EBITDA 10%

This chart shows estimated profitability of a 1-shift operation (8 hours per day, 300 days per year) of an entry-level, 3-5 tons per hour e-waste-only MRF. A 1-shift operation is estimated to produce an annual net income (profit) of \$1,126,366 (10% EBITDA—Earnings, Before, Interest, Tax, Depreciation, Amortization). No large appliances that contain greenhouse gas chlorofluorocarbons (CFC) refrigerants or cathode ray tube (CRT) monitors are included. eCyclingUSA has processes for end-of-life CFC and CRT items that require special handling that can be added to the eCyclingErie MRF.

A 1-shift operation requires 40 tons of e-waste. While this may sound like a lot of e-waste, 40 tons equates to only two standard 40-foot shipping containers or two semi-trailer truckloads worth of feedstock. A standard shipping container and semi-trailer truckload each can carry 20 tons per load. 100 old computers and their peripherals (monitors, hard copy devices, keyboards, mice, etc.) weigh about 3 tons. 51 million PCs and 118 million peripherals are discarded in America each year. Erie has railroad access to major metropolitan areas that ship e-waste overseas for processing. Each railroad boxcar contains up to 140 tons of capacity. Erie also has significant access to seaborne shipments.

2-Shift Operation Feedstock Requirements



75 Tons Per Day
(Less Than 4 Shipping Container Equivalents)

\$ Value of e-Waste Raw Materials

For Estimating Purposes Only

5 Tons Per Hour, 2-Shift Operation, 300 Days Per Year

Feedstock: Computers, Consumer Electronics, Small and Large Appliances

Metal/Material	% of e-Waste	\$s per Metric Ton*	\$/Ton (2204 pounds)	Total \$/Year (5 tons/hour x 16 hour/day x 300 days/year)
Iron/Steel (Fe)	20%	\$ 195	\$ 39.00	\$ 936,000
Copper (Cu)	5%	\$ 4,430	\$ 221.50	\$ 5,316,000
Aluminum (Al)	20%	\$ 1,300	\$ 260.00	\$ 6,240,000
ABS Plastics	10%	\$ 1,675	\$ 167.50	\$ 4,020,000
Other Plastics/Foam	40%	\$ 287	\$ 114.80	\$ 2,755,200
Computer Components	5%	\$ 2,466	\$ 123.31	\$ 2,959,531

Source: Jobenomics, eCyclingUSA 100%

Revenue** \$ 22,226,731

Cost of goods sold \$ 14,730,000

Operating expenses \$ 3,631,000

*Scrap prices as of 3 December 2016

**Does not include grants, tax incentives or tipping fees

Net Income \$ 3,865,731

EBITDA 17%

A 2-shift (16 hours per day), 5-tons/hour, 300 day/year operation requires about 75 tons of e-waste or about four truckloads per day. A 2-shift operation will produce a net income of \$3,865,731 (17% EBITDA), which is more than double the average U.S. stock market real return of 6.8% in 2016. This level of profitability will cover MRF operating costs, retire a portion of investor debt (if needed), and underwrite the cost of the Jobenomics Erie skills-based training and certification programs.

3-Shift Operation Feedstock Requirements



110 Tons Per Day
(5.5 Shipping Container Equivalents)

\$ Value of e-Waste Raw Materials

For Estimating Purposes Only

5 Tons Per Hour, 3-Shift Operation, 300 Days Per Year

Feedstock: Computers, Consumer Electronics, Small and Large Appliances

Metal/Material	% of e-Waste	\$s per Metric Ton*	\$/Ton (2204 pounds)	Total \$/Year (5 tons/hour x 23 hour/day x 300 days/year)
Iron/Steel (Fe)	20%	\$ 195	\$ 39.00	\$ 1,345,500
Copper (Cu)	5%	\$ 4,430	\$ 221.50	\$ 7,641,750
Aluminum (Al)	20%	\$ 1,300	\$ 260.00	\$ 8,970,000
ABS Plastics	10%	\$ 1,675	\$ 167.50	\$ 5,778,750
Other Plastics/Foam	40%	\$ 287	\$ 114.80	\$ 3,960,600
Computer Components	5%	\$ 2,466	\$ 123.31	\$ 4,254,326
Source: Jobenomics, eCyclingUSA 100%				Revenue** \$ 31,950,926
				Cost of goods sold \$ 15,417,000
				Operating expenses \$ 4,666,000
				Net Income \$ 11,867,926
				EBITDA 37%

*Scrap prices as of 3 December 2016

**Does not include grants, tax incentives or tipping fees

A 3-shift (23 hours per day), 3-5 tons/hour, 300 day/year operation requires 110 tons of e-waste or 5.5 daily truckloads, which is a significantly less than the number of trucks servicing most landfills or big box store distribution centers each day.²⁸⁸

A 3-shift, 3-5 tons/hour operation could produce an annual net income of \$11,867,926 (37% EBITDA). This level of profitability will cover MRF operating costs, retire investor debt, pay for costs of additional eCyclingErie skills-based training and certification programs, and provide seed capital for micro-business loans. Moreover, the eCyclingErie can invest funds in new Pennsylvania MRFs and collection sites; expand the existing facility to include processing of large appliances containing CFCs and monitors with CRTs; and/or start e-waste related light industrial manufacturing, like model plastic products, using the raw material generated by the MRF. A combined e-waste/large appliance (3-shifts, 10 tons/hour) MRF can generate a net income per annum of over \$40 million and employ 200-300 direct and up to 3 to 5-times as many indirect/induced workers.

The eCyclingErie implementation team will be led by Mr. Steve Grueber, EVP of Operations for eCyclingUSA, and Mr. Peter Hessler, CEO of URT, eCyclingUSA's German engineering, and

²⁸⁸ Walmart's 150+ distribution centers are serviced by a Walmart transportation fleet of 6,100 tractors, 61,000 trailers and more than 7,800 drivers, <http://corporate.walmart.com/our-story/our-business>

manufacturing partner. Mr. Grueber has 35-years of experience in waste management field services to municipal, industrial and commercial institutions. Mr. Hessler designed and installed hundreds of MRFs around the world and leads an engineering team of over 150 direct employees familiar with the latest state-of-the-art MRF systems and technologies.

The success of eCyclingErie depends largely on four factors, (1) adequate supply of feedstock, (2) reasonable commodity prices, (3) competitive advantage over traditional recyclers, and (4) community support.

- (1) **Feedstock Supply.** Feedstock supply should not be a major challenge since the amount available since Erie has a population supporting similar European operations. If eCyclingErie is set up as a non-profit with a powerful social benefit mission, like jobs and career paths for ex-offenders and would-be-offenders, it should be able to attract much more feedstock as opposed to for-profit organizations, like Goodwill that does not reinvest profits into the community. Since eCyclingErie is also a workforce training and job development organization, it will partner with other non-profit (churches, social-oriented institutions) and businesses as a source of tax-deductible e-waste donations. State and local governments will also be a major contributor of e-waste as well as legislating tougher restrictions for exporting or landfilling e-waste. eCyclingErie can be part of the solution to Erie's e-waste challenges and opportunities.

Americans dispose of 9,400,000 tons of e-waste per year. As a percent of the U.S. population (4%), Pennsylvania produces an estimated 377,000 tons of e-waste per year, not including C&D e-scrap or major commercial items like medical and industrial equipment. Over 7 million vending machines are being replaced with smarter machines across the nation. According to the EPA, only 12.5% of U.S. e-waste is recycled and estimates that 40% of the heavy metals in U.S. landfills come from discarded electronics.

Due to the advent of cloud computing, flat panel technology (smartphones and pads) and smart devices, U.S. e-waste volumes expected to rise significantly over the next decade as consumers dispose of dumb electronics to smarter interconnected devices. From near zero in 2010, 600 million units are produced per year today. Notwithstanding the dramatic rise in smart phones and pads, desktop computers are not going away. The number of desktop units produced per year dropped from 350 million per year in 2010 to only 270 million today and is expected to remain above 200 million per year for the foreseeable future. Also, government agencies and businesses that switch to cloud computing to eliminate or reduce their back-office IT systems (servers, racks, routers, and power supplies) will significantly add volume to the e-waste stream. The dawning of the Internet-of-Things era will add substantially more items to e-waste stream as analog and mechanical devices are replaced with intelligent digital devices to connect to the virtual world.

- (2) **Depressed Commodity Prices.** Commodity prices have dropped approximately 40% over the last few years which have caused many manually-oriented recycling operations out of business. According to a Knoema, a US-based company data analysis organization, study of World Bank data, e-waste commodity prices are rebounding from recent lows. Copper and aluminum are the two highest value commodities that will be reclaimed by eCyclingErie. Copper prices peaked in 2011 at \$8,820/metric ton, dropped to a low of \$5,070/ton in 2016 and are expected to rise to

\$5,910/ton in 2019. The price for copper scrap on the eCyclingErie feedstock chart is conservatively priced at \$4,430/ton based on a survey of U.S. scrap buyers as of 3 December 2016. Correspondingly, aluminum prices peaked in 2011 at \$2,401/ton, dropped to a low of \$1,625/ton in 2016 and are expected to rise to \$2,000/ton in 2019. The price for aluminum scrap on this eCyclingErie Feedstock chart is conservatively priced at \$1,300/ton.²⁸⁹ Forecasted upswing in commodity prices will make eCyclingErie a more attractive private sector investment.

- (3) **Competitive Advantage.** eCyclingErie will be tailored to quantity and types of feedstock available in Erie and the Central and Northeast regions at large. eCyclingErie will have the very latest and state-of-the-art processing technologies in operation as well as in research. eCyclingUSA's German partners are even working with the Chinese state-run urban mining centers to develop material reclamation processes that can reclaim minute amounts of precious metals and trace amounts of rare elements. While eCyclingErie will initially be designed to reclaim common metals and materials, growth to more refined metal processes will be available.

According to the EPA, modern MRFs provide significant environmental and climate change savings: mining waste saving of 97% followed by air pollution 86%, water pollution 76%, energy 75%, and water use savings of 40% over traditional mining processes. Since eCyclingErie MRF emits no pollutants into the ground or air, it is environmentally friendly. Handling of toxic materials is limited (batteries and CRTs have a limited amount of toxicity) and can be handled in a safe and efficient manner.

Recycled metals, such as copper, are worth up to 90% of the cost of the original material. eCyclingErie will produce the cleanest and purest fractions in the industry, which is a competitive advantage over traditional recyclers. Computer-controlled eCyclingErie sensors will allow the Erie MRF to keep track of quality and historical records of past fractions that will allow facility managers to negotiate the highest prices and loyalty from commodity buyers.

- (4) **Community Support.** Government support is important to provide a reliable and consistent source of feedstock for processing operations and investment.
- *E-Waste Mandates.* In many places in Europe, where waste processing is mandated, 10 ton/hour MRFs usually operate at full capacity (3 shifts per day) using feedstock generated by as little as 300,000 people. Erie's County's population is 278,000, which could mathematically support an advanced technology 3-5 ton/hour MRF. While state and local governments cannot mandate e-waste recycling for any individual company, it can regulate the amount of landfilled or exported material. The government can also prioritize where their generated e-waste should be processed. The non-profit, socially-beneficial, anti-crime and anti-poverty establishment, like the eCyclingErie, is a defensible sole source provider. The Federal Government designed UNICOR as a sole-source collector of federal e-waste for prison industry workforce training. According to UNICOR discussion with Mr. Vollmer, UNICOR collected less than 10% of the federal e-waste. And, now they are getting out of the business.

²⁸⁹ Knoema, Commodity Prices, Forecast 2015-2019 | Charts and Tables, [https://knoema.com/wxgcxde/commodity-prices-forecast-2015-2019-charts-and-tables?variable=Copper%20\(US%20cents%2F1b\)](https://knoema.com/wxgcxde/commodity-prices-forecast-2015-2019-charts-and-tables?variable=Copper%20(US%20cents%2F1b))

- *Underwriting and Financial Support.* Government underwriting and financial support will be important during the 6-month startup phase and the first 2-years of operation. The eCyclingErie plans to be self-sustaining in the 3rd year of operation. The most likely form of underwriting is tax-free municipal bonds that will provide an incentive for private sector investors. Municipal bonds are debt securities issued by states, counties, and cities to fund day-to-day obligations and to finance capital projects, such as building schools. Industrial Revenue Bonds (IRBs) are another form of underwriting. IRBs are tax-exempt loans issued by state or local governments to finance a private company's expansion, construction or acquisition of manufacturing facilities and equipment. Local and state governments support these projects because they can improve the economic well-being of a community. Financial support can take the form of government grants and contracted activities. Federal, state and local governments spend hundreds of billions of dollars annually on training, general welfare, anti-poverty and crime/gang/at-risk youth prevention programs.
- *Oversight, Supervision and Evaluation.* eCyclingErie needs overseers and outside supervisors to verify eCyclingErie trustworthiness, evaluate eCyclingErie results and build public confidence. This Oversight and Supervisory Board should consist of local citizens appointed by the Mayor, City Manager, or other official, to oversee and evaluate the effectiveness of the eCyclingErie due-diligence process and training programs. The Board will also work with public authorities to assess recidivism rates and economic impact of program graduates.

Private sector support is also vital. Jobenomics works with for-profit establishments, non-profit institutions and philanthrocapitalists for sources of feedstock and funding.

- *For-Profit Establishments.* For-profit establishments include financial and non-financial establishments. In discussions with the banking industry, Jobenomics has obtained commitments for tens of millions of dollars' worth of micro-business loans based on actionable programs like the eCyclingErie. In Baltimore, an investment group submitted in writing a framework to a major (\$50 million to \$100 million level) fund for a Jobenomics demolition/eCycling initiative, if Baltimore City government would use the 31,000 city-owned derelict homes and properties as collateral for the micro-business fund. Most major corporations expressed interest in designating the disposition of their e-waste and e-scrap to charitable and socially-worthy non-profit organizations.
- *Non-Profit Institutions.* Churches and other non-profit organizations are an excellent source of feedstock and human capital. For example, three mega-churches in North Carolina want to start "e-waste collection ministries" to gather, warehouse and distribute e-waste in the same manner as they do for clothing and foodstuffs. The quid pro quo for these churches involved giving church members, and their children, priority in the Jobenomics business and job creation programs. Tipping fees were also a consideration.
- *Equity and Strategic Partners.* eCyclingErie presents an opportunity for equity and strategic partners. Equity partners would invest and share in the profits of the B-Corp with understanding that a majority of the profits would be used for enhancing the public good and public security. Strategic partners are likely to involve companies in waste management and recycling businesses.

- *Philanthrocapitalists.* High-income earners are not averse to giving but greatly prefer philanthropy over charity. Teaching a person to fish for a living is highly preferable to the daily giving of fish. Moreover, many high-income earners are philanthrocapitalists. Philanthrocapitalism applies for-profit capitalist objectives, such as private property and ownership, to address poverty and unrest. Many philanthrocapitalists told Mr. Vollmer that micro-business loans and equity financing could be readily obtained for the right initiatives and projects. Jobenomics has micro-business loan commitments for several of Jobenomics initiatives in the \$100 million range.

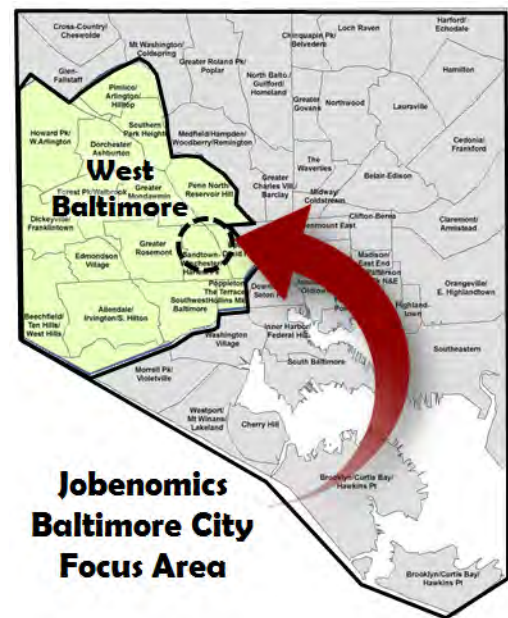
Jobenomics Baltimore

The Jobenomics Baltimore City initiative serves as a good example of what the Jobenomics National Grassroots Movement is trying to achieve with state and local communities via the implementation of the Jobenomics Community-Based Business Generator process.

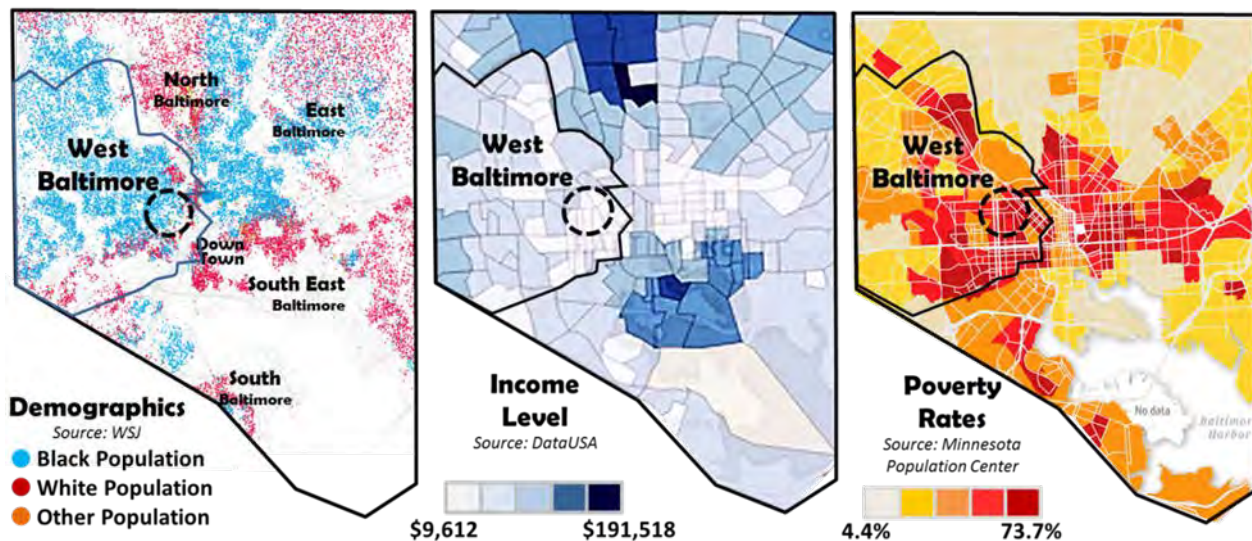
In April 2016, Jobenomics was contacted by Baltimore City leaders in regard to developing a potential Jobenomics Baltimore job creation initiative. After a few meetings, Jobenomics developed an initial framework for the Baltimore Metropolitan Area (MSA). In June 2016, Jobenomics and Baltimore City community leaders met with State and County economic development officials. The State of Maryland, Baltimore County and Baltimore suburbs are performing better than the national average in job creation, but Baltimore City (an independent city within the metropolitan area) is not. The consensus of the State and County economic development officials was that a priority must be given to areas with the highest potential for job creation, namely Baltimore suburbs with high skills and resources. By comparison, Baltimore City's urban labor force has lower skills with fewer resources. As a result of the June meeting, Jobenomics Baltimore was rewritten as Jobenomics West Baltimore focused on West Baltimore's most distressed neighborhoods—the area where Freddie Gray's death in police custody in 2015 fueled latent unrest into full-fledged riots and violence.

Over the next several months, these core community leaders are organizing seminars and meetings with other community leaders to discuss the Jobenomics West Baltimore plan and its initial business and job creation strategy. These community leaders will include state and local government officials, corporate executives, non-profit organizations as well as the new mayor's transition team that will be assembled after the election in November 2016 (several of the core community leaders are slated to be on the Mayor's Transition Team). Based on the result of these meetings Jobenomics will determine if there is reason to commence fund raising operations for pilot projects in Baltimore.

Based on Jobenomics West Baltimore's goal of restoring the labor force, Jobenomics analyzed Baltimore City labor force skills, major corporations and businesses within the city limits, current job openings and emerging business opportunities offered by the Energy and Network Technology Revolutions. The result of this analysis produced the following initial net new jobs framework which was enthusiastically endorsed by the half-dozen community leaders on the Jobenomics West Baltimore team. Creating 100,000 net new jobs by 2026 became the 2026 Jobenomics West Baltimore milestone with emphasis on minorities, women and new workforce entrants. Jobenomics West Baltimore business and job creation plan focuses on the poorest neighborhoods and expands outward in West Baltimore and then to the rest of City.



Demographic, Income & Poverty Statistics



The Jobenomics West Baltimore plan incorporates national, state, county, metropolitan, city and neighborhood statistics regarding demographic, economic, employment, unemployment, business, cultural, educational and job skill data unique to the Baltimore City workforce.

In 1950, Baltimore City's population topped out at 950,000, of whom 24% were Black. Today, the Baltimore City population is 632,000, of whom 64% are Black, 30% White and 6% Hispanic/Asian/Mixed. West Baltimore's population is 213,000 and overwhelmingly Black. By race and ethnicity, the 14 West Baltimore neighborhoods are 98%, 97%, 96%, 96%, 94%, 93%, 92%, 92%, 93%, 89%, 84%, 83%, 73% and 46% Black. Perhaps not surprisingly, the most mixed race neighborhood (46% Black, 39% White, 8% Asian, 4% Hispanic and 3% Mixed) was Freddie Gray's neighborhood.²⁹⁰

Baltimore City's median income levels, by neighborhood, range from a low of \$9,612 to a high of \$191,518. The national per capita income is \$47,669. Maryland per capita income is \$56,127.²⁹¹

Approximately 60% of the adult working-age population in the City is employed. Two-thirds of the employed personnel have jobs outside of Baltimore City due the lack jobs in the City.

The national average poverty rate is 14.8% and varies by family size. Maryland's average poverty rate is 10.0%. The Baltimore County poverty rate is 9.7%. The average Baltimore City poverty rate is 23.6%.²⁹² Baltimore City neighborhood poverty rates range from a low of 4.4% to a high of 73.5% in

²⁹⁰ Statistical Atlas, Map of Race and Ethnicity by Neighborhood in Baltimore, Black, <http://statisticalatlas.com/place/Maryland/Baltimore/Race-and-Ethnicity>

²⁹¹ DataUSA, Baltimore City, MD, Income by Location, <http://datausa.io/profile/geo/baltimore-city-md/#economy>

²⁹² DataUSA, Baltimore City, MD, Poverty by Race & Ethnicity, <http://datausa.io/profile/geo/baltimore-city-md/>

West Baltimore's predominantly Black neighborhoods.²⁹³ The most common race or ethnicity living below the poverty line in Baltimore City is Black (104,000), followed by White (26,000) and Hispanics (6,000). Females, age 25 to 34 (12,900), are the largest single demographic living in poverty.²⁹⁴

The percent of female-headed households with children under 18 in Baltimore City averaged 55% of all households. In some areas of the city (such as Cherry Hill, Upton and Druid Heights—a walkable 8-block distance from the proposed Jobenomics West Baltimore Operations Center), the percentage is as high as 77.4% for all female-headed households.²⁹⁵ The percentage of single minority female-headed households is likely to be even higher.

Low income levels coupled with high poverty leads to high crime. Baltimore City ranks within the top 20 most dangerous cities in America. Violent crime rate is one of the highest in the nation, across communities of all sizes (both large and small). The chance of a person being a victim of a violent crime (murder and non-negligent manslaughter, armed robbery, aggravated assault and rape) is 1 in 73. The chance of a person being a victim of a violent crime or property crime (burglary, larceny, motor vehicle theft and arson) is 1 in 16.²⁹⁶

Based on statistical research, neighborhood tours and meetings with West Baltimore community leaders, the Jobenomics West Baltimore team agreed to an overall goal of restoring Baltimore City's labor force, which would go a long way to increasing incomes, alleviating poverty and reducing crime.



In January 1990, the City had 459,100 jobs. By May 2016, the City had 369,900—loss of 89,200 jobs since 1990 and a loss of 4,400 over the previous decade.²⁹⁷

²⁹³ Wall Street Journal, WSJ analysis of U.S. Census Bureau data via Minnesota Population Center of the University of Minnesota, Diversity Index, <http://graphics.wsj.com/baltimore-demographics/>

²⁹⁴ DataUSA, Baltimore City, MD, Poverty by Race & Ethnicity, <http://datausa.io/profile/geo/baltimore-city-md/>

²⁹⁵ Baltimore Neighborhood Indicators Alliance-Jacob France Institute at the University of Baltimore, Census Demographics (2010-2014), Percent of Female-Headed Households with Children under 18 (2010), http://bniajfi.org/vital_signs/data_downloads/

²⁹⁶ Neighborhood Scout, Crime rates for Baltimore, MD (analysis of FBI data), <http://www.neighborhoodscout.com/md/baltimore/crime/#description/>

²⁹⁷ U.S. Bureau of Labor Statistics, Baltimore Area Employment – March 2016, http://www.bls.gov/regions/mid-atlantic/news-release/AreaEmployment_Baltimore.htm

The Jobenomics West Baltimore team decided on an employment goal of 100,000 net new inner-city jobs by 2026, which would slightly exceed the City's 1990 employment level. The team also agreed on the principle that jobs do not create jobs, businesses do, especially small businesses that can support the needs of the local community. Consequently, it was decided that the Jobenomics West Baltimore's small business creation effort should focus primarily on minority, women and new workforce entrants—the demographics with the highest need and potential in West Baltimore and the City at large.

100,000 net new jobs is an aggressive but achievable goal for a city with a population of 621,000 and an employed workforce of 369,900. 100,000 new workers will increase the employed workforce by 27% over the next decade, or 2.7%, per year. 2.7% is aggressive but achievable if focused on high growth occupations. Most of Jobenomics targeted occupations are forecast by the U.S. Department of Labor to grow faster than 2.7% per year over the next decade. Home health, nursing, occupational and physical therapy jobs are all projected to grow over 3.0% per year. Trainers, construction workers, counseling, computer, medical assistant jobs are projected to grow up to 2.9% per year.²⁹⁸ These projections are based on a business-as-usual approach. The Jobenomics approach is much more aggressive with a standardized skills-based training process targeted at local high growth business and employment initiatives. If the Jobenomics West Baltimore plan is successfully implemented, population decay should reverse itself upward and employment increase.

Baltimore City does not lack human resources to fulfill the Jobenomics West Baltimore plan. Over the next decade, a large percentage of the City's 96,000 new workforce entrants, now aged 6 to 18, will enter the workforce ready for meaningful jobs and careers. A high percentage of Baltimore City's 62,000 unemployed who are looking for work may be able to finally land a job, the right job. A reasonable percentage of Baltimore City's 182,000 able-bodied adults who are no longer looking for work may decide to change their minds. Jobenomics Community-Based Business Generators will work with established educational and training organizations to add an extra dimension to workforce and business development for these new workforce entrants, the unemployed and underemployed, as well as the discouraged, underutilized and sidelined nonworking adults. In addition, the Generators will assist unfulfilled workers who are dissatisfied with their current job, retrain to find employment opportunities more fulfilling.

Jobenomics West Baltimore initiatives include a number of interesting new next-generation and socially conscious job opportunities that should be able to attract 25,000 to 50,000 from outside the City. Since the end of the 2007 -2009 Great Recession, Millennials (now numbering 75.4 million people) have reversed the migration from urban to suburb and are seeking socially-conscious and interesting employment opportunities.

Kevin Plank, the CEO of Under Armour, is looking for such people—10,000 of them to work in his new 4-million-square-foot headquarters on 266 acres in the Port Covington district of Baltimore City. Plank and other community leaders like him want to transform Baltimore as a model and destination

²⁹⁸ U.S. Bureau of Labor Statistics,, Occupational Outlook Handbook, Growth Rate (Projected), <http://www.bls.gov/ooh/>

city. While the Jobenomics West Baltimore plan is not likely to be involved in Under Armour's direct hiring, it will help develop new business and high quality employees for Under Armour's indirect workforce that is projected to be five times as large (30,000 jobs). The Jobenomics West Baltimore team will work with One Baltimore, Visit Baltimore, Innovation Village, BLocal and Baltimore Tourism to develop businesses tailored to making Baltimore City a model destination city. A 25% increase in tourism alone will create 20,000 new jobs.

Given these new opportunities, untapped labor force resources, community support and help from above, the goal of 100,000 net new jobs by 2026 is a very achievable. In addition to jobs, if the Jobenomics Community-Based Business Generator is as successful as envisioned, it should be able to create as many as 2,000 new small businesses and significantly more self-employed businesses. The Plan also will provide post-startup support that will increase the lifespans of new business and support their growth into medium and large-sized businesses.

As of this writing, the Jobenomics West Baltimore plan has four major objectives, each with four sub-objectives. These objectives are specific to Baltimore according to the needs of the community as expressed by the current cadre of community leaders. As more community leaders join the initial cadre and commit themselves and their organizations, the plan's objectives/sub-objectives will be modified to meet their needs.

Jobenomics West Baltimore's Initial Net New Jobs Framework

Industry/Occupation	Job Zone Skill Level	Jobs		Total Jobs	% of 100K Goal
		Direct (Est.)	Indirect (Est.)		
Manufacturing	1-5	5,750	28,750	34,500	35%
Under Armour	1-5	3,000	15,000	18,000	18%
Foreign (EB-5)	1-5	1,000	5,000	6,000	6%
Urban Mining	1-3	750	3,750	4,500	5%
Light Industrial	1-3	1,000	5,000	6,000	6%
Healthcare and Social Assistance	1-4	6,375	19,125	25,500	26%
Personal Care Aids	1-2	2,000	6,000	8,000	8%
Home Health Aids	1-2	2,000	6,000	8,000	8%
Nursing Assistances	1-2	2,000	6,000	8,000	8%
Direct-Care Center	1-4	375	1,125	1,500	2%
Demolition and Construction	1-4	6,000	18,000	24,000	24%
Demolition Labor	1	1,500	4,500	6,000	6%
Construction Labor	1-2	1,500	4,500	6,000	6%
Live-Baltimore/Retire-Baltimore	1-4	1,500	4,500	6,000	6%
Renewable Energy Initiative	1-4	1,500	4,500	6,000	6%
Digital Economy	1-5	4,000	12,000	16,000	16%
E-Commerce Self-Employed	1-4	2,000	6,000	8,000	8%
On Demand Work (e.g., Uber)	1-3	1,000	3,000	4,000	4%
E-Business Consultants	4-5	500	1,500	2,000	2%
Independent Contractors	3-5	500	1,500	2,000	2%
Total	1-5	22,125	77,875	100,000	100%

Out of the 100,000 net new jobs, 35% will be related to Manufacturing, 26% to Health Care and Social Assistance, 24% to Demolition and Construction and 16% to the emerging Digital Economy. Both direct and indirect jobs are listed. Direct jobs are actual full-time positions created by business.

Indirect jobs are created by other businesses that come into existence due to the economic growth provided by direct employment. Jobenomics uses a direct/indirect ratio of 1:5 for goods-producing businesses and 1:3 for service-providing businesses. Job skill zone levels are also listed.

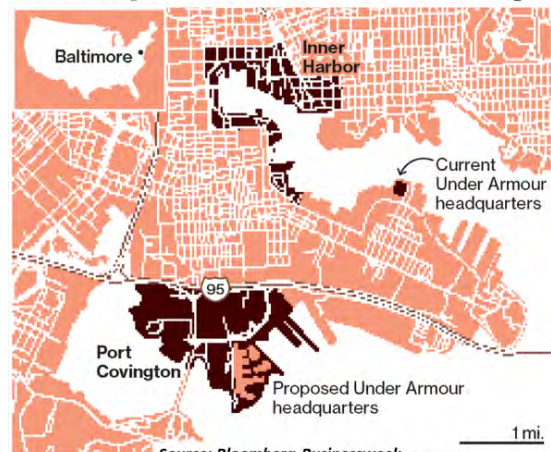
Manufacturing. The first objective is to restore the Baltimore manufacturing labor force by adding 34,500 jobs (5,750 direct and 28,750 indirect). While Jobenomics does not view manufacturing as a major contributor to net new job creation in America (mainly due to foreign competition and automation), Baltimore City is an exception.

Baltimore was a major war production center in World War II replete with steel, shipyards and aircraft manufacturing plants. After WWII, Baltimore lost 100,000 jobs in manufacturing alone. Today, the Baltimore region's manufacturing workforce is about 5% of the labor force compared to 30% in the heydays of the 1950s.

Baltimore City has a rich history of manufacturing. Consequently, it makes it easier politically, publically and culturally to accept major manufacturing initiatives. While only 5% of the workforce, Baltimore still has 100 operational manufacturing companies including major manufacturers like Northrup Grumman (aerospace, defense and information technology), Under Armour (apparel), McCormick & Co. Inc. (food products), BD Diagnostic Systems (medical devices) and AAI (unmanned systems) that employ approximately 15,000 direct employees in the metro area. The City is also replete with adequate, but aging, manufacturing infrastructure and a Tier 2/3 subcontractor manufacturing base. Despite all their challenges, Baltimore City citizens are eager and willing to work as evidenced by extremely large queues of Baltimoreans at job fairs. Most importantly, Baltimore City has a major manufacturing champion, Kevin Plank the CEO of Under Armour, who is personally committed to Baltimore City labor force restoration with next generation jobs and financing to make these jobs a reality.

Kevin Plank was featured on the cover of the 28 June 2016 edition of Bloomberg Businessweek pledging to "jump-start Baltimore".²⁹⁹ Baltimore City is Plank's "adopted city" and he is committed to providing jobs in Baltimore City in preference to exporting these jobs outside the City as well as abroad. In January 2016, Under Armour announced plans to build a 4 million square foot headquarters, employing 10,000 direct employees, on 266 acres that Plank had acquired in the Port Covington district of Baltimore City. In addition to the new Under Armour headquarters, according to Under Armour's plan, "Port Covington will be home to 7,500 housing units, a hotel, shopping, and two light-

Under Armour's Current & Future Headquarters In Baltimore City



Source: Bloomberg Businessweek

²⁹⁹ Bloomberg Businessweek, Under Armour's Quest to Dethrone Nike and Jump-Start Baltimore, by Rachel Monroe, 28 June 2016, <http://www.bloomberg.com/features/2016-under-armour-kevin-plank/>

rail stops". Plank's master plan also includes 13 million square feet of offices, 13,500 homes, stores and restaurants, and 42 acres of parks. In June 2016, the City's Planning Commission unanimously approved the master plan that can be obtained at this footnoted website³⁰⁰.

The Jobenomics West Baltimore team intends to work with Under Armour (and other likeminded corporate executives) to help develop Under Armour's indirect workforce that is estimated to be five-times the size of the direct workforce with emphasis on minority-owned business, and training and certified lower skilled workers.

The indirect workforce will be drawn from the local community, trained and certified by the business generators to mass-produce small service-providing businesses in areas like transportation, accommodation, food and beverage, retail (convenience stores, salons, barber shops, etc.) and other indirect services businesses. In regard to Under Armour's Tier 2/3 subcontractor manufacturing base, the Jobenomics plan calls for attracting domestic and international textile, information/network technology, commercial/residential development, and renewable energy firms to help meet the needs of Under Armour as well as new and expanding Tier 2/3 firms.

In addition to the above, Jobenomics is working with local officials on an Urban Mining initiative. Urban mining is defined as a process of reclaiming raw materials and metals from municipal waste streams including construction and demolition material, municipal solid waste, electronic waste and tires. These waste streams contain combustible and non-combustible materials. Combustibles are carbon-based matter that has caloric value that can be converted to marketable products via waste-to-organic and energy via waste-to-energy technologies. Non-combustible elements can be reclaimed via waste-to-material technology. Urban mining offers a number of benefits including reclamation of valuable raw materials and metals that can be sold as commodities or used for local manufacturing applications, reducing the impact on landfills and exporting of toxic waste, mitigating environmental pollution associated with traditional surface and subsurface mining operations, and producing revenue for local business and job creation.

Jobenomics West Baltimore's Net New Job Framework is tailored to the demographics of Baltimore City. Emphasis is being given to lower skill zones that tend to be more predominant in the poor sections of the inner-city. To date, the Jobenomics West Baltimore plan has been endorsed and led by community leaders who are now obtaining endorsements and support from corporate executives, government officials, opinion leaders and non-profit organizations, all of whom will be involved in the finalization and implementation of an actionable Jobenomics West Baltimore plan.

Health Care and Social Assistance. The second objective is to enhance Baltimore City's health care and social assistance labor force by mass-producing small and self-employed direct-care businesses in order to create 25,500 net new jobs (6,375 direct and 19,125 indirect).

³⁰⁰ Under Armour, Presentation to the Urban Design & Architecture Review Panel, 28 January 2016, <http://technical.ly/baltimore/wp-content/uploads/sites/3/2016/02/012816-UDARP-UA-Global-HQ.pdf>

So far this decade (January 2010 to July 2016), the U.S. Health Care and Social Assistance sector added 2,640,000 jobs—the largest sector of the thirteen labor sectors in the United States. Over the next decade, the U.S. Department of Labor projects 3.8 million new U.S. health care and social assistance jobs, or 40% of all new U.S. jobs, which is twice the amount of the next fastest growing sector.³⁰¹ Over the same time period, the Maryland Department of Labor projects 435,000 new health care-related jobs, second only to government growth of 500,000 workers, and 45,000 new social assistance-related jobs.³⁰² Creating the Jobenomics plan to create 6,375 direct health care and social assistance jobs in Baltimore City by 2026 is a very small fraction of the 435,000 projected new Maryland health care jobs when Baltimore City is the hub for Maryland regional medical services.

Seven of the top ten major employers in Baltimore City are involved with health care. These esteemed Tier 1 corporations include: John Hopkins Hospital, University of Maryland Medical System, MedStar, LifeBridge, Mercy Health, St. Agnes and Kennedy Krieger Institute. Each of these employers has Tier 2/3 firms involved in health care. Jobenomics West Baltimore plan is create a “Tier 4” cadre of small and self-employed health care businesses that can work as independent contractors or be acquired by higher tier corporations.

The Jobenomics Baltimore Plan also calls for creation of a Direct-Care Center as part of an overall Direct-Care Initiative focused on health care, eldercare and childcare. A Direct-Care Initiative would provide in-home services from local small, micro and self-employed businesses managed by community-based direct-care centers equipped with the latest information systems connected to a network replete with real-time teleconferencing and mobile phone direct-care apps.

A number of factors are expected to lead to job growth in direct-care technology development as well as direct-care business and job creation: (1) growing population, (2) longer life expectancy, (3) chronic and age-related disease growth, (4) improved service-providing technology and (5) increasingly generous health care, social assistance and welfare programs.

Today, direct-care jobs are primarily funded through public funds. A direct-care initiative, designed around a community information and coordination center, could be largely paid by clients who need some assistance to retire at home or working families who can’t afford the high cost of daycare.

According to the Bureau of Labor Statistics, in-home personal care service sector is projected to increase by 1.3 million jobs (a 70% growth rate compared to 14% for all U.S. occupations) from 2010 to 2020 with a median pay of approximately \$20,000. While \$20,000 is well below the \$33,000 median pay for all occupations, it is attractive to new workforce entrants, retirees who need supplemental income and contingent workers who often work multiple part-time jobs as a matter of choice.

³⁰¹ BLS, Employment Projections (2014-2924), Table 2. Employment by major industry sector, <http://www.bls.gov/news.release/ecopro.t02.htm>

³⁰² Maryland Department of Labor, Maryland Long Term Occupational Projections (2014 - 2024), <https://www.dllr.state.md.us/lmi/iandoproj/maryland.shtml>

Community-based direct-care centers will also help establish and manage home-based health care, eldercare and childcare businesses. By 2020, assisted-living facilities are projected to have a 17 million bed shortfall for aging and disabled baby boomers—in-home eldercare services by home-based caregivers could solve the assisted-living shortfall. Today, only 8% of childcare arrangements are conducted in a caregiver's own home. This percentage could be expanded significantly and safely if managed by a Direct-Care Center. Affordable childcare is a major issue for female-headed households in Baltimore City and nearby suburbs.

Mass-producing self-employed, home-based childcare businesses that are safely managed could have significant impact on homebound mothers. More mothers could have home-based childcare businesses to supplement their income. More mothers could be emancipated from the home to pursue other occupational pursuits. The requisite childcare skills are natural for mothers who are or have raised children. Jobenomics believes that mothers should be afforded the opportunity to monetize these skills. Micro and self-employed businesses are ideally suited to provide direct-care, either on full-time or part-time basis. These businesses are relatively easy to start.

The principal role for government (federal, state and/or local) would be to fast-track policies, regulations and licensing arrangements conducive to in-home care by small and self-employed businesses. Today, the regulatory environment is so burdensome only larger companies can provide the full range of direct-care services. Small and self-employed businesses could provide basic in-home services that would not require extensive regulation and licensing. If teenage babysitters do not need government licensing, why should adults that want to start a self-employed business?

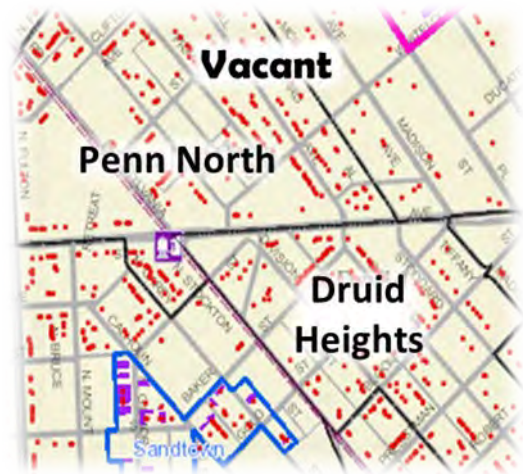
In addition to training and certifying basic caregiving skills, a Direct-Care Center would provide proper regulatory oversight and quality control. The Direct-Care Center would also work with larger established businesses that provide services higher up the skills chain. Small and self-employed businesses can provide basic services at a lower cost than larger businesses, which is extremely important to the elderly and parents who cannot afford the price of current caregiving services.

If Airbnb (a trusted community marketplace for people to list, discover, and book unique lodging accommodations around the world) can grow from zero to 500,000 homes in 34,000 cities in eight years, direct-care centers could implement home-based eldercare and childcare services in hundreds of thousands U.S. households in a relatively short period of time. By unleashing the power of new technology, like Airbnb did, it is not unreasonable to expect a quadrupling of the current in-home personal care employment growth rate. In Baltimore City, the net result could be thousands of net new jobs and microbusinesses for its most financially distressed demographic.

Demolition and Construction. The third objective is to restore the Baltimore construction labor force by adding 24,000 demolition and construction jobs (6,000 direct and 18,000 indirect).

Baltimore's plan to demolish tens of thousands of residential buildings and commercial properties could lead to tens of thousands of new jobs and businesses if properly planned. Baltimore City's Vacants to Values (V2B) program identifies for-sale vacant homes, commercial buildings, and lots that need to be demolished or refurbished.

According to V2B, population loss and other economic factors over the past 60 years have left Baltimore with upwards of 17,000 vacant and boarded structures.³⁰³ West Baltimore's Penn North and Druid Heights neighborhood vacancies are the red dots on the map. Based on location, population trends, and market demand, about 5,500 of vacant buildings have good potential for redevelopment. Market demand for the remaining 11,500, however, is very limited. These 11,500 properties are candidates for demolition. Under V2B, the Baltimore City commits \$10 million per year in demolition funding, which is a good start. Much more funding could be obtained for developers to design and build planned residential communities as envisioned by Kevin Plank and likeminded social engineering architects.



According to Baltimore Neighborhood Indicators Alliance, Baltimore City owns 31,092 vacant properties but issued only 4,300 demolition permits due to limited funding.³⁰⁴ An additional 5,492 properties are in the process of rehabilitation. Baltimore City has a total of 204,295 residential homes, many in need of repair and upgrading. In 2014, 7,822 homes were sold at a median sales price of \$126,325, which is a very low price compared to other East Coast communities. If 100,000 new jobs were added to the workforce as envisioned by the Jobenomics West Baltimore plan, many thousands of demolition, renovation and construction jobs would be needed.

The Jobenomics West Baltimore plan recommends working with V2B to integrate the current demolition, renovation and construction efforts into a small business and job creation plan in association with Jobenomics Community-Based Businesses Generators. Jobenomics has identified a dozen related short (several weeks in duration) federally certified training programs that could quickly mass-produce startup businesses.

The Jobenomics West Baltimore team is working with the investment community to create a \$100 million micro-business fund for demolition and construction related business startups. This fund would use the 30,000 derelict homes and properties owned by Baltimore City as collateral for the fund. This fund would be secured in ways similar to the federally-funded Home Affordable Refinance Program (created by the Federal Housing Finance Agency to help homeowners refinance their mortgage), Freddie Mac (a government owned enterprise created to buy U.S. home mortgages) and Ginnie Mae (a government owned enterprise created to help make affordable housing a reality for low- and moderate-income households).

Jobenomics also believes that HUD Section 3 financial assistance could be used to startup demolition, renovation and construction businesses. HUD Section 3 financial assistance is expended for housing

³⁰³ Vacants to Values, Demolition Site Maps, <http://www.vacantstovalue.org/Developers.aspx#demomaps>

³⁰⁴ Baltimore Neighborhood Indicators Alliance-Jacob France Institute, Housing and Community Development (2010-2014), http://bniajfi.org/vital_signs/data_downloads/

or community development, targeted at public housing and low income residents and businesses. Section 3 is the legal basis for providing jobs for residents and awarding contracts to businesses needing financial assistance.³⁰⁵ Properly orchestrated, HUD Section 3 could underwrite labor force restoration and business creation efforts in West Baltimore. To qualify for HUD Section 3 financing low income is defined as 80% or below the median income of the Baltimore metro and to qualify as a business at least 51% of the businesses must be owned by Section 3 residents. Both of these stipulations are easily met in West Baltimore.

The Jobenomics West Baltimore plan calls for the development of Live/Work/Play communities. Live/Work/Play consists of major new modern multilevel, multifaceted, high-tech, sustainable Live/Work/Play communities near the Inner Harbor, which would be a large draw for the Millennial Generation-Y and Generation-Z domestic and international college graduates entering the workforce.

Jobenomics is discussing the possibility of modifying the HUD Section 8 Housing Choice Voucher program to attract low income college graduates (most graduates do not have an income) to the City as opposed to paying poor inner-city residents to move to the suburbs.³⁰⁶ Using these vouchers in this way would be of interest to developers and investors to build modern Live/Work/Play apartments and condos, as well as planned residential and retirement communities. Live/Work/Play communities would also be of interest to Under Armour for their future employees who would work at the Port Covington headquarters and campus. Under Armour plans to build two light rail stops and a water taxi to connect their employees to Downtown Baltimore and the Inner Harbor.

Jobenomics West Baltimore envisions incorporating Live Baltimore into the planned community process. Live Baltimore is a tax deductible non-profit that emphasizes Baltimore City's attractive features: sports, entertainment, low housing costs and other features of city living. Live Baltimore's target generation is Millennials—the largest U.S. demographic with 83 million people. This year, Millennials surpassed Baby Boomers and Generation X as the largest component in the U.S. labor force with 53.5 million workers. Jobenomics West Baltimore also envisions a Retire Baltimore initiative. Retire Baltimore would create low-cost, high-quality assisted-living and skilled-care retirement communities close to Baltimore's leading medical centers and staffed by locally trained and certified caregivers. The Direct-Care initiative will provide low cost services to Retire Baltimore. The ultimate goal is to make Baltimore City an attractive and affordable live/work/play/retire community for the upcoming Millennial and retiring Baby Boomer generations.

³⁰⁵ HUD.GOV, Section 3 Brochure,

http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/section3/section3brochure

³⁰⁶ Under the current Administration, the total number of voucher households has grown to more than 2.2 million.

According the U.S. Department of Housing and Urban Development, the housing choice voucher program is the federal government's major program for assisting very low-income families, the elderly, and the disabled to afford decent, safe, and sanitary housing in the private market. Since housing assistance is provided on behalf of the family or individual, participants are able to find their own housing, including single-family homes, townhouses and apartments. Source: http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/hcv/about/fact_sheet

Digital Economy. The fourth objective is to enhance Baltimore City's labor force by adding 16,000 jobs (4,000 direct and 12,000 indirect) related to the emerging digital economy. The Digital Economy objective is likely to be the most important of all four objectives from a long-term point of view. The U.S. economy is currently 95% traditional and 5% digital. The U.S. traditional economy is growing at approximately 2% per year and the digital economy is growing at 20% per year. If these growth rates continue, the digital economy would equate to $\frac{1}{4}$ of the U.S. economy by year 2026 and $\frac{1}{2}$ by 2033. Consequently, it is essential that all U.S. communities prepare their digitally-oriented labor force for this explosive growth.

The emerging Digital Economy (also known as the Internet Economy, New Economy, Gig Economy Apps Economy, Uber Economy and Shared Economy) is transforming the planet via e-commerce, e-retailing, e-business, m(mobile)-commerce, h(health)-commerce as well as the Internet-of-Things. The Digital Economy will favor an independent home-based, self-employed, flexible and task-oriented part-time workforce over the traditional corporate full-time workforce. The Jobenomics West Baltimore plan will help to develop the digital infrastructure, training and business development to support the emerging digital economy and the ever-growing Baltimorean contingent workforce that is dependent on the web for task-oriented work.

To be economically robust, the Baltimore City economy depends on good jobs that reside inside city limits. In 2010, 54.2% of the population worked outside of the City. In 2014, 67.1% did—a rise of 24% or 6% per year. The impact of the 2015 riots is yet unknown but many citizens believe that the exodus may worsen especially with Baltimore City's most talented and upcoming youngsters who are entering the workforce. This brain drain has to be reversed. Next-generation talent and skills must be retained in order for the Baltimore economy to grow. Since the digital economy is not geographically constrained, Baltimore's digital natives could work anywhere from home.

Compared to similar sized East Coast cities (Washington 659,000, Boston 659,000), Baltimore City employment opportunities are limited for the upcoming generation, known as Generation Z—born 1996 to present, now 21 years old and younger. Generation Zers are called "Screenagers" due to the amount of time they spend on the Internet and Smartphones. For the most part, Baltimore's Screenagers are digital natives just like all other digital natives across the world. Moreover, digital skills are largely taught during the 7 hours a day that these youngsters spend online. As the world's digital economy matures, Screenagers will be at the helm.

Baltimore City's Screenage population is 177,500 or 21% of the population. 67,000 screenagers, 15-21 years old, are now entering the workforce. The Jobenomics West Baltimore plan will help them prepare for entry as well as start their own business. The digital economy offers standard and contingent career opportunities that are generally not suitable for older non-digital generations. 72% of surveyed American Screenagers want to start their own business. Baltimorean Screenagers are likely to feel the same. While much of this is wishful thinking, the digital economy will provide many of these Screenagers with opportunities that could make their wishes come true. A Jobenomics Community-Based Business Generator would significantly enhance the probability of success in this regard as well as productively pursuing self-interests and self-sufficiency.

Properly planned and structured, the digital economy will not only mitigate the brain drain leaving the city but maintain indigenous Screenager talent. As discussed in the previous section, modern high-tech Live/Work/Play communities would also draw Screenage talent from outside the City. The fusion of inside and outside talent would constitute a formidable force for economic and workforce development in Baltimore City.

The Jobenomics West Baltimore plan also includes a Sharing/On-Demand Economy component. The Sharing/On-Demand Economy is a new wave of peer-to-peer, access-driven businesses that are characterized by (1) the ability of individuals to share (goods, knowledge, money, time, skills, content, etc.) rather than buy or own or (2) fulfill consumer demand via the immediate provisioning of goods and services. In sharing, the trend is towards usage, as opposed to possession, of underused or idle assets. Consumers and entrepreneurs will be the greatest beneficiaries of the sharing economy. Such peer-to-peer sharing concepts can provide additional income for owners while providing cheaper alternatives to consumers. For consumers, the sharing provides cheaper goods and services by quickly satisfying consumer needs via internet-connected applications.

With major business successes, like Uber and Airbnb, the sharing/on-demand economy is much more than a fad or trend. It is an emergent ecosystem that is upending mature business models across the globe. If successful, the sharing/on-demand economy is likely to usher in a transformation as significant as the personal computer did when it was introduced in the 1990s.

Shared-mobility is at the forefront of the new model of global, multi-modal, on-demand, share-mobility transformation that is currently taking place on five continents, in over 30 countries and in hundreds of cities. Shared-mobility offers an attractive alternative to owning (including fractional ownership) a vehicle as well as providing a meaningful alternative or supplement to conventional public transit systems. Car-sharing and personal vehicle-sharing applications can provide greatly needed low-cost services for the disabled, elderly and low-income groups. Leading ride-sharing and ride-hailing application providers include Uber, Lyft, Rideshare, Getaround, Rydes, Ridejoy, Carma, and Zimride (Enterprise Rent-A-Car). Leading car-sharing providers include Zipcar (11,000 cars and 730,000 members), Enterprise Car Share, Hertz on Demand, Gar2go, City CarShare, Uber, and Lyft.

Uber serves as an excellent example of a Jobenomics West Baltimore On-Demand/Shared-Mobility application. Each month Uber adds approximately 50,000 new drivers for each of its ride-hailing services: UberX (lowest cost fares), UberXL (larger cars and vans), UberSUV (SUVs seating up to six people), UberSELECT (entry-level luxury service) and UberBLACK (commercially registered and insured limos). Lesser known Uber ride-sharing and ride-hailing applications include UberPOOL (car and van-pooling), UberESPAÑOL (UberX with a Spanish-speaking driver), UberTAXI (Uber app to hail a traditional taxi service), UberWAV/ACCESS/ASSIST (wheelchair-accessible and special-need vehicles with certified drivers), UberBIKE (Uber vehicles with a bike rack), UberRUSH (vehicles for custom and on-demand delivery of goods and service), UberHOP (flat fare rush hour ride-sharing) and UberLUX (luxury cars).³⁰⁷

³⁰⁷ Uber, Newsroom, <https://newsroom.uber.com/>

In Washington DC, Uber is experimenting with an integrated metropolitan shared-mobility approach (UberDC) that combines UberTAXI with ride-sharing (UberPOOL) and ride-hailing (UberX, UberXL, and UberSUV) services to reduce traffic congestion, emissions and costs as well producing new small businesses and jobs. The significance of UberDC should not be underestimated. If successful, UberDC could be a prototype for an integrated public shared-mobility transit system. The Jobenomics West Baltimore plan envisions an UberBaltimore initiative similar to UberDC with sponsorship from leading companies like Under Armour and the leading Baltimorean medical institutions.

The leading on-demand, shared-accommodation company is Airbnb. Other Airbnb-like companies include FlipKey (owned by travel giant TripAdvisor and offers over 30,000 rental listings in over 1100 cities), HomeAway (over 1 million worldwide listings), VRBO (Vacation Rentals by Owner with 800,000 listings in 100 countries), Roomorama (specializes in professionally-managed and trusted holiday homes, homestays and vacation rentals), Couchsurfing (offers rentals that foster cultural exchange), OneFineStay (handpicks extraordinary residential, loft and penthouse rentals), 9flats (specializes in alternatives to a hotel with 250,000 homes worldwide), Travelmob (specializes in matching travelers with hosts renting out villas and apartments for short- and long-term rentals) and Travelzoo (specializes in aggregating discounted accommodations and plots them on Google Map for last minute travelers).

Airbnb serves as an excellent example of a Jobenomics West Baltimore On-Demand/Shared-Accommodation application. Founded in 2008, Airbnb is a trusted community marketplace for people to list, discover and book online, via a mobile app, unique accommodations around the world. Airbnb has connected 60 million guests to unique travel experiences, at any price point, in more than 34,000 cities and 191 countries. As its name suggests (Airbnb derived its name from “airbed” and “bed and breakfast”) 90% of Airbnb’s bookings are pleasure and family oriented. 10% are business travel related.

Airbnb’s economic impact has been phenomenal, especially for their accommodation providers (hosts). Using New York City as an example, Airbnb’s serviced 400,000 visitors who generated \$632 million in economic activity with \$105 million in direct spending in the outer boroughs, in neighborhoods that don’t typically benefit from tourism dollars. 87% of Airbnb New York City hosts typically earn \$7,530 per year. Equally important, 62% of these hosts report that this additional income allows them to remain as homeowners as well staying in their own homes.³⁰⁸

The Jobenomics West Baltimore plan envisions working with Airbnb and other on-demand, shared-accommodation companies in regard to enhancing Baltimore’s tourist industry and providing

Economic Impact to Baltimore. Jobenomics estimates that the economic impact would be **negative \$5-\$10 million** if the Jobenomics West Baltimore initiative proved to be unsuccessful after the initial pilot projects. On the other hand, if Maryland and Baltimore City community leaders embraced the concept and supported mass-producing small businesses and jobs, the economic impact could exceed

³⁰⁸ Airbnb, About, <https://www.airbnb.com/about/about-us>, and Economic Impact, <http://blog.airbnb.com/economic-impact-airbnb/>



\$6 billion per year. 100,000 new jobs at an average salary of \$50,000 are worth **\$5 billion a year** to Baltimore City.

If companies, like Under Armour agreed to support the EB-5 foreign investment and manufacturing initiative, Baltimore City should benefit in numerous new startup businesses in textile- and wearable technology. Corporate support would also help justify developers and financial institutions to invest and build major new modern multilevel, multifaceted, sustainable Live/Work/Play communities near the Inner Harbor which would be a large draw for the Millennial Generation-Y and new Generation-Z domestic and international college graduates. These “digital natives” are flocking to modern high-tech communal working areas with local charm, a sense of purpose, and 24/7 food/beverage/entertainment options. Other real estate investments in new green commercial buildings, residential communities and open spaces would be significant. An e-waste/e-scrap/e-demolition material reclamation facility could produce profits of up to \$50 million per year, and potentially \$200 million per year if Baltimore City can divert the exported e-waste stream from its container shipping facilities. Raw reclaimed materials (copper, aluminum, steel, and plastics) could be used at cost for building industrial manufacturing plants in Baltimore. The total economic impact of these initiatives could be between **\$500 million to \$2 billion per year.**

Even a moderate Jobenomics West Baltimore success would receive national and international attention and vastly help improve Baltimore City as a “destination city” for tourism, vacations, sporting events and business conferences. According to Visit Baltimore³⁰⁹, over 24.5 million domestic visitors and 1.8 million international visitors came to Baltimore City in 2014. The direct economic impact of visitor spending in 2014 was \$5.2 billion spent on lodging, food/beverage, entertainment, and transportation. The economic value of tourism beyond direct visitor spending included \$2.7 billion in salaries (82,379 jobs; 56,919 directly employed and 25,460 indirectly employed) that were pumped back into the local economy and approximately \$0.5 billion that was collected as taxes and fees by the State and Baltimore City government. The total economic impact of tourism to Baltimore City was around \$8 billion in 2014. If the Jobenomics West Baltimore helped improve Baltimore City as a “destination city” by 25%, the additional economic impact could be **\$2 billion per year.**

If 40% (current percentage of the U.S. contingent labor force) of the 100,000 new jobs joined the contingent workforce and would become contingency workers (temporary workers, part-time workers, day laborers, self-employed, task-oriented workers, shared economy workers, independent contractors, consultants, freelancers). If half (20,000) of these workers were Jobenomics Community-Based Business Generator graduates, they would likely be part of a small business startup. If each startup contained 10 employees, **2,000 new small businesses** would be created.

Concluding Thought. Whether the Jobenomics West Baltimore plan will be realized is too early to predict. Fulfillment will be only achieved when consensus is achieved by community leaders and a decision is made to commence with several pilot projects. Today, only one thing is for sure. In the short three months since inception, the Jobenomics West Baltimore plan has changed the

³⁰⁹ Visit Baltimore, Annual Report And Business Plan Fiscal Years 2015–2016, http://baltimore.org/sites/default/master/files/pdf/ar_2015_final_web.pdf

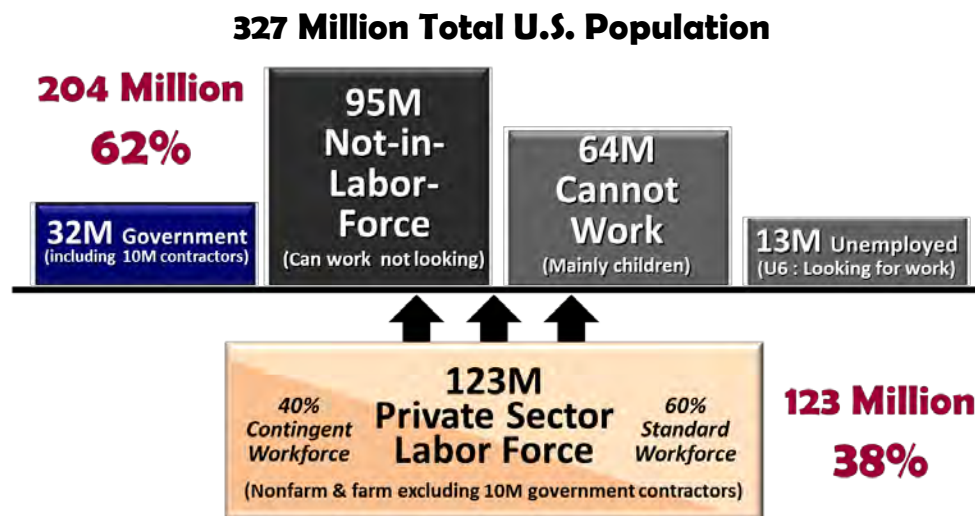


Baltimorean workforce development dialog from a project-by-project approach to a more strategic small business and labor force development approach focused on developing skills for those at the bottom of Baltimore's economic hierarchy. The notion of creating 100,000 net new jobs by 2026 was initially received as whimsical. Based on the reaction to the plan in its current incarnation, 100,000 net new jobs for Baltimore City is no longer a fanciful notion but an achievable possibility.

Conclusion

Job creation is the number one issue facing the U.S. in regard to economic growth, sustainment, and prosperity. Jobs do not create jobs, businesses do, especially small businesses that currently employ around 80% of all Americans and created up to 80% of all new jobs since the end of the Great Recession.

Unfortunately, America is focused on big business and government employment solutions that have not been very effective growing the U.S. labor force. In fact, the U.S. labor force is in a state of decline as evidenced by the eroding middle-class and the transformation from full-time to core contingency workers. With the next fifteen years, Jobenomics forecasts that the contingent workforce will replace traditional full-time workforce as the dominant force of labor in the United States—a trend that is largely unknown to U.S. policy-makers and the American public.



38% of all Americans financially support the rest of the country. As of 1 April 2018, out of a total U.S. population of 327 million, 123 million private sector workers support 32 million government workers and government contractors, 95 million able-bodied people who can work but chose not to work, 64 million who cannot work (at home caregivers, children, retired, institutionalized), and 13 million unemployed and underemployed.

The U.S. economy is not sustainable with only 38% supporting an overhead of 62%. The growing contingent labor force, which consists of mostly lower-paid wage earners, makes the overhead burden even more precarious. More people with livable wages and greater discretionary income must be productively engaged in the private sector labor force for the U.S. economy to flourish.

The ever-growing contingent labor force, which consists of mainly lower-paid wage earners, makes the overhead burden of the private sector labor force even more precarious. More people with livable wages and greater discretionary income must be productively engaged in the private sector labor force for the U.S. economy to flourish.



Today, Jobenomics estimates the contingent workers (part-time, self-employed, independent contractors, temporary workers, on-call and day laborers with “alternative” or “nonstandard” work agreements) to be about 60,000,000 employed Americans or 40% of the total employed workforce (private sector and government). By 2030, this will rise to around 90,000,000, or 50%, of the total employed workforce.

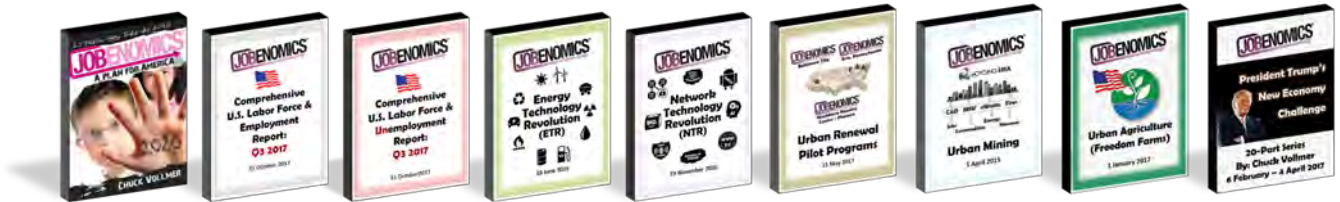
Jobenomics believes that new small, emerging and self-employed businesses could create 20 million new jobs within a decade if properly incentivized and supported. Notwithstanding filling the 5.6 million open U.S. jobs positions, the emerging Energy Technology Revolution and the Network Technology Revolution could easily create 20 million net new American jobs within a decade given proper leadership and support.

To create this number of net new jobs, Jobenomics asserts that the four demographics with the highest need and growth potential include women, minorities, new workforce entrants, and the large cadre of financially distressed citizens who want to work or start a small business. These demographics are ideally suited for accommodating the growing contingent workforce and attracting new labor force entrants that often do not share the same employment dream of older generations.

Using the Jobenomics model of mass-producing highly repeatable and scalable “turn-key” small and self-employed businesses via community-based business generators, the United States could create tens of millions of jobs that would transform the American labor force, middle-class and economy.

About Jobenomics

Jobenomics (jobs + economics) deals with the process of creating and mass-producing small businesses and jobs. Jobenomics National Grassroots Movement's goal is to facilitate the creation of 20 million net new U.S. jobs within a decade. Jobenomics media outreach has touched over 20 million people and has garnered wide-spread support for its economic development, workforce development, and business development efforts. In 2017, Jobenomics' website received over 4 million hits, and 350,000 page views with the majority the viewers spending a half hour or more online, not counting time spent reviewing downloads.



Jobenomics regularly updates its nine books and e-books (shown above) to keep its members current on the latest national and international economic and labor force issues, trends and solutions. Jobenomics research is perhaps one of the most comprehensive libraries regarding employment and unemployment challenges facing today's rapidly changing world. Jobenomics also provides special reports on national and international events that impact the economy. These reports range from the contingent workforce challenge, international, the emerging digital economy, to helping solve future labor force issues and problems.



Jobenomics provides advice and timely data to policy and decision-makers worldwide. Over the last few years, Jobenomics met with over a thousand government, business and community leaders to incorporate the best of their ideas and requirements into Jobenomics initiatives and programs. Today, over a dozen communities started Jobenomics initiatives led by local community leaders. These initiatives focus on citizens at the base of America's socioeconomic pyramid with emphasis on women, minorities, youth, veterans and other hopefuls who want to work or start a business. While Jobenomics is an American business and job creation movement, there is significant interest from Asian, Middle East, and African nations to start similar movements.

Key Focus Areas. While Jobenomics supports big business and government job creation efforts, its principal focus is on highly-scalable small and self-employed businesses that employ 80% of all Americans and produced 80% of all new jobs this decade. Jobenomics is working with numerous national organizations to implement Jobenomics Community-Based Business Generators to mass-produce startup businesses and provide skills-based training and certification programs to create "jobs within months and careers within a year." Via a strategic partnership with The Hope Collection



(www.hopecollection.org), Jobenomics can offer over 9,000 online technical training and certification programs. Jobenomics partnership with EmeraldPlanet (www.EmeraldPlanet.org) includes relationships with the world's 1,000 best emerging green business practices and Emerald Planet Television Show aired weekly worldwide. Jobenomics is also partnered with ACTS Freedom Farms (www.actsffa.com) produce 25,000 veteran-owned micro-farms, employing over 100,000 new U.S. jobs in the next five years. These micro-farms feature state-of-the-art hydroponic and vertical agricultural technology in a controlled environment to grow high-quality organic agricultural products in both urban and rural areas.



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