



Workforce Education/Training Challenge

www.Jobenomics.com

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Executive Summary. 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 many in today’s workforce. Today the U.S. labor force is increasingly characterized by income inequality, an eroding middle class and a growing contingent workforce that traditional degree-oriented educational programs have not been able to mitigate. 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/training challenge. To those at the top of the American economic pyramid, the old paradigm of “get a degree to get a job, get a better degree to get a better job” is more important than ever. On the other side of the ledger, to those at the bottom of the economic pyramid, more workforce technical and social skills training are needed to stem the increasing exodus to welfare and alternative lifestyles. For many at the bottom getting a postsecondary degree is a bridge too far. Earning a high school degree no longer guarantees a livable wage or viable career.

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 refers to first through eighth grades. Secondary usually refers to the last four years of high school (ninth through twelfth grade). Tertiary, also called postsecondary, refers to academic pursuit undertaken after high school. Primary and secondary education are compulsory (required by law), whereas pre-primary and postsecondary education is not. Postsecondary undergraduate programs, generally include associate and bachelor (baccalaureate) programs. Postsecondary post-baccalaureate pursuits generally include masters and doctorate programs. Primary, secondary and tertiary/postsecondary are degree-oriented.

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.

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 skills-based training provides the most effective way to getting 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 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 higher 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 (Generation Z, aged 21 and below) are digital natives who are largely self-taught from countless hours on the Internet. A great percentage of these young workforce entrants view industrially-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 the 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.¹ 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. 96% want universities to foster entrepreneurialism as opposed to academia.²

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 post-postsecondary school training. According to the Georgetown University Center on Education and the Workforce, while colleges and

¹ 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>

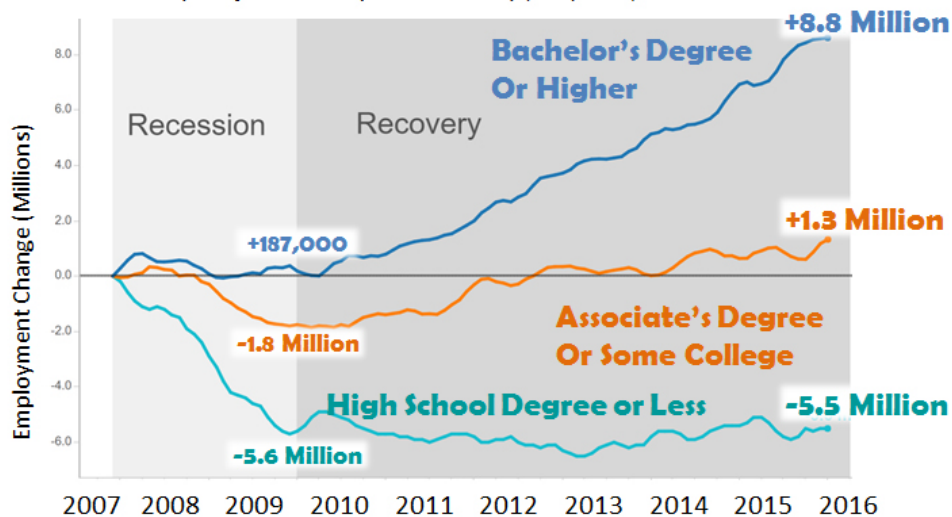
² Zogby Analytics, 2015 Laureate/Zogby Global Student Confidence Index, May 2015, <https://www.laureate.net/Thought-Leadership/~media/Files/LGG/Documents/Thought%20Leadership/Laureate%20Zogby%20Global%20Student%20Confidence%20Index.ashx>

universities spend \$407 billion annually on postsecondary education, employers spend \$590 billion annually on post-postsecondary school training (\$177 billion on formal training and \$413 billion on informal on-the-job training). 58% of formal employer-provided training spending goes to college and university graduates.³ Based on these statistics, degree-based programs are not providing employment-ready graduates.

Even the Association of American Colleges & Universities seems to agree with student and business concerns. According a 2016 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.⁴

U.S. Employment by Type of Degree

Source: Georgetown University Center on Education and the Workforce analysis of Current Population Survey (CPS) data, 2007-2016.



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.⁵

According to the report, during the 2007-2009 Recession, individuals with a postsecondary degree gained 187,000 jobs compared to 1.8 million job losses for those with some college or an Associate’s Degree and 5.6 million job losses for those with a high school degree or less.

³ 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>

⁴ 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>

⁵ 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>

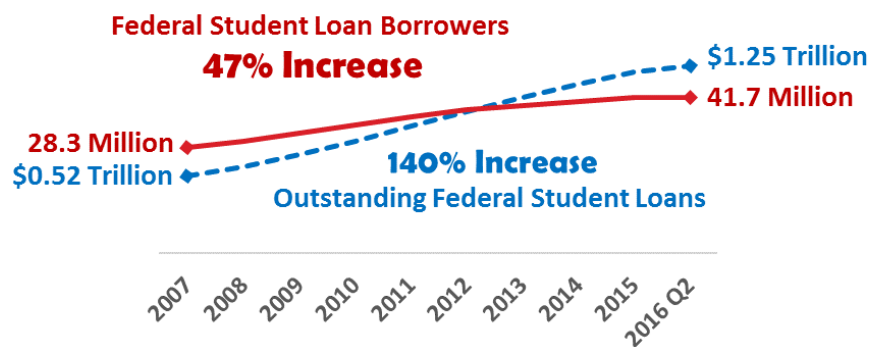
Graduates with a Bachelor’s Degree, or higher, added 8.8 million overall jobs since the beginning of the Great Recession. Undergraduates with some college or an Associate’s Degree added 1.3 million jobs. Individuals with a high school diploma or less lost 5.5 million jobs during the same time period. Even more disconcerting to the poorly educated, approximately all (99%) the jobs created in the post-recession recovery period have gone to people with at least some postsecondary education.

Degree-Oriented Postsecondary Education. According to the U.S. Department of Education, total undergraduate enrollment in degree-granting postsecondary institutions was 17.7 million in fall 2014, an increase of 48% from 1990, plus an additional 2.9 million graduate students. Of the 17.7 million undergraduates, about 60% were enrolled in 4-year institutions, 39% in 2-year institutions and 2% in less-than-2-year institutions. By 2023, undergraduate enrollment is projected to increase 14% to 20.2 million and post-baccalaureate enrollment (Master’s Degree and Doctorate Degree) is projected to increase 24% to 3.6 million.

The 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.

In 2013, average student loan debt was \$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 the only way to move up the social/educational pyramid—often a great cost that may or may not be fiscally prudent.

Federal Student Loan Program



According the U.S. Department of Education, in 2007, total student debt and student loan recipients were \$0.52 trillion and 28.3 million respectively. Today, outstanding student loans total \$1.25 trillion (an all-time high, up 140% from 2007), with 41.7 million federal student loan borrowers (also an all-time high, up 47% from 2007).⁶ The rate of growth is projected to continue to increase at a rate of

⁶ 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>

8% per year. If this projection is correct, there will be 97 million student loans totaling \$2.9 trillion by 2026.

According to the National Center for Education Statistics, in academic year 2013–14, postsecondary institutions spent \$517 billion. Total expenses were \$324 billion at public institutions, \$173 billion at private nonprofit institutions, and \$21 billion at private for-profit institutions.⁷

62% of all surveyed Americans support making public universities, colleges and community colleges tuition-free for anyone who attends.⁸ Hillary Clinton and the Democrat Party agree.

According to the Clinton's campaign website⁹, under the Clinton Plan, families with 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 will 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. Her 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 will 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 will be afforded childcare assistance.

If Hillary Clinton and her 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, the Clinton Plan claims that tuition-free postsecondary education “will be fully paid for by limiting certain tax expenditures for high-income taxpayers”.

Supporters argue that tuition-free education will help enroll and graduate more people, and therefore pay for itself via increased government taxes and economic growth. While this argument may be partly 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 postsecondary education, and the deleterious impact of the ever increasing number of low-skilled workers who leave the workforce for public assistance and the underground economy.

From a Jobenomics perspective, while it is beneficial to get a college or university degree for the higher 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.

⁷ 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>

⁸ 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>

⁹ Hillary, Making college debt-free and taking on student debt, retrieved 1 August 2016, <https://www.hillaryclinton.com/issues/college/>

Not all degrees are created equal. According to another recent Georgetown study¹⁰, 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 roughly equal to benefits provided by a dozen other states.

The BLS 2016-17 Occupational Outlook Handbook (OOH), the U.S. government's premier job market reference source, includes 576 detailed occupations (about 83% of total employment).¹¹ According to the OOH, in 2014, the top 50 occupations employed 80,012,200 out of a total 150,539,900 employed Americans, which equates to 53% of the U.S. workforce. The bottom 526 OOH occupations employ 70,527,000 Americans, or 47%. Rate of growth for the top 50 occupation is projected at 8% compared to the bottom 526 rate of growth of 4%. Within the top 50, 14 college degree plus occupations (listed below) are projected to grow at 13%.

Top 50 Growth Occupations (With College Degree): 2014 to 2024

College Degree	Occupation	Number of Jobs In 2014	Number of New Jobs	Growth Rate	2014 Median Pay	\$/Hour
1	Registered nurses	2,751,000	439,300	16%	\$66,640	\$32.04
2	Software developers	2,228,000	373,200	17%	\$97,990	\$47.11
3	General and operations managers	2,467,500	147,000	6%	\$102,750	\$49.90
4	Accountants and auditors	1,332,700	142,400	11%	\$69,940	\$31.70
5	Management analysts	758,000	103,400	14%	\$80,880	\$38.89
6	Computer systems analysts	567,800	118,600	21%	\$82,710	\$39.76
7	Physicians and surgeons	708,300	99,300	14%	\$187,200	\$90.00
8	Market research analysts and marketing specialists	495,500	92,300	19%	\$61,290	\$28.47
9	Elementary school teachers	1,517,400	87,800	6%	\$53,760	\$25.84
10	Personal financial advisors	249,400	73,900	30%	\$81,060	\$38.97
11	Physical therapists	210,900	71,800	34%	\$82,390	\$39.61
12	Medical and health services managers	333,000	56,300	17%	\$92,810	\$44.62
13	Secondary school teachers	961,600	55,900	6%	\$56,310	\$26.87
14	Computer and information systems managers	348,500	53,700	15%	\$127,640	\$61.37
Total Top 50 Occupations Requiring A College Degree		14,929,600	1,914,900	13%		
Top 50 Total		80,012,200	6,796,000	8%		
Bottom 526 Occupations		70,527,700	2,992,900	4%		
Grand Total Employment/Jobs		150,539,900	9,788,900	7%		

These 14 college-decreed occupations are projected to generate 1,914,900 new jobs over the 10-year period with substantially higher wages than average. The two occupations that will produce the majority of new jobs include 439,300 registered nurses (\$66,640 median pay in 2014) and 373,200 software developers (\$97,990 median pay). The two highest paying occupations are 99,300 new physicians and surgeons (\$187,000 median pay) and 53,700 new computer and information systems managers (\$127,640 median pay).

¹⁰ 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>

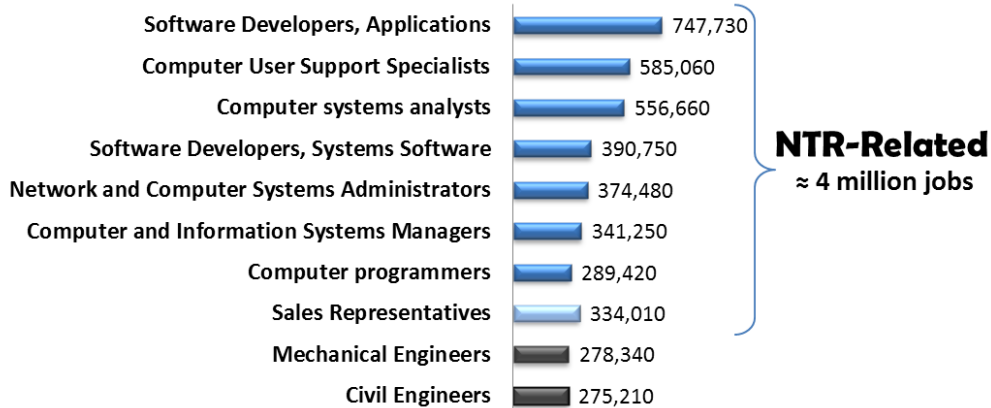
¹¹ BLS, 2016-17 Occupational Outlook Handbook, Table 1.3, <http://www.bls.gov/ooh/>

According to a recent PayScale study, the college degrees that are most likely (50%+) to lead to underemployment are: Criminal Justice (62%), Business Management & Administration (60%), Healthcare Administration (58%), General Studies (55%), Sociology (53%), English Language & Literature (52%), Graphic Design (52%), Liberal Arts (50%), Education (50%) and Psychology (50%).¹²

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 Network Technology Revolution (NTR) and the emerging digital economy will capture approximately 4 million of the 9.8 million new jobs projected by the BLS as shown below.

Employment in the Largest U.S. STEM Occupations in 2015

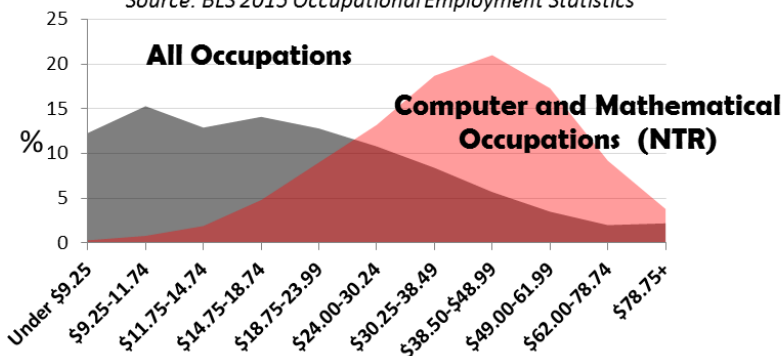
Source: BLS 2015 Occupational Employment Statistics



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 as indicated by the BLS 2015 Occupation Employment Statistics data.¹³

Wage Ranges for Occupations in 2015

Source: BLS 2015 Occupational Employment Statistics



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

¹² PayScale, Underemployment Report, <http://www.payscale.com/data-packages/underemployment>

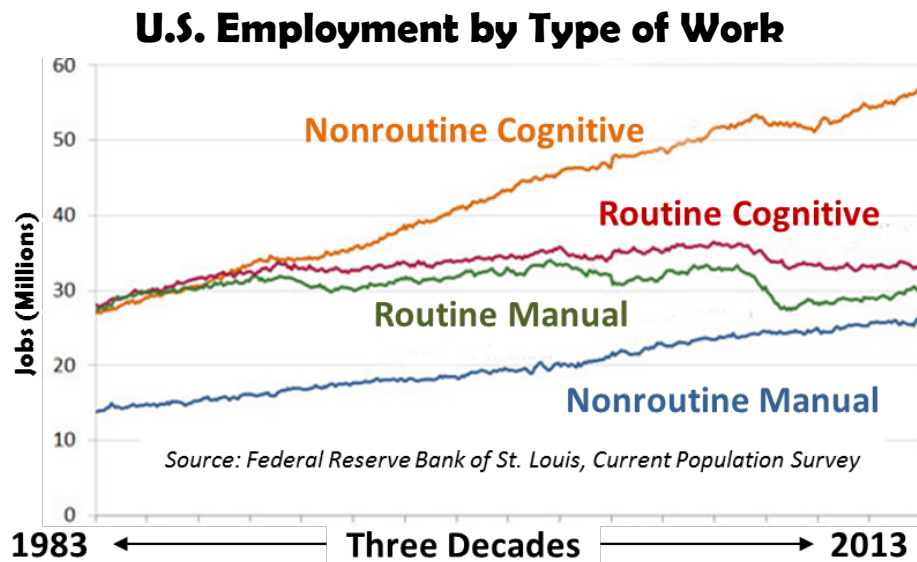
¹³ BLS, Occupational Employment Statistics, Data tables for the overview of May 2015 occupational employment and wages, http://www.bls.gov/oes/2015/may/featured_data.htm#largest

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-Oriented Training. 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 economic 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 the Democrat Party achieves its goal of tuition-free college education, 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 the labor market.

The Network Technology Revolution is obsoleting workers via automation, intelligent agents and smart machines. According to an Oxford University study on computer automation “about 47% of total U.S. employment is at risk over the next two decades”. If Oxford’s estimates are correct, out of the 143 million U.S. nonfarm workers, 67 million jobs could be at risk. This obsolescence will impact all workers, including degreed workers, who have routine manual and cognitive skills.



According to a Federal Reserve Analysis, 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.¹⁴ 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 is

¹⁴ 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>

also a major factor as standard full-time jobs are giving way to temporary part-time and task-oriented work.

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.¹⁵

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 depressed and disenfranchised communities, especially in many of the large metropolitan inner-cities, Jobenomics emphasizes three basic forms of skills training: tradecraft, communication and business.

- 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.
- The third priority is small business creation with emphasis on services-providing startups that can be created and implemented with short-term training and certification programs. Jobs don't create jobs, business do, especially small businesses. 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.

¹⁵ Prison Policy Initiative, Mass Incarceration: The Whole Pie 2016, <http://www.prisonpolicy.org/reports/pie2016.html>

Job “Skill” Zones 1 Through 5

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>	

A Job Skill 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 economic 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.

According to a 2013 CATO Institute study¹⁶, “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 outweigh the promise of degreed-jobs which have proven to be increasing elusive and unattainable in today’s polarized labor market. In addition, many disenfranchised individuals in financially depressed communities exhibit anti-establishment and counter-cultural attitudes that view standard work as passé, outmoded and less lucrative than they

¹⁶ 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

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.

Top 50 Growth Occupations (No College Degree): 2014 to 2024

Data Sources: BLS, Occupational Outlook Handbook, Employment Projections, Table 1.3

No College Degree	Occupation	Number of Jobs In 2014	Number of New Jobs	Growth Rate	2014 Median Pay	\$/Hour
1	Personal care aides	1,768,400	458,100	26%	\$20,440	\$9.83
2	Food and beverage serving workers	4,731,800	451,800	10%	\$18,550	\$8.92
3	Home health aides	913,500	348,400	38%	\$21,380	\$10.28
4	Retail salespersons	4,859,600	331,000	7%	\$21,670	\$10.42
5	Nursing assistants	1,545,200	267,800	17%	\$25,090	\$12.06
6	Customer service representatives	2,581,800	252,900	10%	\$31,200	\$15.00
7	Construction laborers	1,386,400	180,100	13%	\$30,190	\$14.51
8	Laborers and freight, stock, and material movers	3,719,300	175,500	5%	\$23,560	\$11.33
9	Medical assistants	591,300	138,900	23%	\$29,960	\$14.41
10	Janitors and cleaners	2,360,600	136,300	6%	\$22,840	\$10.98
11	Secretaries and administrative assistants	3,976,800	118,800	3%	\$35,970	\$17.30
12	Medical secretaries	3,976,800	118,800	3%	\$35,970	\$17.30
13	Licensed practical and licensed vocational nurses	719,900	117,300	16%	\$42,490	\$20.43
14	Sales representatives, wholesale and manufacturing	1,800,900	117,200	7%	\$58,380	\$28.07
15	Heavy and tractor-trailer truck drivers	1,797,700	98,800	5%	\$39,520	\$19.00
16	Receptionists and information clerks	1,028,600	97,800	10%	\$26,760	\$12.87
17	Cooks, restaurant	2,290,800	97,000	4%	\$21,120	\$10.16
18	Office clerks, general	3,062,500	95,800	3%	\$28,670	\$13.78
19	Billing and posting clerks	1,426,500	89,300	6%	\$36,230	\$17.44
20	Computer user support specialists	766,900	88,800	12%	\$50,380	\$24.22
21	Electricians	628,800	85,900	14%	\$51,110	\$24.57
22	Stock clerks and order fillers	2,924,300	84,700	3%	\$25,810	\$12.41
23	Maintenance and repair workers, general	1,374,700	83,500	6%	\$36,170	\$17.39
24	Teacher assistants	1,234,100	78,600	6%	\$24,430	\$11.74
25	Landscaping and groundskeeping workers	1,282,000	77,600	6%	\$24,810	\$11.93
26	Industrial machinery mechanics	464,400	73,400	16%	\$47,450	\$22.82
27	Childcare workers	1,260,600	69,300	5%	\$19,730	\$9.48
28	Waiters and waitresses	2,465,100	68,900	3%	\$18,730	\$9.01
29	Cashiers	3,424,200	67,000	2%	\$19,060	\$9.16
30	Hairdressers, hairstylists, and cosmetologists	656,400	64,400	10%	\$23,200	\$11.15
31	Carpenters	945,400	60,400	6%	\$40,820	\$19.63
32	Bartenders	580,900	60,100	10%	\$19,050	\$9.16
33	Dental assistants	318,800	58,600	18%	\$35,390	\$17.02
34	Emergency medical technicians and paramedics	241,200	58,500	24%	\$31,700	\$15.24
35	Security guards	1,102,500	55,000	5%	\$24,470	\$11.76
36	Food preparation workers	873,900	54,800	6%	\$19,560	\$9.40

Total Top 50 Occupations Requiring No College Degree 65,082,600 **4,881,100** 7% **Below \$15 Min Wage**

36 of the top 50 fastest growing OOH occupations require less than a college degree. Within the top 36 non-college degree occupations, the number of projected new jobs range from a high 458,100 new personal care aid jobs to a low of 54,800 food preparation worker job openings over the next decade (2014-2024). In the base year (2014), the labor pool of these combined 36 occupations was 65,082,600 workers with an average projected growth rate of 7%, which should generate 4,881,100 net new jobs over the ten-year period. Many job-seekers will pursue degree-oriented programs to be competitive for these 4,881,100 non-college positions. Many more will seek certification-oriented programs to learn specific skills to be competitive.

As highlighted in red the OOH list, 25 out the 36 non-college occupations are projected to make less than \$15 per hour, the hourly “livable” wage benchmark. 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.

Most people perceive that minimum wage laws apply mainly to the fast-food industry. 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 nationwide, if all current able-bodied Americans who can work were considered, 159 million citizens make below minimum wage or no wage at all.¹⁷ 44 million Americans in the top 50 projected highest growth occupations listed would need an hourly increase in pay of up to \$6 per hour.¹⁸ According to California Governor Jerry Brown, California’s new minimum wage law will increase the wage for about 6.5 million Californian residents or 43% of the state’s workforce.¹⁹ Major cities that have high costs of living are likely to easily absorb \$15/hour, but smaller cities and rural areas with lower cost of living may not find it so easy. The impact on small business creation and sustainability would be significant.

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 automation to avoid the \$15 wage hike. At the end of the day, fewer people will be hired, valuable skills training would be curtailed and upward mobility diminished.

¹⁷ 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

¹⁸ BLS, 2016-17 Occupational Outlook Handbook, Table 1.3, <http://www.bls.gov/ooh/>

¹⁹ 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/>



Rather than instituting a universal minimum wage, Jobenomics prefers workforce incentives and supplements that would encourage 15 million unemployed and underemployed workers, 16 million new workforce entrants per year and 95 million sidelined able-bodied citizens to choose workfare over welfare. Rather than funding people not to work, subsidize them to work by providing ways to bridge the gap between low wages and livable wages.

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 assist people who desire to become self-sufficient via workfare. It would be better to teach people to fish for a living rather than continually providing fish for sustainment.

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 startup businesses, funding should be applied to standardized training and certification programs. Easily accessible low interest loan programs, like the Home Affordable Refinance Program (HARP), should 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.