

The Economics Of It All

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¹ In this and all my other essays, I will periodically add applicable supplemental information as new information becomes available. Therefore, this published year refers to its first release to the public.

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Is “College For All” Really Appropriate?

Many in the political and academic communities argue that our society must pursue a “college for all” scenario. It is believed this is necessary to remain internationally competitive, to provide opportunity for everyone to “rise to the top,” and to eliminate poverty. While there is truth in the need for better education, it does not necessarily follow that there must be more. Quality over quantity, as in most things, is a far better approach to remedying any society’s educational, economic, and social dilemmas. Current U.S. leaders are focused on quantity with almost no consideration for quality. As pointed out in my *Quality of Education* essay regarding efficiencies relative to individuals, quality over quantity provides far greater economic efficiencies for society – this is an important consideration given the constant battles over resource allocation of any community, regardless of size.

Scott and Cooper (2016) appear to lament the fact that only around one-third of U.S. citizens possess an undergraduate degree, though they do understand it is not for everyone. However, their solution is political manipulation of market forces rather than pursuing the cause of the problem.

It is no secret that wages for typical workers have stagnated over the past 35 years. The lagging recovery of construction and manufacturing sectors, two sectors which traditionally provide strong wages for workers without college degrees, is one reason for this wage stagnation. ...

We cannot solve the problem of low and stagnating wages for non-college educated workers by expecting everyone to pursue more education. We need solutions that will raise wages for *all* workers, regardless of educational attainment. These solutions include raising the minimum wage, strengthening collective bargaining rights, ... and reducing our trade deficit by stopping destructive currency manipulation.

While stopping destructive currency manipulation certainly makes a lot of sense, raising minimum wage and strengthening collective bargaining rights exacerbate the problem. They miss the mark when they discuss the issue of quantity of education. What's missing is skill attainment that must be accomplished during the secondary years rather than post-secondary years. It's an issue of quality over quantity during the formative years – when it really matters! Missing this mark leads people to believe that government intervention and controls are necessary to address dysfunctional behavior in the educational establishment. It's the age-old problem of dealing with symptoms rather than causes.

Vedder et al. (2013), from the Center for College Affordability and Productivity, list the shortcomings in arguments made for more schooling; in particular, over-credentialing through formal education programs. They state “Increasing numbers of recent college graduates are ending up in relatively low-skilled jobs that, historically have gone to those with lower levels of educational attainment.” The following are some of the points they make:

- “About 48% of employed U.S. college graduates are in jobs that the Bureau of Labor Statistics (BLS) suggests requires less than a four-year college education
- The proportion of overeducated workers in occupations appears to have grown substantially; in 1970, fewer than 1% of taxi drivers and 2% of firefighters had college degrees, while now more than 15% do in both jobs
- About 5 million college graduates are in jobs the BLS says require less than a high-school education
- Not all majors are equal: Engineering and economics graduates, for example, typically earn almost double what social work and education graduates receive by mid-career
- Past and projected future growth in college enrollments and the number of graduates exceeds the actual or projected growth in high-skilled jobs, explaining the development of the underemployment problem and it's probable worsening in future years
- Rising college costs and perceived declines in economic benefits may well lead to declining enrollments and market share for traditional schools and the development of new methods of certifying occupation competence.”

The last point is a natural outcome when supply exceeds demand of a given product/service, especially when prices rise faster than any other economic sector, as we see in education.

Additional points need to be added to the list that Vedder and his colleagues provide:

- “45% or so of those entering college fail to graduate within 6 years
- Not everyone earns the average [income level of a college graduate] – maybe one-third of those who graduate make at least 20% less than the average
- A large proportion of the earnings gains associated with attending college come only upon completion of the college degree”
- If a degree is not achieved, or a degree is had that has little to no demand in the marketplace, college loan repayments frequently make life worse since there is typically no earnings gain for either scenario but a mountain of debt must be repaid
- The college debt burden has become overwhelming with many defaulting on loans.

Pew (2012) provides further insight into the college debt crisis:

Among respondents in the March 2011 Pew Research Center survey who say they took out college loans and are no longer in school, about half (48%) report that paying back the loan has made it harder to make ends meet; 25% say it has made it harder to buy a home; 24% say it has had an impact on the kind of career they are pursuing; and 7% say it has delayed their getting married or starting a family.

Fernandez (2017) reflects on student loan debt defaults. “According to the New York Federal Reserve, U.S. student loan debt has soared to \$1.3 trillion becoming the second highest consumer debt category, more than both credit cards and auto loans.” He then shares a Fox Business interview with Washington College President and former Federal Deposit Insurance Corporation (FDIC) Chair Sheila Bair who said “if the student debt bubble bursts ... [it] could spark the next financial crisis, since it is a ‘tremendous drag’ on the U.S. economy. ... Bair said student loan debt is thwarting the creation of small businesses and affecting job growth as college graduates opt for safe corporate jobs to pay back the loans.” This is an example of how government intervention distorts life decisions. We see the same forces play out where individuals choose companies to work for that provide better health care rather than for career aspirations.

Vedder et al. (2013) reveal the growing disconnect between what academia offers and what citizens, employers, and society need.² They show “that in some categories of occupations historically almost completely shunned by college graduates, recent college graduates are effectively crowding out those with lesser education for jobs.” With such an excess in supply of over-educated individuals – who will work for the same wages as high school graduates and even high school non-completers – it is no wonder those with postsecondary credentials have a lower unemployment rate than their lesser educated brethren.

² This is nothing unusual as Quigley (1964) explains. People join forces in new associations to improve some social need, but in time, the association evolves into an institution where its members marginalize the original intent of their compact and become more concerned with their own interests, coming at a high cost to society.

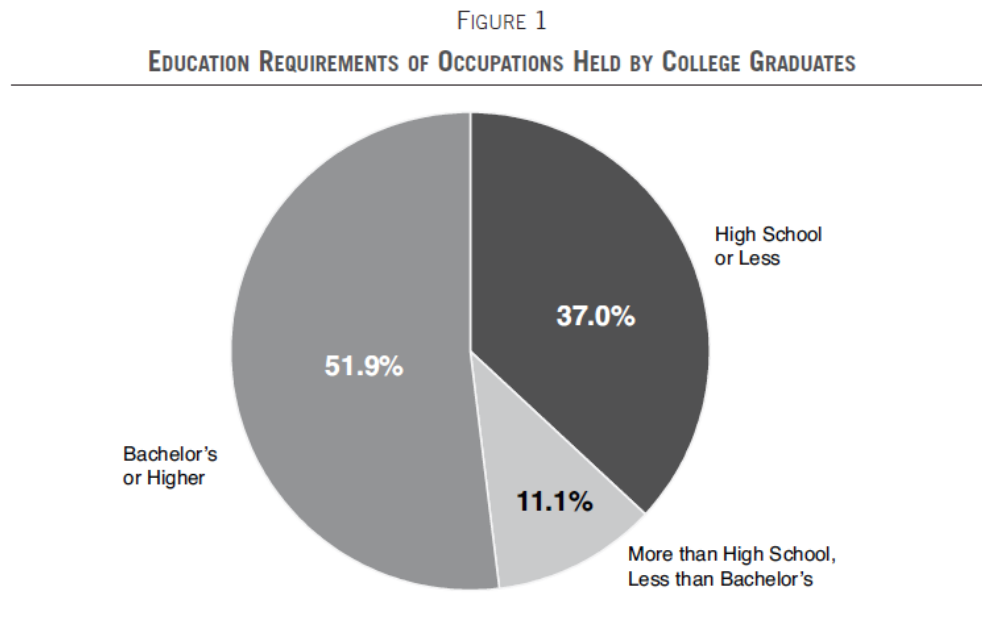
Charts and graphs Vedder and his colleagues offer (Figures 1, 2, 3, and 5 below) reveal startling data that is typically not disclosed to the public. They state:

Figure 1 presents 2010 data for 41.7 million working college graduates and illustrates that *barely half of college graduates are in occupations requiring bachelor's degrees or more*. Some 37%, in fact, are in jobs requiring a high-school diploma or less, and about 11% in jobs typically requiring some postsecondary training, usually an associate's degree. ...

The basic problem is that *the stock of college graduates is far greater than the number of jobs requiring a bachelor's degree or more* (see Figure 2). There are over 13 million more working college graduates than jobs requiring a bachelor's degree or more (several million jobs requiring bachelor's degrees are in fact filled with those with lesser education, so the actual number of college graduates in jobs requiring less than a college degree is over 20 million), according to these data. ...

Credential inflation is pervasive. And as Herrnstein and Murray noted nearly two decades ago [*in The Bell Curve*], one by-product of this phenomenon is a dumbing down of the college curriculum; as they put it credentialism ... is part of the problem, not the solution.' ...

Can we afford to expend \$100,000 or more in resources giving kids a college degree, only to see them take taxi driver jobs...? Can we afford to lose the labor services of 18- to-22 year olds³ going to college for little employment advantages, persons who could start driving a taxi or working as a bank teller at 18 instead of 22?



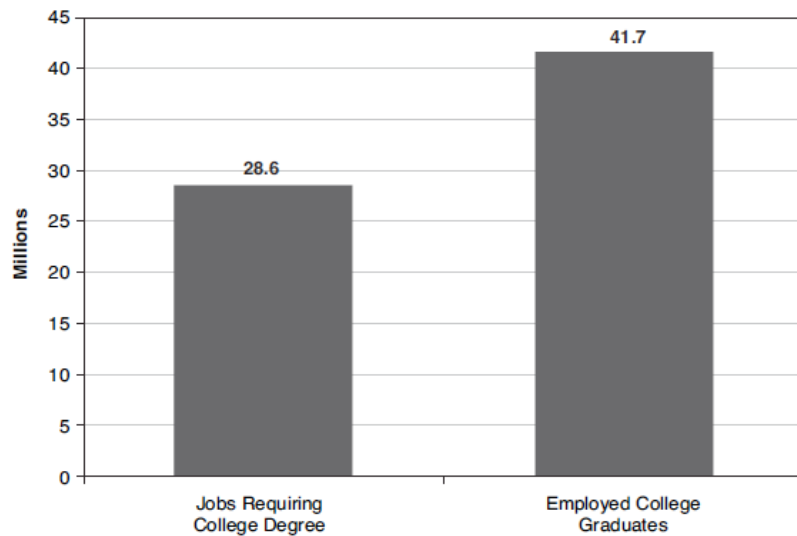
Source: U.S. Bureau of Labor Statistics, authors' calculations

³ Though it's more like 24 year olds since 59% take 6 years to graduate.

Figure 5 (see below) uncovers the volume of jobs in the private sector that would benefit by a high school curricula covering applied studies in, amongst other applied subjects, business related areas such as microeconomics, financial management, operations management, marketing management and human resource management; though not with the same type of programs typically offered in college that frequently teach subjects as though one will pursue a career in them. However, all that is needed at the high school level is an overview in order to familiarize individuals with the business structure, language, and environment.

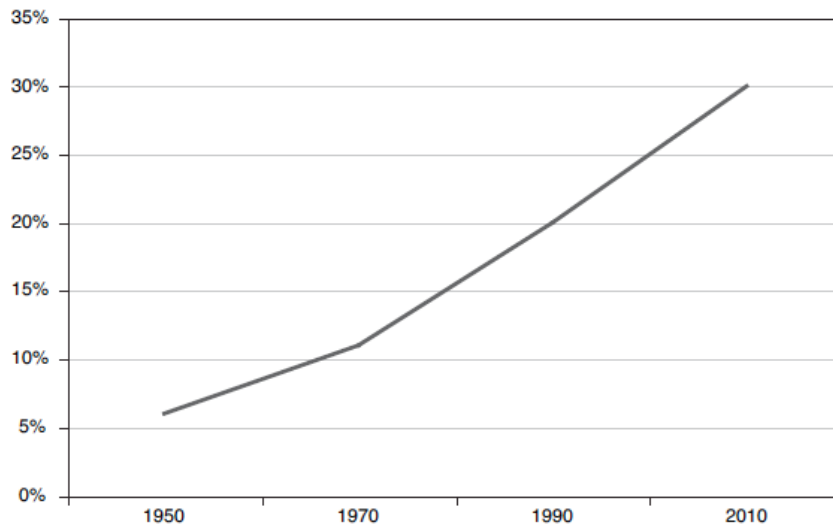
Something that never seems to be discussed is the stress experienced and the blow to individuals' confidence when they are unable to land jobs they were lead to believe would be theirs for the picking once a diploma was in hand. Many remain unemployed rather than taking jobs "beneath them." Some remain unemployed for extended periods of time while living with parents, waiting for their ship to come in. They were sold a bill of goods and will accept nothing less than what they were promised and what they paid for. It can be imagined, egos are crushed – with depression being the byproduct – in many cases since they blame themselves rather than a dysfunctional education system.

FIGURE 2
JOBS REQUIRING A COLLEGE DEGREE VS. NUMBER OF COLLEGE GRADUATES



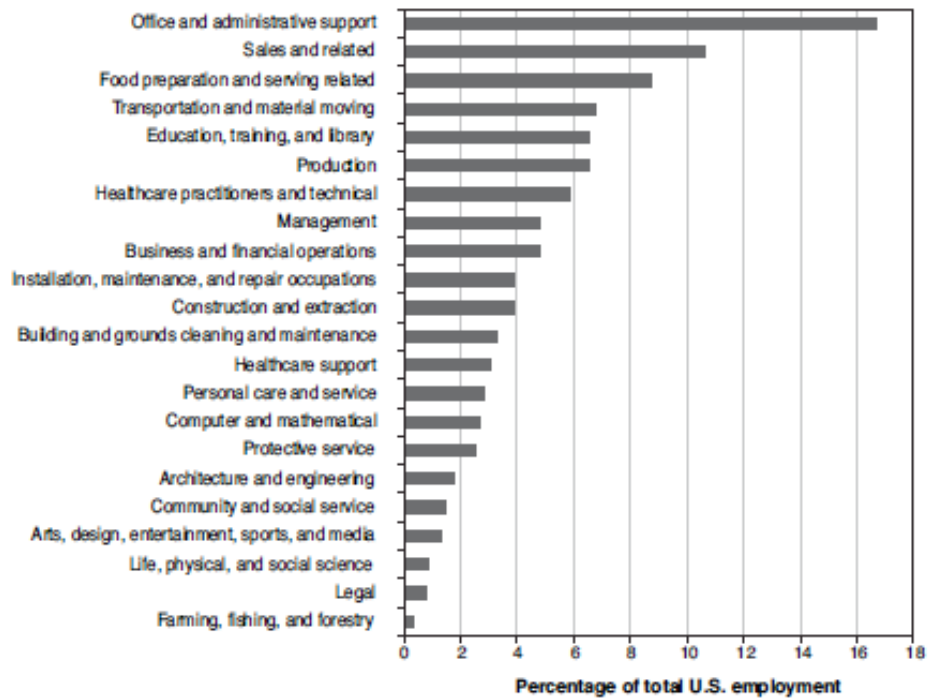
Source: U.S. Bureau of Labor Statistics

FIGURE 3
PERSONS 25 YEARS OR OLDER WITH COLLEGE DEGREES, 1950–2010



Source: U.S. Bureau of the Census

FIGURE 5
MAJOR OCCUPATIONAL GROUPS AS A PERCENT OF US TOTAL EMPLOYMENT, MAY 2011



Source: U.S. Bureau of Labor Statistics

The State of Educational Investment

Vedder and his colleagues raise some relevant questions:

- Is the increased amount of education – the current 16 versus the previous 12 years – really necessary to prepare youth for work?
- Has the quality of primary and secondary education deteriorated to the point where postsecondary education is required to make up for it?
- Have we reached the point of diminishing returns in higher education – the point at which additional resources invested provides little to no additional return?
- Is the assumption we will experience increased economic growth with increased higher educational investment accurate? They conclude it is highly questionable.

Vedder and his colleagues offer: “The *Wall Street Journal* recently proclaimed, ‘demand for four-year college degrees is softening.’ Yet public policies such as massive federal loan subsidies often distort outcomes and prevent a stable and economically effective equilibrium being reached. As someone once joked, ‘when we see light at the end of the tunnel, the government adds more tunnel.’”

Carapezza (2016) points out, “There’s been a big push in this country to get more students into and through college. But according to a new report by the National Student Clearinghouse, the number of people who earn a degree in the U.S. has remained flat since 2012.” And for good reason! The demand simply isn’t there and yet academics aren’t listening. They believe the flatness is troubling – perhaps troubling for their careers, but certainly not troubling for citizens and society.

Vedder (July 20th, 2012) offers an additional angle to consider:

Partly by design, colleges develop cultures that are relatively isolated from the real world. Highly subsidized, the university community is loath to change, contemptuous of the discipline of markets. College professors hold views on a wide variety of issues fairly widely at variance with those of the American population, for example. Concern about labor-market outcomes of students is decried by some as ‘mindless vocationalism’ or ‘corporatist thinking.’

This is due, in many cases, to professors’ own inability to survive in such an environment – they simply don’t have the talent/intelligence for the market. This frightens them and produces insecurities, which is the reason for their contempt of it (people instinctively hate that which frightens them). If they were truly capable, they would be confident of their abilities and wouldn’t need the protections they currently expect and enjoy. Throughout my years in various social environments, I’ve always found that people who are highly competent are very confident, though not arrogant, and don’t need to prove anything to anyone. However, those who are incompetent, but want to parade an air of expertise to fool the world, are extremely insecure and arrogant. I have observed this dysfunctional behavior in many college professors.

Herrnstein and Murray (1994, p. 438) reference research done by J. H. Bishop:

Bishop ... shows that achievement in high school does not pay off in higher wages or better jobs. Many employers assume that the high school diploma no longer means much more than that the student warmed a seat for twelve years. ... Bishop found that better test scores in science, language arts, and math were associated with *lower* wages and employment among young men in the first ten years after high school.

Is this due to the high expectations students have coming from an academic, ivory tower type of environment, only to realize they are completely unfamiliar, and therefore uncomfortable, with the real world of work? Or is it due to the content of the instruction (i.e. abstract data) having little to do with the real world that people experience, causing students' minds to be molded into an abstract disconnected instrument rather than a functionally reasoning mechanism?

They continue:

Students, like everybody else, respond to what's in it for them. There's close to nothing in it for them in working hard in high school. Ergo, they do not work hard in high school.

On page 38, they explain that employers are uninterested in high school performance since there is little to no correlation between school and work performance. There is a large divide between the two beyond foundational literacy and numeracy abilities. But even here, the abstractness of academic math and the creative writing and politically correct literature dominating language arts, disconnects these two disciplines from the real world as well, making it difficult to transfer academic learning to application. In essence, the academic world of public schools and the real world are so far apart, the transition is exceedingly difficult to bridge.

Abel et al. (2014a) analyzed college majors and the differences in employment outcomes between them. They classified undergraduates as belonging to one of 13 majors and then compared unemployment and underemployment by major for the 2009-11 period. They characterized

the labor market situation for recent college graduates by looking at three possible labor market outcomes for each graduate: unemployed, employed in a job where a bachelor's degree is required, and employed in a job where a bachelor's degree is not required. We then identify the share of recent college graduates in each of the thirteen majors that has experienced each of these outcomes (Chart 7). We find that unemployment rates across majors range from 3 percent to 8 percent.

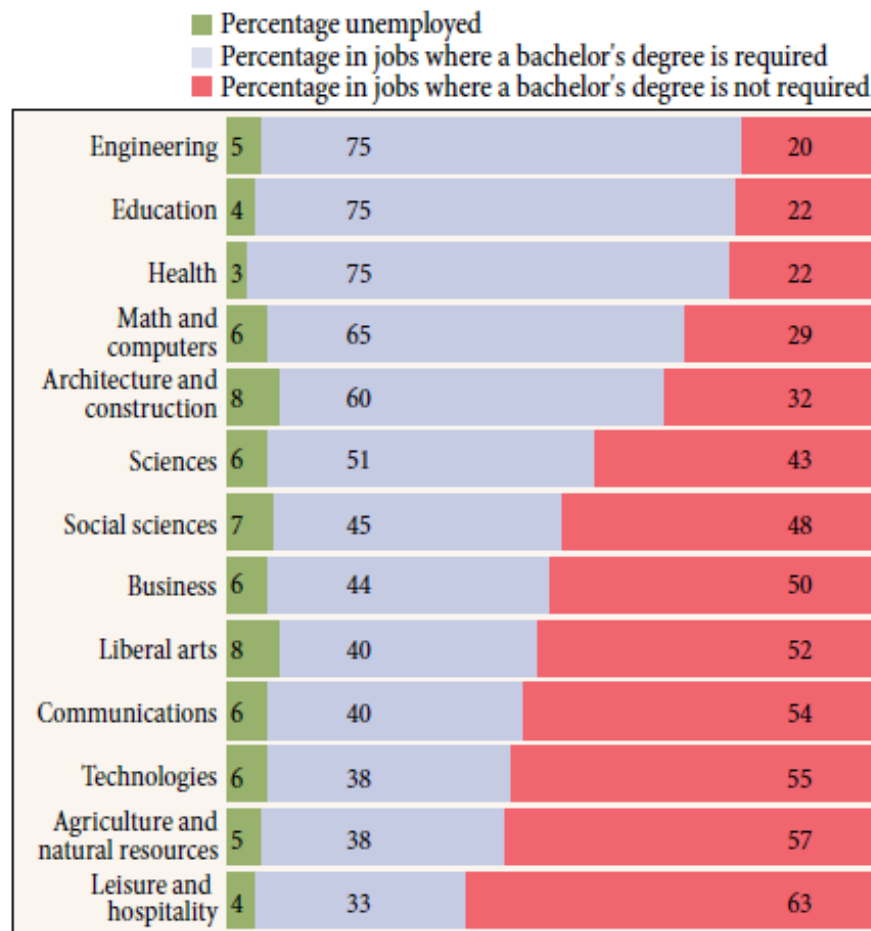
They point to the stability of the education and health sectors but the weakness of architecture and construction during this recessionary period. "In addition, many of the majors that provide general training – that is, training that is not occupation-specific or highly technical in nature – also ranked relatively low on this dimension. In particular, only 40 to 45 percent of recent college graduates majoring in communications, liberal arts, business, and social sciences were working in jobs that required a degree."

The authors of this report conclude:

[B]oth unemployment and underemployment have followed a clear upward trend for recent college graduates over the past two decades, and particularly since 2001. In addition, it has become more common for underemployed college graduates to find themselves in low-wage jobs or to be working part-time.

Chart 7

Employment Outcomes for Recent College Graduates by Major, 2009-11



Sources: U.S. Census Bureau, American Community Survey; U.S. Department of Labor, O*NET.

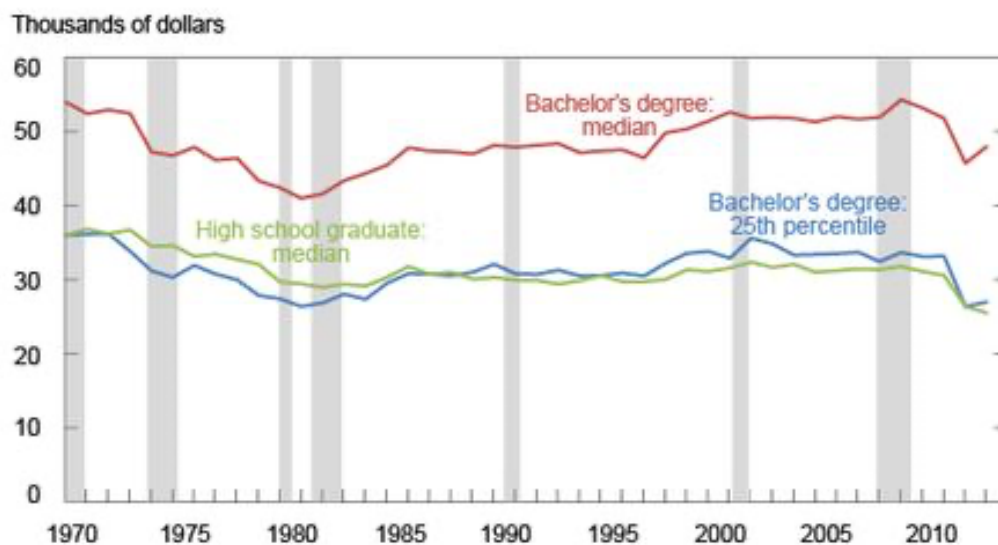
Notes: *Recent college graduates* are those aged 22 to 27 with a bachelor's degree or higher. All figures exclude those currently enrolled in school. Because of rounding, figures in each bar may not sum to 100.

The [HEA Group](#) (2024) examined “the economic outcomes that students obtain by pursuing a postsecondary credential within the United States. Specifically, we look at several minimal economic benchmarks to see just how many colleges exceed – or fail to meet – basic financial outcomes for the students who attend.” The results are not what one would expect. While results were good for a number of educational institutions, there was a significant number who do not deliver. The phrase, *buyer beware*, applies as much to public institutions as to private.

“Averages Lie”

While Abel et al. (2014b) confirm that *on average* the economic benefits of a college degree outweigh the costs, they report that “a good number of college graduates earn wages that are not materially different from those of the typical worker with just a high school diploma. This suggests that, at least from an economic perspective, college may not pay off for a significant number of people.” They describe that “averages” mask important trends. They provide a chart that “plots the median annual wage for full-time employed workers with a bachelor’s degree between 1970 and 2013, together with the median annual wage for those with only a high school diploma. We also plot the annual wage for the 25th percentile of college graduates. All figures are expressed in constant 2013 dollars.” (See below)

Annual Wage by Education, 1970-2013



Source: U.S. Census Bureau and U.S. Bureau of Labor Statistics, Current Population Survey, March Supplement; U.S. Bureau of Labor Statistics, consumer price index.

Notes: Dollar figures are expressed in constant 2013 dollars. Shaded areas indicate periods designated recessions by the National Bureau of Economic Research.

The wage premium of the “average” college graduate demonstrates the economic benefits make it worthwhile to *consider* pursuing a bachelor’s degree. However, they add a caveat: “**As we have cautioned before, this earnings gap may arise at least in part from differences in the skills and abilities of those who earn a college degree compared with those who don’t, rather than from the knowledge and skills acquired while in college.**” (Emphasis added.) Indeed, in small companies, native ability accounts for success far more than degrees or knowledge acquired in formal educational settings, except for the highly technical careers such as engineering.

When Abel and his colleagues separated the wages of the college graduates for the 25th percentile, they found almost no difference between these college graduates and the median wage for high school graduates. Further, they state:

This means that the wages for a sizable share of college graduates below the 25th

percentile are actually less than the wages earned by a typical worker with a high school diploma. ... [T]his pattern strongly suggests that the economic benefit of a college education is relatively small for at least a quarter of those graduating with a bachelor's degree. ... [O]nce the costs of attending college are considered, it is likely that earning a bachelor's degree would not have been a good investment for many in the lowest 25 percent of college graduate wage earners. So while a college degree appears to be a good investment on average, it may not pay off for everyone.

Anthony Carnevale, the director of the Georgetown University Center on Education and the Workforce, says, “**averages lie.**” (Arnold, 2015) “**He says the problem with those averages is that people who work at RadioShack or Target get lumped in with master carpenters and electricians.**” **In contrast, doctors, lawyers, and engineers are lumped in with college graduates who possess degrees for which there is little to no demand.** (Emphasis added.)

‘You can get a particular skill in a particular field and make more than a college graduate,’ he says. For example, he says the average electrician makes \$5,000 a year more than the average college graduate. And the country is going to need a lot more skilled tradesmen.

‘We made a mistake,’ Carnevale says. ‘Back in 1983, there was the ['Nation at Risk' report](#) in which, quite rightly, we all were appalled at the quality of education in America.’

After that, he says, most high schools focused on academics and getting students ready for college. For a lot of parents, they wanted their kids to have a four-year degree. But Carnevale says, in the process ‘**we basically obliterated the modernization of the old vocational education programs and they've been set aside.**’ (Emphasis added.)

Another demonstration of how “averages lie” is provided by Dale and Krueger (2002). They point out, “Past studies have found that students who attended colleges with higher average SAT scores or higher tuition tend to have higher earnings when they are observed in the labor market.” They then ask, “Does the ‘quality’ of the college that students attend influence their subsequent earnings?” They conclude “we find that students who attended more selective colleges earned about the same as students of seemingly comparable ability who attended less selective schools.” Therefore, we can see that success is based primarily on individual attributes rather than what academia hopes we will buy into, and that vague or general statistics can be highly misleading. We must dig deeper into the data and measure more qualitative aspects. We need to learn an important lesson from this research: status and prestige are fleeting pursuits that cause people to expend energy on the wrong things.

“Upcredentialing”

Williams (2015) address the phenomena of some employers requiring higher credentials than jobs actually require.

“Upcredentialing” may not be a familiar term among the general public, but it’s becoming a standard practice among employers. According to [a recent study](#) by Boston-

based analytics firm Burning Glass Technologies, many employers now prefer a bachelor's degree – even for jobs that previously required only a high school diploma or an associate degree.

Burning Glass compiled millions of daily job postings from over 40,000 websites, analyzing each employer's requirements. The company then compared employers' educational requirements with those in the 2011 and 2012 American Community Survey Standard Occupational Codes. The study revealed significant gaps between the educational level of current job holders, and employers' expectations for their future employees. ... However, the demand for a more educated workforce may also make it harder for employers to fill open positions. ...

What's fueling the trend? GoodCall asked Richard Vedder, Distinguished Professor of Economics Emeritus at Ohio University and Director of the Center for College Affordability and Productivity, ... what's fueling this "upcredentialing" trend.

"Employers are increasing the educational qualifications for jobs beyond traditional norms for a simple reason: they can," says Vedder. He explains that the number of recent college graduates far exceeds the number of job openings that college graduates have traditionally filled – jobs predominantly in the technical (e.g., STEM disciplines), managerial, or professional areas (designed for college grads with advanced degrees).

"Suppose a firm advertises for a position as a secretary to an executive, and gets 30 applicants, 12 with a college degree. It is costly and time consuming to sift through 30 applications, so the firm narrows the search to the 12 degree-holders. On average, the college degree holders will be better academically trained, have more cognitive skills, and be more disciplined than the high school graduates, so as a screening device the employer declares a degree is required." ...

What it means for job seekers: The credential inflation phenomenon will inevitably adversely impact those with less than a bachelor's degree. Vedder concludes, "Unemployment rates are sharply higher for those with lesser education, in part because they are crowded out of some jobs by college grads."

Williams (2016) further writes about "upcredentialing":

[W]ith sticker prices ranging from over \$19,000 a year for in-state public schools to more than \$43,000 annually for private colleges, opinions are all over the board regarding the return on investment that students actually receive on a college degree.

According to a recent [survey](#) by Kaplan Test Prep and MONEY Magazine, many parents and high school counselors are questioning the value-for-cost of college. Selected survey results reveal:

When asked if they thought the cost of college is clearly justified for the value it delivers:

21% of parents agree

58% of parents don't agree
21% of parents aren't sure

Only 37% of high school counselors strongly agree that the cost of college is clearly justified. When asked how often this topic arises during conversations with parents:

12% of high school counselors say it is always discussed
30% of high school counselors say the topic often comes up
32% of high school counselors say the topic comes up sometimes
22% of high school counselors say the topic rarely comes up
4% of high school counselors say the topic never comes up

... And affordability is a major concern. College students are incurring student loan debt at a record-breaking pace. ...

Stephanie Kennedy, co-founder of My College Planning Team, points out that most students anticipate earning their degree in four years. "However, if a student takes five or six years to graduate, the cost of college increases by that much more – and even if they have a merit scholarship, it rarely applies to a fifth or sixth year," explains Kennedy. ...

It is my opinion this is an unsustainable trend since it does not make economic sense over the long term. As we come out of the recent depression, employment trends will not allow companies to demand college graduates where there is no need for them since there will no longer be enough of them who are unemployed or underemployed to fill the demand. In addition, once society discovers that secondary school can indeed be designed to fulfill the needs of individuals and the public interests, this trend will end abruptly.

Contrast "upcredentialing" with the talent shortage *ManpowerGroup* analyzes below.

The Talent Shortage

The *ManpowerGroup Talent Shortage: 2011 Survey Results* analyzes the other end of the educational spectrum: economic demand for skilled labor that our educational system ignores, hence a shortage in many fields. There is no competition with "upcredentialing" in this realm, yet the educational establishment refuses to provide instruction in an economic sector that: is in great need, that pays good wages, and that will lift many out of poverty. One must ask the question why? Prejudice is the answer.

"When asked, 'What is the one job you are having the most difficulty filling due to lack of available talent?' employers on a global basis named technicians, sales representatives and skilled trades workers to the top of the list for the fifth year in a row. " In the Americas technicians, sales representatives, skilled trades workers, engineers, secretaries, personal assistants, administrative assistants, office support staff, drivers, production operators, laborers, accounting finance staff, and managers/executives were the primary jobs at the top of the list as most difficult to fill.

The last on the list, managers/executives, is something to look further into. The best leaders are ones who came through the trenches rather than through the academy – in the military, they are referred to as “mustangs.” This is due to the intricate understanding one acquires on the job that is not possible to teach in a disconnected school setting. The uniqueness and intricacies of real world social settings, such as companies, makes it impossible to cover human dynamics in a classroom. Therefore, providing instruction in business managerial sciences during the secondary years to familiarize students with foundational concepts would be a good method of preparing them to absorb business cultural nuances of the company they will eventually work for. This would prepare them to fill managerial positions once enough experience has been obtained. They could later pursue business studies when they feel ready to sharpen their knowledge of management to improve their effectiveness on the job.

In his conclusion to *Higher Education Pays: But a Lot More for Some Graduates than for Others*, Schneider states:

Technical associate’s degrees carry a far higher value in the labor market than transfer-oriented associate’s degrees. Perhaps more surprising is the fact that in the time frame captured by the data in this report, technical associate’s degrees often carry a far higher value than bachelor’s degrees. Together, the high wages accruing to graduates completing many certificate programs and technical associate’s degrees demonstrate a faster, cheaper route to the labor market that many students should consider before enrolling in academically oriented associate’s degrees or even bachelor’s degrees.

The first page of Stark and Noel’s paper (2015) references the annual wage discrepancy between high school non-completers and high school graduates: \$25,000 versus \$46,000 respectively in 2012. What is never considered is what would happen if everyone had a high school credential? Wouldn’t there still be wage sectors that would fall within categories such as these? Of course they would require some other means of identification, but it would no longer be related to a diploma. What educators, politicians, and bureaucrats fail to see is the big picture based on cause and effect, and there are multiple reasons for wide disparities in income that frequently have nothing to do with diplomas or knowledge acquired through education.

Wealth Versus Education

Boshara et al. (2015) analyze wealth accumulation as it is correlated with levels of education attained.

Our research shows that there’s a strong correlation between education and money. More of the former often leads to more of the latter. However, correlation is not causation – there is no guarantee that more education will lead to more wealth. Many other factors might be in play, such as natural ability, family environment, inheritances and even health.

These social dynamics uncover where educational efforts must be focused if we hope to achieve greater equity in society. (As Natural Law philosophy of the Enlightenment argues, decisions and behavior reveal the positive, neutral, or negative consequences of our actions.) While welfare systems address symptoms of social challenges for those who are severely marginalized,

they do not address causes. If we do not address causes, as is currently the case, we can only expect that a very large percentage of the population will continue to be marginalized and in increasing numbers. And by focusing on special interests (e.g. minorities, women, etc.) we avoid the interests of humans overall. Therefore the welfare system will expand with more citizens being caught up the cycle of poverty, while wealth will continue to be concentrated in fewer hands.

Boshara continues: “It’s entirely possible that what’s learned in the classroom has much less influence on lifetime earnings and wealth accumulation than most people believe.” Cognitive psychologists have confirmed the truth of this by demonstrating the lack of transfer of learning that occurs from the classroom to the real world. The cultural loading of status and prestige bestowed by credentials, compensates for the lack of knowledge and lack of ability to transfer learning by most people. In other words, since few are truly well prepared for the real world, credentials are supposed to be the proxy for skills. However, what is not considered is what Andrew Carnegie indirectly alludes to in his *The Empire of Business*: School prepares people for more school while experience in the working world, through direct application of one’s knowledge and talents, prepares people for life and work. I would argue that we need the combination of the two to be effective in contemporary society. “In fact,” Boshara states, “your ability, family background, inheritances or health might be responsible for some – perhaps a large part – of your success even if you hadn’t received the education you did.”

Gallup’s presentation at the World Innovation Summit for Education (Nov. 2015) pointed out that the Gallup/Lumina 2013 poll disclosed that U.S. executives’ who strongly agree college graduates have necessary skills, is at a dismal 11%. This certainly demonstrates that education is not preparing individuals for work, but that the credential is indeed the lesser of evils to choose from and/or that if there is a high percentage of employees with credentials, then a company feels it can confidently attach prestige to its name by association.

What would be difficult to ascertain raises an important question: What if degrees and certifications had no status or prestige within society, and businesses required demonstration of competence before hiring and before determining compensation? How would the individuals within each of these categories – high school non-completers, high school graduates, associate and bachelor graduates, and post-graduates – fair then? It can be imagined the outcome would be quite different since we know students coming out of college are typically ill prepared for work.

When guilds ruled the trades and crafts of Europe, prior to the Industrial Revolution, in order for an apprentice to be elevated to *master craftsman* in his profession, he had to produce his “masterpiece” to demonstrate he attained the requisite knowledge and skills to produce high quality products. When most of our public educational institutions shunned the manual arts and dedicated efforts on the aristocratic oriented liberal arts program, which had been focused primarily on literary development until the German scientific influence was imported into the U.S., it became very difficult to measure competence in many of the new subjects being taught to satisfy the scientifically oriented social efficiency reformers of the early 20th century. So we adopted multiple choice and true-false assessment tests designed for the elusive “average person,” while abandoning essay writing since it was deemed too subjective a method for a teacher to evaluate objectively. Ever since, literacy competence has suffered with content of

work being marginalized, being replaced by structure and rules, which are easy to judge. This is why credentials supplant competence in the world of employment hiring practices.

Boshara et al. continue:

We should not expect increased educational attainment alone by an individual or group to translate into greater wealth to the full extent suggested by the raw correlation we observe in historical data. If the other key contributors to income, financial behavior and wealth accumulation do not change, the increased level of education alone may be insufficient to generate the increased wealth that a naïve interpretation of the education-wealth correlation would suggest.

How much of the higher earnings, better financial decision-making and high wealth accumulation of college graduates result from their educational experience? Said differently, would these financially successful people have been relatively successful even if they had not earned their degrees? We can never know the answers to these counterfactual questions, but economists have developed methods to shed light on the underlying issue. The research suggests that some, but not all, of the college wage premium is due to the skills imparted by the education itself, while other factors that correlate with educational attainment are partly responsible, as well. We provide evidence in this essay that suggests the same is true for financial behavior and financial outcomes.

[T]he positive correlation we observe between a person's education and his wealth does not imply that education itself is solely responsible for the amount of wealth accumulated. Some factors contributing to the partly spurious correlation include: natural ability ... family background ... incentive to become financially knowledgeable ... [and] benefits of better health and longer lifespans....

The key point is that none of these contributors to wealth is *caused* by having more education. Instead, people who have more education are more likely to benefit from one or more of them – as if by coincidence.

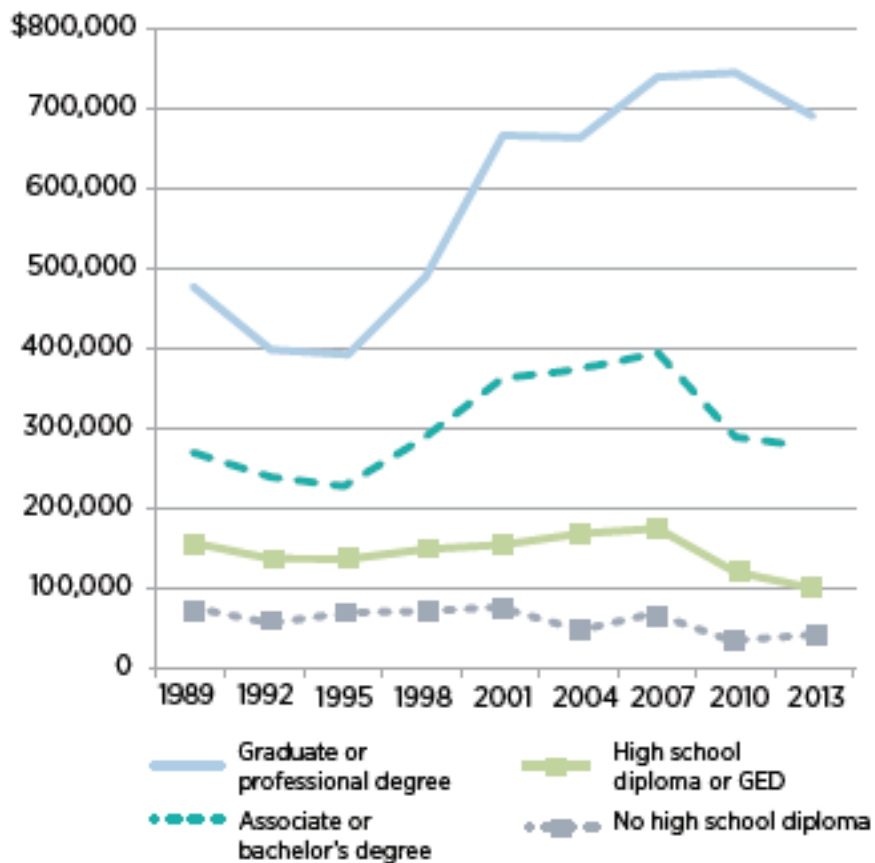
This is an extremely important point since our society has been optimized for those who have academic type of abilities and who follow the educational path. Rather than education offering individuals the knowledge and ability (through application and practice) to be successful, generally speaking, our culture has socially constructed a path through the education system with barriers outside of it that prohibits non-conformers from participating in wealth accumulation. With such a social construct rigidly adhered to by most, there is no perceived need or incentive to change the rules of the game.⁴ A rebellion of some sort by those marginalized might be the only event that forces society to reexamine the educational institution and our cultural perspective of the “value” of credentials. History is full of examples of the marginalized majority

⁴ Feudal Europe provides an example of the optimization of power and wealth for one talent-set and the marginalization of the rest. Warriors were the wealth and power accumulators in this period and they looked down upon scholars as inferior people and having little value. The expansion of one's wealth and political power was dependent upon his ability to fight in battle and to assist his liege lord in conquering new lands as the principal means of accumulating wealth, since land was understood to be the primary representation of wealth.

eventually lashing out at those who optimized the system for their own self-serving interests. It is in this country's best interest to correct the situation before this comes to pass or before a collapse of the economic system results. We cannot continue down the road where the wealth of the minority educated class expands while the wealth of the marginalized majority contracts. This is a recipe for social disaster.

Figure 3 of Boshara's report shows a dangerous trend for any society that hopes to continue to exist long-term. What can be seen is an accelerated growth of the gap between those with wealth and those who are less well off. This reveals how the system has been optimized for academic type talents through accreditation systems, credentialing institutions, and our culture's misguided fixation – bordering on religious fanaticism – on the academic culture. As academic power expands, more people will be marginalized who do not fit the narrowly tailored academic regime. At some point, a perfect storm will develop. History has demonstrated this time and again, but because history is currently taught as a data collection subject rather than a discipline to look for life lessons, we are ignorant of what lies in store for us. We are walking toward the edge of a cliff with our eyes closed.

Figure 3. Median Net Worth of Families Headed by Someone 40 or Older



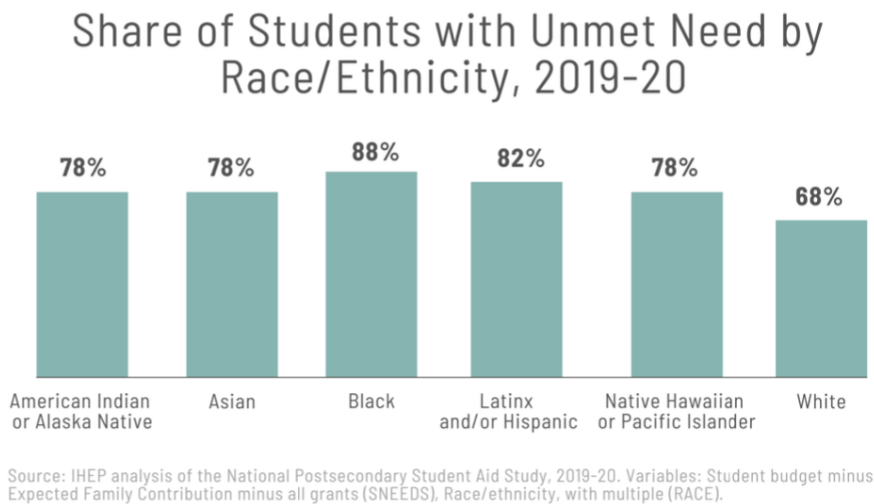
All dollar amounts are expressed in 2013 dollars, deflated by the CPI-U-RS. Median family net worth is the value of total assets minus total debts for the family that ranks exactly in the middle of a ranking by net worth. The median wealth among all families 40 or older declined from \$152,179 in 1989 to \$145,360 in 2013, or 4%.

The authors of this report conclude:

The correlation between education and various measures of economic and financial success does not represent causation exclusively. In fact, there are reasons to believe that the correlation is partly spurious. Factors that are correlated with educational attainment – such as native ability, family background, assortative mating,⁵ incentives to become financially knowledgeable, the likelihood of receiving a sizable gift or inheritance and better health – undoubtedly are responsible for some of the positive outcomes families with more education experience.

What is not mentioned, but may play an important role, is the regulatory tightening of credentials, which is a form of protectionism for both industries who seek credential protectionism (as trade unions as well as the legal and medical professions are infamous for) and educational institutions that provide expansion of market share for academic completers by restricting access to those who did not pay their dues (time and money) to academia.

Let’s now consider family wealth and access to education. Vargas and Dancy (2023) did a study on college affordability. Their findings show a significant portion of the population cannot afford college due to insufficient resources. The following chart reveals just how difficult it is for all races:



Given the dynamics of supply and demand, it is hard to overcome the lower income challenges of the majority of a population – in relative terms – attempting to keep up with the inflation of educational costs driven by the demand of the upper classes. As incomes rise for all, so too will

⁵ Mating with those of one’s own class.

the cost of college. It is not unlike the carrot on a stick dangling in front of the donkey metaphor, where the donkey is never allowed to reach it. In the case of education, the carrot is a valued credential that is meant to motivate the entire population, regardless of ability or resources. However, only a minority of the population will be allowed to reach it, which is driven by tightly regulated academic abilities – in contrast to reasoning and overall cognitive abilities – and the necessary resources to pay for the over-valued education, which is the cause of it being over-priced. A large percentage of the deceived masses, who had to take loans, will be obligated to loan repayments for decades due to insufficient incomes. To make matters worse, approximately half who start college will not complete it, providing no financial rewards, and a significant portion will find that their college degrees have very little additional value above a high school degree. Both of these populations will discover they should have chosen a better route that would have been more lucrative with fewer demands on their resources; though would not have provided the status and prestige they were deluded to believe had real value.

The Forgotten Half – Small Businesses

Rounds (2018) brings up an important point about small businesses that is typically overlooked by academia:

Main street businesses are America’s job creators. Over the past two decades, small businesses have generated 65 percent of all net new jobs. In fact, small businesses represent half of all jobs in the U.S., half the U.S. GDP and account for two out of every three new jobs created in the U.S. today. ... Small businesses are the backbone of our economy and the heartbeat of our communities.

Rounds points out that the 2017-18 economic recovery has been due to the reduction of intense regulatory burdens placed upon businesses and citizens, as well as The Tax Cuts and Jobs Act, both of which are freeing up entrepreneurial free market forces that will allow for unprecedented economic activity for all. Small businesses in particular will benefit by these free market policies since high taxes and intense regulatory burdens harm them the most because they typically do not have the capital to hire advisors who can help them navigate through the nonsensical bureaucratic labyrinths.

As it relates to preparing citizens for work, academia tends to focus on large corporations, government bureaucratic jobs, or trendy technological job opportunities. Rarely are the needs of small to medium sized businesses addressed. This is due to a number of variables, but one reason is that small and medium sized businesses are extremely diverse in what they require from employees, and academics are incapable of seeing the diversity, let alone being able to arrange curricula and programs that can serve such diversity. Wing (2019) points out the disconnect between CTE training in our public schools and the “on-the-ground employment needs of businesses.” Wing states:

Part of the problem is that schools do not respond to market signals such as wages and job shortages when determining what programs to offer. Curriculum is set, ultimately, through a political process, so even if a gap in education is recognized it takes years to discover, design and implement changes in the type of training schools offer.

In addition, school districts face few incentives to make sure their programs align with the needs of the labor market. A school's funding is based on the number of students enrolled, regardless of their outcomes beyond graduation.

Due to these challenges, schools may not be the best-equipped to administer CTE training. Further, why should students be limited to what their local school can provide? Businesses should play a crucial role in educating students for employment too, as they have the best access to information regarding what jobs and skills are in demand. Employers also have strong incentives to make sure educational programs are useful, as they directly benefit from a well-trained workforce. Ideally, local businesses and school districts should team up to more effectively use the CTE programs currently in place.

This is why industry associations should have the largest share of input into formulating occupational curricula and programs, with academia playing the role of formulating delivery for efficiency and effectiveness purposes.

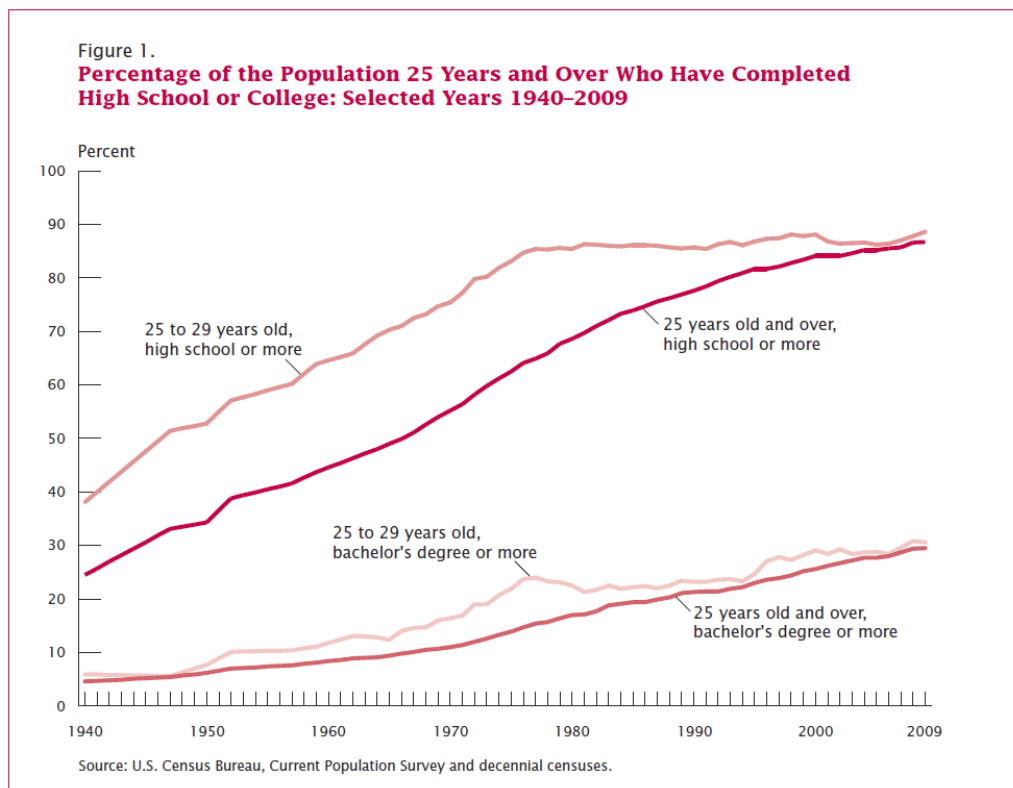
Industry associations represent many thousands of businesses in their respective economic sectors who have much in common. These associations know what their industry requires better than anyone since the leaders of these associations typically come from their respective industry. Therefore, business educational interests must first emanate from industry association determinations, with effective delivery being worked out through academic efforts (such as by cognitive psychologists and curriculum writers), but with industry associations' final approval being required. Industry associations must be mindful of academics' tendency to expand their product offering so as to maximize their resource allocations and their public influence. However, the public must be mindful of industry associations' tendency to erect barriers in order to protect the turf of its members. The history of European guilds is the example to guard against.

Conclusion

The current argument that everyone must have a high school education (evolving into "everyone must have a college education") is a means of manipulating data (or misinterpreting it) through statistics to convince citizens that higher formal education is the only thing that should matter to young people and that economic failure is the only outcome if one doesn't follow academia's lead – and they have been largely successful in marketing their brand. What is not even considered is, when will there ever be enough education? As educational attainment has risen over the last two centuries – due, in large part, to the desire for prestige rather than for useful knowledge – people are starting their careers and families far later than what is natural for the human clock. We are forcing all young people to accept excessive training in areas that have no use or significance to them. The formative years or "stages of childhood development" – described by psychologist Jean Piaget – are permanently lost. For all intents and purposes, once individuals who are not academically inclined are fully matured, they will find it difficult if not impossible to hone and perfect their talents to a level they otherwise would have if they had been given the opportunity during the formative years to do so. Public schools confiscating so much of our youths' precious time make such opportunity exceedingly difficult to achieve. Even "highly educated" parents are unable to see through the smoke and mirrors of the educational culture's deceptions and therefore, frequently, do not make wise choices for their children.

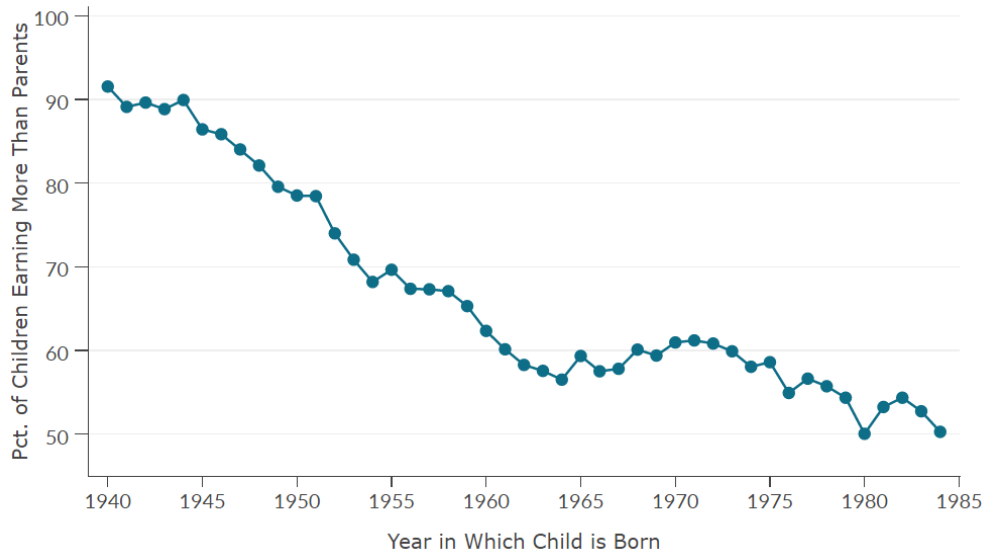
Chetty et al. (2016) findings reveal an inverse correlation between levels of higher education achieved in the U.S. and the number of children earning more than their parents. That is, as the amount of education increases, economic improvement decreases across the population *over time*. Given that which passes for “education” – i.e. memorization of data of the “pure” arts and sciences, in contrast to learning the application of the *useful* arts and sciences – it is no wonder the population demonstrates deterioration in abilities. This correlates well with Andrew Carnegie’s position that too much education robs individuals of learning about the world during the important stages of development (see his *The Empire of Business*, Doubleday, Page & Co., 1902, pp. 109-14).

Let’s compare the U.S. Census Bureau’s graph “Percentage of the Population ... Who Have Completed High School or College” to Chetty et al. graph:



The Fading American Dream

Percent of Children Earning More than their Parents, by Year of Birth



While one may claim that *on average* the more education one receives, the greater one's income *tends* to be and the *less likely* one is to be unemployed, this tendency is frequently true of a population in a given period of time (e.g. the first decade of the 21st century) based on contemporaneous cultural conditions that are highly biased, such as favoring credentials acquired under protectionist educational policies that we currently labor under. However, as the comparison of the above graphs reveal, over the *progression of time* education is contributing to the “dumbing down” of America given its shallowness and pervasiveness. This helps explain why such a large percentage of the U.S. population has been losing faith in higher education as reported by Gallup.⁶

Do the above graphs reveal a loose or tight correlation between them given the fact that there are so many variables that contribute to such data? Chetty et al., the authors/researchers of *The Fading American Dream*, conclude that “absolute mobility has declined sharply in America over the past half century primarily because of the growth in inequality” which I would attribute to the educational establishment's extensive powers over economic mobility as manifested through control over credentials. Regardless of the *level* of correlation between a poorly designed educational system and the decline in economic ascension by such a large percentage of the population, there *is* a correlation, and it *is* a troubling one.

It becomes obvious that instead of looking for more education beyond high school, we should look at primary and secondary schools to remedy the many woes the academic community and politicians identify – though with inappropriate remedies – and what parents and the business community agree upon: The educational system is broken and needs a new start. The bureaucracy needs to be dismantled and a multitude of options need to be made available to individuals to choose from, not only as it relates to the delivery system (e.g. brick and mortar

⁶ <http://www.gallup.com/opinion/gallup/182867/america-no-confidence-vote-college-grads-work-readiness.aspx>

schools versus online options) but also educational pathways with the Swiss and Finnish systems being examples to get ideas from.

One thing cannot be disputed: the status quo is not an option.

Note: To consider an easy means to achieve economic opportunity for individuals plus responsible and frugal public expenditures on education, review Edmunds et al., *How Early Colleges Can Make Us Rethink the Separation of High School and Postsecondary Systems*. By shortening the years spent in the education system that is necessary to achieve social and occupational competence, individuals will benefit by possessing credentials within 12 years, starting careers much earlier, and accumulating greater wealth over individual lifetimes. In addition, communities will save substantial capital that can be used in other more productive areas that will benefit society far more than current extremely wasteful education practices mired in ineffective redundancy.

Appendix

O*NET (Occupational Information Network, a U.S. Dept. of Labor occupational database⁷) defines economic sectors as career clusters as follows:

“Career Clusters contain occupations in the same field of work that require similar skills. Students, parents, and educators can use Career Clusters to help focus education plans towards obtaining the necessary knowledge, competencies, and training for success in a particular career pathway.”

The clusters they list as primary career paths are:

- Agriculture, Food & Natural Resources
- Architecture & Construction
- Arts, Audio/Video Technology & Communications
- Business Management & Administration
- Education & Training
- Finance
- Government & Public Administration
- Health Science
- Hospitality & Tourism
- Human Services
- Information Technology
- Law, Public Safety, Corrections & Security
- Manufacturing
- Marketing
- Science, Technology, Engineering & Mathematics
- Transportation, Distribution & Logistics

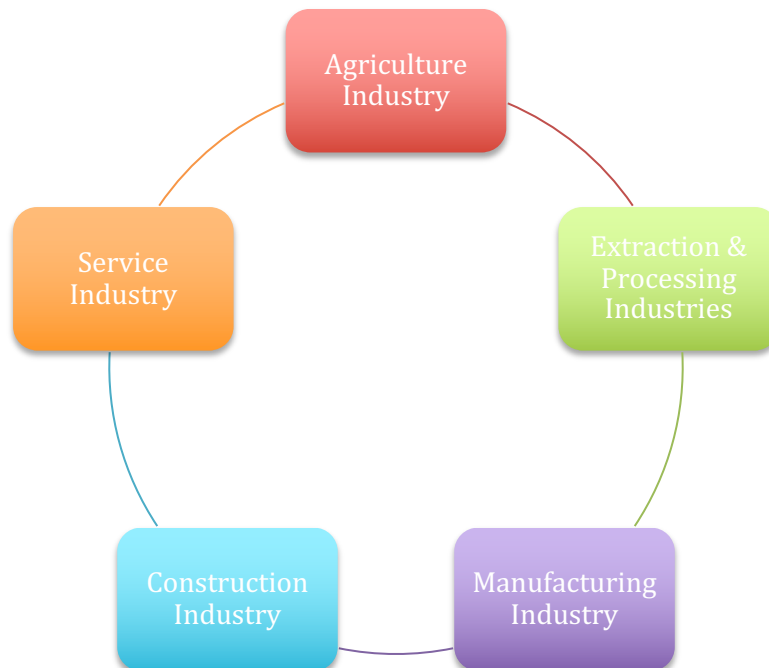
⁷ <https://www.onetonline.org/find/career>

To get an idea of the changes of occupational groupings in relation to the percentage of their share in the economy from 1910 to 2000, see *Occupational Changes During the 20th Century*, by Wyatt and Hecker, Monthly Labor Review, Mar. 2006. The percentage of the share for each category in the year 2000 gives a good idea of resource allocation needed for each grouping.

The Bureau of Labor Statistics offers excellent information for the analysis of what the economy requires of our educational system. Let's take a look at the various economic sectors and jobs in those sectors. With this information, we can begin to understand the foundational knowledge required by citizens for pursuing individual careers – which is one part of the equation – so that primary school curricula can be designed appropriately. In addition, we can then analyze what mid-level and advanced education is required during the secondary school years – i.e. middle and high school. Fundamentally, there is that knowledge which every citizen requires; there is that which is necessary for an economic sector (manufacturing sector for example); and there is that which is necessary only for a given career path.

Something we must be cautious of: Sectors that are a small percentage of the economy as it relates to job numbers, or that are not “glamorous,” tend to be overlooked by educators. This is a big mistake and is inappropriate for them to make decisions what to focus on and what to ignore. This is for individuals to determine for themselves. The job of bureaucrats is to ask what citizens want and then to do all they can to deliver it. They are the servants, not the masters, which is something they have forgotten and actually hate when reminded of it.

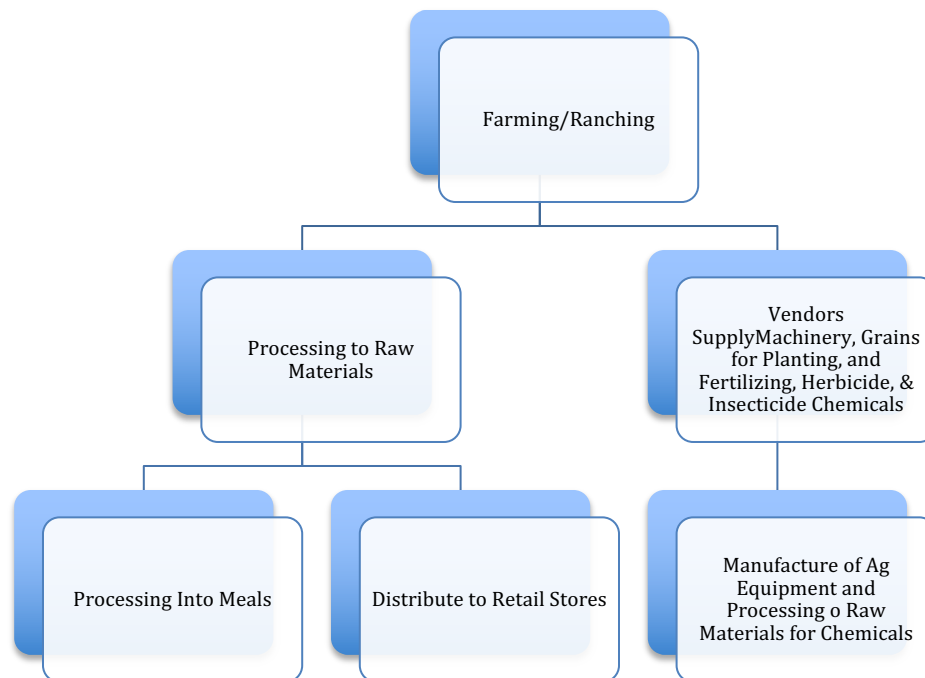
Primary Economic Sectors Organized for Educational Programs



While there is overlapping that occurs between each economic sector, there are patterns that provide guidance for planning a comprehensive education program for each sector. From such a choice of programs, individuals can further refine their focus as they advance through the educational system, which is dependent on the demands of the career they will choose to pursue. The power and resources of the State must be used to serve the needs of the individual rather than the needs of the State or the needs of the educational establishment. If this is not recognized as a fundamental truism, then individual rights and needs will be ignored, except for those who fit the popular optimized program.

Agriculture Industry

1.5% Jobs held in this sector



Agriculture, Forestry, Fishing and Hunting: NAICS 11

- [About the Agriculture, Forestry, Fishing and Hunting sector](#)
- BLS Data
 - [Workforce Statistics](#)
 - [Earnings](#)
 - [Prices](#)
 - [Workplace Trends](#)

About the Agriculture, Forestry, Fishing and Hunting sector

The agriculture, forestry, fishing and hunting sector is part of the [natural resources and mining](#) supersector.

The Agriculture, Forestry, Fishing and Hunting sector comprises establishments primarily engaged in growing crops, raising animals, harvesting timber, and harvesting fish and other animals from a farm, ranch, or their natural habitats.

The establishments in this sector are often described as farms, ranches, dairies, greenhouses, nurseries, orchards, or hatcheries.

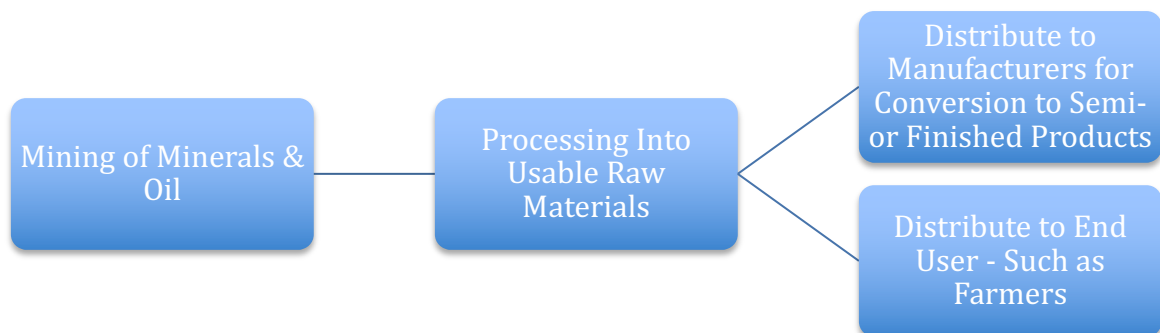
North American Industry Classification System

The agriculture, forestry, fishing and hunting sector consists of these subsectors:

- [Crop Production: NAICS 111](#)
- [Animal Production: NAICS 112](#)
- [Forestry and Logging: NAICS 113](#)
- [Fishing, Hunting and Trapping: NAICS 114](#)
- [Support Activities for Agriculture and Forestry: NAICS 115](#)

<http://www.bls.gov/iag/tgs/iag11.htm>

Extraction & Processing Industries (Heavily dependent on chemical & geological engineers) 0.6% Jobs held in mining sector



Mining, Quarrying, and Oil and Gas Extraction: NAICS 21

- [About the Mining, Quarrying, and Oil and Gas Extraction sector](#)
- BLS Data
 - [Workforce Statistics](#)
 - [Earnings and Hours](#)
 - [Prices](#)
 - [Workplace Trends](#)

About the Mining, Quarrying, and Oil and Gas Extraction sector:

The mining, quarrying, and oil and gas extraction sector is part of the [natural resources and mining](#) supersector.

The Mining sector comprises establishments that extract naturally occurring mineral solids, such as coal and ores; liquid minerals, such as crude petroleum; and gases, such as natural gas. The term mining is used in the broad sense to include quarrying, well operations, beneficiating (e.g., crushing, screening, washing, and flotation), and other preparation customarily performed at the mine site, or as a part of mining activity.

North American Industry Classification System

The mining, quarrying, and oil and gas extraction sector consists of these subsectors:

- [Oil and Gas Extraction: NAICS 211](#)
- [Mining \(except Oil and Gas\): NAICS 212](#)
- [Support Activities for Mining: NAICS 213](#)

<http://www.bls.gov/iag/tgs/iag21.htm>

Chemical Manufacturing: NAICS 325

About the Chemical Manufacturing subsector:

The chemical manufacturing subsector is part of the [manufacturing](#) sector [*though for educational purposes, we will assign it to both the manufacturing and processing industries, depending on its production stage in the market*].

The Chemical Manufacturing subsector is based on the transformation of organic and inorganic raw materials by a chemical process and the formulation of products. This subsector distinguishes the production of basic chemicals that comprise the first industry group from the production of intermediate and end products produced by further processing of basic chemicals that make up the remaining industry groups.

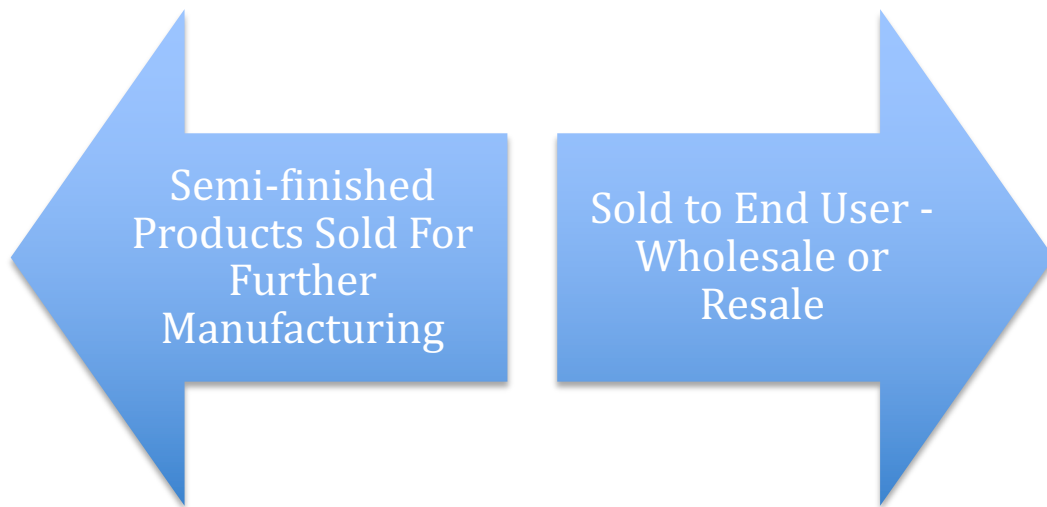
North American Industry Classification System

The chemical manufacturing subsector consists of these industry groups:

- Basic Chemical Manufacturing: NAICS 3251
- Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing: NAICS 3252
- Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing: NAICS 3253
- Pharmaceutical and Medicine Manufacturing: NAICS 3254
- Paint, Coating, and Adhesive Manufacturing: NAICS 3255
- Soap, Cleaning Compound, and Toilet Preparation Manufacturing: NAICS 3256
- Other Chemical Product and Preparation Manufacturing: NAICS 3259

<http://www.bls.gov/iag/tgs/iag325.htm>

Manufacturing Industry
8.2% Jobs held in this sector



Manufacturing: NAICS 31-33

- [About the Manufacturing sector](#)
- BLS Data
 - [Workforce Statistics](#)
 - [Earnings and Hours](#)
 - [Prices](#)
 - [Workplace Trends](#)

About the Manufacturing sector

The manufacturing sector is part of the [goods-producing industries](#) supersector group.

The Manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products.

Establishments in the Manufacturing sector are often described as plants, factories, or mills and characteristically use power-driven machines and materials-handling equipment. However, establishments that transform materials or substances into new products by hand or in the worker's home and those engaged in selling to the general public products made on the same premises from which they are sold, such as bakeries, candy stores, and custom tailors, may also be included in this sector. Manufacturing establishments may process materials or may contract with other establishments to process their materials for them. Both types of establishments are included in manufacturing.

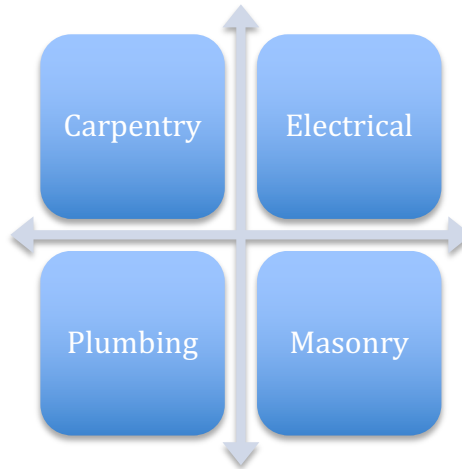
North American Industry Classification System

The manufacturing sector consists of these subsectors:

- [Food Manufacturing: NAICS 311](#)
- [Beverage and Tobacco Product Manufacturing: NAICS 312](#)
- [Textile Mills: NAICS 313](#)
- [Textile Product Mills: NAICS 314](#)
- [Apparel Manufacturing: NAICS 315](#)
- [Leather and Allied Product Manufacturing: NAICS 316](#)
- [Wood Product Manufacturing: NAICS 321](#)
- [Paper Manufacturing: NAICS 322](#)
- [Printing and Related Support Activities: NAICS 323](#)
- [Petroleum and Coal Products Manufacturing: NAICS 324](#)
- [Chemical Manufacturing: NAICS 325](#)
- [Plastics and Rubber Products Manufacturing: NAICS 326](#)
- [Nonmetallic Mineral Product Manufacturing: NAICS 327](#)
- [Primary Metal Manufacturing: NAICS 331](#)
- [Fabricated Metal Product Manufacturing: NAICS 332](#)
- [Machinery Manufacturing: NAICS 333](#)
- [Computer and Electronic Product Manufacturing: NAICS 334](#)
- [Electrical Equipment, Appliance, and Component Manufacturing: NAICS 335](#)
- [Transportation Equipment Manufacturing: NAICS 336](#)
- [Furniture and Related Product Manufacturing: NAICS 337](#)
- [Miscellaneous Manufacturing: NAICS 339](#)

<http://www.bls.gov/iag/tgs/iag31-33.htm>

Construction Industry
(New building, remodeling, or repair)
3.9% Jobs held in this sector



Dept. Of Labor, Bureau of Labor Statistics Construction: NAICS 23

- [About the Construction sector](#)
- BLS Data
 - [Workforce Statistics](#)
 - [Earnings and Hours](#)
 - [Fatalities, Injuries, and Illnesses](#)
 - [Workplace Trends](#)
 - [Other BLS Resources](#)

About the Construction sector

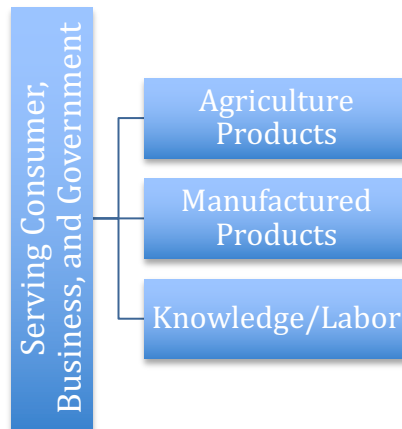
The construction sector is part of the [goods-producing industries](#) supersector group.

The construction sector comprises establishments primarily engaged in the construction of buildings or engineering projects (e.g., highways and utility systems). Establishments primarily engaged in the preparation of sites for new construction and establishments primarily engaged in subdividing land for sale as building sites also are included in this sector.

Construction work done may include new work, additions, alterations, or maintenance and repairs. Activities of these establishments generally are managed at a fixed place of business, but they usually perform construction activities at multiple project sites. Production responsibilities for establishments in this sector are usually specified in (1) contracts with the owners of construction projects (prime contracts) or (2) contracts with other construction establishments (subcontracts).

<http://www.bls.gov/iag/tgs/iag23.htm>

Service Industry
79.9% Jobs held in this sector



Service-Providing Industries

- [About the Service-Providing Industries supersector group](#)
- BLS Data
 - [Workforce Statistics](#)
 - [Earnings and Hours](#)
 - [Workplace Trends](#)

About the Service-Providing Industries supersector group

The service-providing industries supersector group consists of these supersectors and sectors:

- [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)
(All other industries are part of the Goods-Producing Industries supersector group.)

<http://www.bls.gov/iag/tgs/iag07.htm>

Bennett (1917) provides:

If we consult the United States census for 1910, we find that 36 percent, or 10,851,000 of the male population above 10 years of age, who are employed in gainful occupations are engaged in agriculture, forestry and animal husbandry; 29 percent, or 8,837,000 are engaged in manufacturing and mechanical industries; 10 percent, or 3,146,000 are engaged in trade; 8 percent, or 2,531,000 are engaged in transportation; and less than half the latter number in each of the following: clerical occupations, domestic and personal service, professional service, public service and the extraction of minerals. This shows that agriculture employs the largest number of men, that manufacturing employs the second largest, and that these two together occupy the time of 65 percent of the entire body of male workers. This would seem to indicate that the school is making no mistake when it looks to agriculture and manufacturing for subject-matter. (p. 60)

Such an analysis and summary must be done on a regular basis, such as after each census is taken, in order to determine what an educational system should be composed of. As Bennett shows, the shift from agriculture to other economic activities dominating our economy is a dynamic force.

Industry Sector	Thousands of Jobs			Change		Percent Distribution		
	2002	2012	2022	2002 - 2012	2012—2022	2002	2012	2022
Total	142,294.9	145,355.8	160,983.7	3,060.9	15,627.9	100.0	100.0	100.0
Nonagriculture wage and salary²	131,028.3	134,427.6	149,751.3	3,399.3	15,323.7	92.1	92.5	93.0
Goods-producing, excluding agriculture	22,486.7	18,360.3	19,554.2	-4,126.4	1,193.9	15.8	12.6	12.1
Mining	512.3	800.5	921.7	288.2	121.2	0.4	0.6	0.6
Construction	6,715.7	5,640.9	7,263.0	-1,074.8	1,622.1	4.7	3.9	4.5
Manufacturing	15,258.7	11,918.9	11,369.4	-3,339.8	-549.5	10.7	8.2	7.1
Services-providing	108,541.6	116,067.3	130,197.1	7,525.7	14,129.8	76.3	79.9	80.9
Utilities	596.3	554.2	497.8	-42.1	-56.4	0.4	0.4	0.3
Wholesale trade	5,652.4	5,672.8	6,143.2	20.4	470.4	4.0	3.9	3.8
Retail trade	15,025.1	14,875.3	15,966.2	-149.8	1,090.9	10.6	10.2	9.9
Transportation and warehousing	4,223.8	4,414.7	4,742.0	190.9	327.3	3.0	3.0	2.9
Information	3,394.6	2,677.6	2,612.4	-717.0	-65.2	2.4	1.8	1.6
Financial activities	7,847.1	7,786.3	8,537.3	-60.8	751.0	5.5	5.4	5.3
Professional and business services	15,976.2	17,930.2	21,413.0	1,954.0	3,482.8	11.2	12.3	13.3
Educational services	2,642.8	3,346.9	4,022.2	704.1	675.3	1.9	2.3	2.5
Health care and social assistance	13,555.6	16,971.8	21,965.9	3,416.2	4,994.1	9.5	11.7	13.6
Leisure and hospitality	11,986.0	13,745.8	15,035.0	1,759.8	1,289.2	8.4	9.5	9.3
Other services	6,129.0	6,174.5	6,823.4	45.5	648.9	4.3	4.2	4.2
Federal government	2,766.0	2,814.0	2,406.5	48.0	-407.5	1.9	1.9	1.5
State and local government	18,746.7	19,103.2	20,032.2	356.5	929.0	13.2	13.1	12.4
Agriculture, forestry, fishing, and hunting³	2,245.4	2,112.7	1,889.2	-132.7	-223.5	1.6	1.5	1.2
Agriculture wage and salary	1,217.4	1,306.9	1,281.8	89.5	-25.1	0.9	0.9	0.8
Agriculture self-employed and unpaid family workers	1,028.0	805.8	607.4	-222.2	-198.4	0.7	0.6	0.4
Nonagriculture self-employed and unpaid family worker	9,021.2	8,815.5	9,343.2	-205.7	527.7	6.3	6.1	5.8

Footnotes: ¹ Employment data for wage and salary workers are from the BLS Current Employment Statistics survey, which counts jobs whereas self-employed, unpaid family workers, and agriculture, forestry, fishing, and hunting are from the Current Population Survey (household survey), which counts workers. ² Includes wage and salary data from the Current Employment Statistics survey, except private households, which is from the Current Populations Survey. Logging workers are excluded. ³ Includes agriculture, forestry, fishing, and hunting data from the Current Population Survey, except logging, which is from Current Employment Statistics survey. Government wage salary workers are excluded.

Source: Employment Projections program, U.S. Department of Labor, U.S. Bureau of Labor Statistics

Industries by Supersector and NAICS Code

This list of industries included in [Industries at a Glance](#) is arranged in North American Industry Classification System (NAICS) code order. Each industry sector and subsector is placed into the appropriate group: [Goods-Producing Industries](#) or [Service-Providing Industries](#).

[Goods-Producing Industries](#)

[Natural Resources and Mining](#)

[Agriculture, Forestry, Fishing and Hunting](#) (NAICS 11)

[Crop Production](#) (NAICS 111)

[Animal Production](#) (NAICS 112)

[Forestry and Logging](#) (NAICS 113)
[Fishing, Hunting and Trapping](#) (NAICS 114)
[Support Activities for Agriculture and Forestry](#) (NAICS 115)
[Mining, Quarrying, and Oil and Gas Extraction](#) (NAICS 21)
[Oil and Gas Extraction](#) (NAICS 211)
[Mining \(except Oil and Gas\)](#) (NAICS 212)
[Support Activities for Mining](#) (NAICS 213)

Construction

[Construction](#) (NAICS 23)
[Construction of Buildings](#) (NAICS 236)
[Heavy and Civil Engineering Construction](#) (NAICS 237)
[Specialty Trade Contractors](#) (NAICS 238)

Manufacturing

[Manufacturing](#) (NAICS 31-33)
[Food Manufacturing](#) (NAICS 311)
[Beverage and Tobacco Product Manufacturing](#) (NAICS 312)
[Textile Mills](#) (NAICS 313)
[Textile Product Mills](#) (NAICS 314)
[Apparel Manufacturing](#) (NAICS 315)
[Leather and Allied Product Manufacturing](#) (NAICS 316)
[Wood Product Manufacturing](#) (NAICS 321)
[Paper Manufacturing](#) (NAICS 322)
[Printing and Related Support Activities](#) (NAICS 323)
[Petroleum and Coal Products Manufacturing](#) (NAICS 324)
[Chemical Manufacturing](#) (NAICS 325)
[Plastics and Rubber Products Manufacturing](#) (NAICS 326)
[Nonmetallic Mineral Product Manufacturing](#) (NAICS 327)
[Primary Metal Manufacturing](#) (NAICS 331)
[Fabricated Metal Product Manufacturing](#) (NAICS 332)
[Machinery Manufacturing](#) (NAICS 333)
[Computer and Electronic Product Manufacturing](#) (NAICS 334)
[Electrical Equipment, Appliance, and Component Manufacturing](#) (NAICS 335)
[Transportation Equipment Manufacturing](#) (NAICS 336)
[Furniture and Related Product Manufacturing](#) (NAICS 337)
[Miscellaneous Manufacturing](#) (NAICS 339)

[Service-Providing Industries](#)

- [Trade, Transportation, and Utilities](#)
 - [Wholesale Trade](#) (NAICS 42)
 - [Merchant Wholesalers, Durable Goods](#) (NAICS 423)
 - [Merchant Wholesalers, Nondurable Goods](#) (NAICS 424)
 - [Wholesale Electronic Markets and Agents and Brokers](#) (NAICS 425)
 - [Retail Trade](#) (NAICS 44-45)
 - [Motor Vehicle and Parts Dealers](#) (NAICS 441)
 - [Furniture and Home Furnishings Stores](#) (NAICS 442)
 - [Electronics and Appliance Stores](#) (NAICS 443)

- [Building Material and Garden Equipment and Supplies Dealers](#) (NAICS 444)
- [Food and Beverage Stores](#) (NAICS 445)
- [Health and Personal Care Stores](#) (NAICS 446)
- [Gasoline Stations](#) (NAICS 447)
- [Clothing and Clothing Accessories Stores](#) (NAICS 448)
- [Sporting Goods, Hobby, Book, and Music Stores](#) (NAICS 451)
- [General Merchandise Stores](#) (NAICS 452)
- [Miscellaneous Store Retailers](#) (NAICS 453)
- [Nonstore Retailers](#) (NAICS 454)
- [Transportation and Warehousing](#) (NAICS 48-49)
 - [Air Transportation](#) (NAICS 481)
 - [Rail Transportation](#) (NAICS 482)
 - [Water Transportation](#) (NAICS 483)
 - [Truck Transportation](#) (NAICS 484)
 - [Transit and Ground Passenger Transportation](#) (NAICS 485)
 - [Pipeline Transportation](#) (NAICS 486)
 - [Scenic and Sightseeing Transportation](#) (NAICS 487)
 - [Support Activities for Transportation](#) (NAICS 488)
 - [Postal Service](#) (NAICS 491)
 - [Couriers and Messengers](#) (NAICS 492)
 - [Warehousing and Storage](#) (NAICS 493)
- [Utilities](#) (NAICS 22)
- [Information](#) (NAICS 51)
 - [Publishing Industries \(except Internet\)](#) (NAICS 511)
 - [Motion Picture and Sound Recording Industries](#) (NAICS 512)
 - [Broadcasting \(except Internet\)](#) (NAICS 515)
 - [Internet Publishing and Broadcasting](#) (NAICS 516)
 - [Telecommunications](#) (NAICS 517)
 - [Data Processing, Hosting, and Related Services](#) (NAICS 518)
 - [Other Information Services](#) (NAICS 519)
- [Financial Activities](#)
 - [Finance and Insurance](#) (NAICS 52)
 - [Monetary Authorities - Central Bank](#) (NAICS 521)
 - [Credit Intermediation and Related Activities](#) (NAICS 522)
 - [Securities, Commodity Contracts, and Other Financial Investments and Related Activities](#) (NAICS 523)
 - [Insurance Carriers and Related Activities](#) (NAICS 524)
 - [Funds, Trusts, and Other Financial Vehicles](#) (NAICS 525)
 - [Real Estate and Rental and Leasing](#) (NAICS 53)
 - [Real Estate](#) (NAICS 531)
 - [Rental and Leasing Services](#) (NAICS 532)
 - [Lessors of Nonfinancial Intangible Assets \(except Copyrighted Works\)](#) (NAICS 533)
- [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)
 - [Administrative and Support Services](#) (NAICS 561)
 - [Waste Management and Remediation Services](#) (NAICS 562)
- [Education and Health Services](#)
 - [Educational Services](#) (NAICS 61)
 - [Health Care and Social Assistance](#) (NAICS 62)
 - [Ambulatory Health Care Services](#) (NAICS 621)
 - [Hospitals](#) (NAICS 622)
 - [Nursing and Residential Care Facilities](#) (NAICS 623)
 - [Social Assistance](#) (NAICS 624)
- [Leisure and Hospitality](#)
 - [Arts, Entertainment, and Recreation](#) (NAICS 71)
 - [Performing Arts, Spectator Sports, and Related Industries](#) (NAICS 711)
 - [Museums, Historical Sites, and Similar Institutions](#) (NAICS 712)
 - [Amusement, Gambling, and Recreation Industries](#) (NAICS 713)
 - [Accommodation and Food Services](#) (NAICS 72)
 - [Accommodation](#) (NAICS 721)
 - [Food Services and Drinking Places](#) (NAICS 722)
- Other Services (except Public Administration)
 - [Other Services \(except Public Administration\)](#) (NAICS 81)
 - [Repair and Maintenance](#) (NAICS 811)
 - [Personal and Laundry Services](#) (NAICS 812)
 - [Religious, Grantmaking, Civic, Professional, and Similar Organizations](#) (NAICS 813)
 - [Private Households](#) (NAICS 814)

Data extracted on: February 13, 2015

http://www.bls.gov/iag/tgs/iag_index_naics.htm

Industries in Alphabetical Order

This list of industries included in [Industries at a Glance](#) is arranged in alphabetical order.

These industries are also arranged in [industry numerical](#) order.

A

- [Accommodation](#) (NAICS 721)
- [Accommodation and Food Services](#) (NAICS 72)
- [Administrative and Support Services](#) (NAICS 561)
- [Administrative and Support and Waste Management and Remediation Services](#) (NAICS 56)
- [Agriculture, Forestry, Fishing and Hunting](#) (NAICS 11)
- [Air Transportation](#) (NAICS 481)
- [Ambulatory Health Care Services](#) (NAICS 621)
- [Amusement, Gambling, and Recreation Industries](#) (NAICS 713)

- [Animal Production](#) (NAICS 112)
- [Apparel Manufacturing](#) (NAICS 315)
- [Arts, Entertainment, and Recreation](#) (NAICS 71)

B

- [Beverage and Tobacco Product Manufacturing](#) (NAICS 312)
- [Broadcasting \(except Internet\)](#) (NAICS 515)
- [Building Material and Garden Equipment and Supplies Dealers](#) (NAICS 444)

C

- [Chemical Manufacturing](#) (NAICS 325)
- [Clothing and Clothing Accessories Stores](#) (NAICS 448)
- [Computer and Electronic Product Manufacturing](#) (NAICS 334)
- [Construction](#) (NAICS 23)
- [Construction of Buildings](#) (NAICS 236)
- [Couriers and Messengers](#) (NAICS 492)
- [Credit Intermediation and Related Activities](#) (NAICS 522)
- [Crop Production](#) (NAICS 111)

D

- [Data Processing, Hosting, and Related Services](#) (NAICS 518)

E

- [Education and Health Services](#)
- [Educational Services](#) (NAICS 61)
- [Electrical Equipment, Appliance, and Component Manufacturing](#) (NAICS 335)
- [Electronics and Appliance Stores](#) (NAICS 443)

F

- [Fabricated Metal Product Manufacturing](#) (NAICS 332)
- [Finance and Insurance](#) (NAICS 52)
- [Financial Activities](#)
- [Fishing, Hunting and Trapping](#) (NAICS 114)
- [Food Manufacturing](#) (NAICS 311)
- [Food Services and Drinking Places](#) (NAICS 722)
- [Food and Beverage Stores](#) (NAICS 445)
- [Forestry and Logging](#) (NAICS 113)
- [Funds, Trusts, and Other Financial Vehicles](#) (NAICS 525)
- [Furniture and Home Furnishings Stores](#) (NAICS 442)
- [Furniture and Related Product Manufacturing](#) (NAICS 337)

G

- [Gasoline Stations](#) (NAICS 447)
- [General Merchandise Stores](#) (NAICS 452)
- [Goods-Producing Industries](#)

H

- [Health Care and Social Assistance](#) (NAICS 62)
- [Health and Personal Care Stores](#) (NAICS 446)
- [Heavy and Civil Engineering Construction](#) (NAICS 237)
- [Hospitals](#) (NAICS 622)

I

- [Information](#) (NAICS 51)
- [Insurance Carriers and Related Activities](#) (NAICS 524)
- [Internet Publishing and Broadcasting](#) (NAICS 516)

J

K

L

- [Leather and Allied Product Manufacturing](#) (NAICS 316)
- [Leisure and Hospitality](#)
- [Lessors of Nonfinancial Intangible Assets \(except Copyrighted Works\)](#) (NAICS 533)

M

- [Machinery Manufacturing](#) (NAICS 333)
- [Management of Companies and Enterprises](#) (NAICS 55)
- [Manufacturing](#) (NAICS 31-33)
- [Merchant Wholesalers, Durable Goods](#) (NAICS 423)
- [Merchant Wholesalers, Nondurable Goods](#) (NAICS 424)
- [Mining \(except Oil and Gas\)](#) (NAICS 212)
- [Mining, Quarrying, and Oil and Gas Extraction](#) (NAICS 21)
- [Miscellaneous Manufacturing](#) (NAICS 339)
- [Miscellaneous Store Retailers](#) (NAICS 453)
- [Monetary Authorities - Central Bank](#) (NAICS 521)
- [Motion Picture and Sound Recording Industries](#) (NAICS 512)
- [Motor Vehicle and Parts Dealers](#) (NAICS 441)
- [Museums, Historical Sites, and Similar Institutions](#) (NAICS 712)

N

- [Natural Resources and Mining](#)
- [Nonmetallic Mineral Product Manufacturing](#) (NAICS 327)
- [Nonstore Retailers](#) (NAICS 454)
- [Nursing and Residential Care Facilities](#) (NAICS 623)

O

- [Oil and Gas Extraction](#) (NAICS 211)
- [Other Information Services](#) (NAICS 519)
- [Other Services \(except Public Administration\)](#) (NAICS 81)

P

- [Paper Manufacturing](#) (NAICS 322)
- [Performing Arts, Spectator Sports, and Related Industries](#) (NAICS 711)
- [Personal and Laundry Services](#) (NAICS 812)
- [Petroleum and Coal Products Manufacturing](#) (NAICS 324)
- [Pipeline Transportation](#) (NAICS 486)
- [Plastics and Rubber Products Manufacturing](#) (NAICS 326)
- [Postal Service](#) (NAICS 491)
- [Primary Metal Manufacturing](#) (NAICS 331)
- [Printing and Related Support Activities](#) (NAICS 323)

- [Private Households](#) (NAICS 814)
- [Professional and Business Services](#)
- [Professional, Scientific, and Technical Services](#) (NAICS 54)
- [Publishing Industries \(except Internet\)](#) (NAICS 511)

Q

R

- [Rail Transportation](#) (NAICS 482)
- [Real Estate](#) (NAICS 531)
- [Real Estate and Rental and Leasing](#) (NAICS 53)
- [Religious, Grantmaking, Civic, Professional, and Similar Organizations](#) (NAICS 813)
- [Rental and Leasing Services](#) (NAICS 532)
- [Repair and Maintenance](#) (NAICS 811)
- [Retail Trade](#) (NAICS 44-45)

S

- [Scenic and Sightseeing Transportation](#) (NAICS 487)
- [Securities, Commodity Contracts, and Other Financial Investments and Related Activities](#) (NAICS 523)
- [Service-Providing Industries](#)
- [Social Assistance](#) (NAICS 624)
- [Specialty Trade Contractors](#) (NAICS 238)
- [Sporting Goods, Hobby, Book, and Music Stores](#) (NAICS 451)
- [Support Activities for Agriculture and Forestry](#) (NAICS 115)
- [Support Activities for Mining](#) (NAICS 213)
- [Support Activities for Transportation](#) (NAICS 488)

T

- [Telecommunications](#) (NAICS 517)
- [Textile Mills](#) (NAICS 313)
- [Textile Product Mills](#) (NAICS 314)
- [Trade, Transportation, and Utilities](#)
- [Transit and Ground Passenger Transportation](#) (NAICS 485)
- [Transportation Equipment Manufacturing](#) (NAICS 336)
- [Transportation and Warehousing](#) (NAICS 48-49)
- [Truck Transportation](#) (NAICS 484)

U

- [Utilities](#) (NAICS 22)

V

W

- [Warehousing and Storage](#) (NAICS 493)
- [Waste Management and Remediation Services](#) (NAICS 562)
- [Water Transportation](#) (NAICS 483)
- [Wholesale Electronic Markets and Agents and Brokers](#) (NAICS 425)
- [Wholesale Trade](#) (NAICS 42)
- [Wood Product Manufacturing](#) (NAICS 321)

X

Y

Z

Data extracted on: February 13, 2015

http://www.bls.gov/iag/tgs/iag_index_alpha.htm

OCCUPATIONAL OUTLOOK HANDBOOK

<http://www.bls.gov/ooh/ooh-site-map.htm>

<http://www.bls.gov/ooh/>

<http://www.bls.gov/ooh/about/occupational-information-included-in-the-ooh.htm#howtobecomeone>

<http://www.careeronestop.org/ExploreCareers/ExploreCareers.aspx>

<http://www.bls.gov/k12/content/students/careers/career-exploration.htm>

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