

The Narrative

“The White House is worried that robots are coming to take your job.”¹

HUFFINGTON POST

“Data on jobs also suggest that manufacturing is not entering another golden age. That is less surprising, since with better technology manufacturing is becoming ever less labour-intensive.”²

THE ECONOMIST

“Perceptions about whether today’s job market is weak or strong is [sic] increasingly boiling down to one question: Do you have a college degree?”³

COLUMBUS DISPATCH

“Biden also called on lawmakers and the unemployed workers they’re trying to help ‘to figure out where the jobs are going to be.’”⁴

WASHINGTON EXAMINER

Reality

Global forces and technology trends are creating opportunities as well as challenges for American workers. There are an estimated one-half million more jobs available than workers with relevant skills in trades from construction and manufacturing to aviation, a gap forecast to rise to 2 million within a decade. Such jobs are accessible with a two-year degree or apprenticeship and pay well above average, often at salaries higher than associated with many college degrees.

Surveys reveal that a majority of manufacturers report a “skills gap” and expect it to get worse. The contention that the gap was either created by or will be filled by software and robots isn’t supported by recent trends in automation. On the contrary, manufacturers report a rising need for “trade skills” because of increasing technological sophistication in every industry.⁵

Key Findings

- America’s industrial economy and the associated demand for workers in the skilled trades continues to grow.
 - ◆ U.S. manufacturing output is 30% greater now than it was 15 years ago; output has returned to the peak level seen just before the Great Recession.⁶
 - ◆ Growth is forecast in 22 out of 23 manufacturing sectors⁷ as well as in infrastructures for transportation, energy, and housing,⁸ where skilled trades are essential.
 - ◆ Six of the 10 fastest-growing industries require skilled trades⁹—all these industries make products for which the global demand is rapidly growing.
- A skills gap has created an unprecedented number of unfilled high-paying jobs in a sector otherwise experiencing job losses. The gap is expected to expand.
 - ◆ An estimated half-million more jobs are available than people trained to fill them,¹⁰ with 88% of manufacturers reporting trouble finding skilled workers.¹¹
 - ◆ Skilled trades vacancies have been the hardest to fill for six consecutive years.¹² Some 60% of unfilled manufacturing jobs are due to a shortage of applicants with requisite skills.¹³
 - ◆ A disproportionate share of skilled trade workers are approaching retirement: the share of workers over age 45 in skilled trades is about 25% higher than the labor-force average.¹⁴
- Recent trends don’t support the idea that software and automation have eliminated demand for skilled jobs. Most manufacturers worry about an insufficient supply of skilled workers.
 - ◆ Manufacturing investment in software has been flat since 2008, and up only 30% since 2000—after nearly doubling from 1988 to 2000.¹⁵
 - ◆ Overall industrial automation progress has been slow: the degree of automation in six of eight machine-centric industrial sectors ranges from 18% to 32%.¹⁶
 - ◆ Manufacturers report that workforce training is the number one impediment to accelerating investment in automation,¹⁷ which is key to the virtuous circle of raising productivity to increase wealth and employment.

According to conventional wisdom, future employment prospects are dismal for the 21 skilled trades¹⁸—electricians, electronic and medical techs, mechanics, machinists, welders, pipe fitters, and other similar trades—and for those workers uninterested in or unmotivated by a college education. The challenges, the argument goes, emerge from a trifecta of forces: automation as robots invade the trades; deindustrialization as America becomes more service-sector-dominated; and globalization as industrial jobs move offshore. While these forces are real, the dismal conclusion is neither inevitable nor supported by the facts.

The Industrial Economy Remains Strong

Technology progress and automation improve productivity and thus, on average, increase the need for more skilled workers with rising salaries. Overall U.S. manufacturing productivity (output per labor hour) is up about 40% since 2002, and average wages are up 25%, too.¹⁹ The combination enhances U.S. competitiveness, since output is growing faster than costs.

While there are few bullish forecasts for America’s economy these days, the consensus nonetheless is that nearly every industrial sector is growing. Output in the automotive and computing-communications manufacturing sectors, for example, is now at all-time highs and expected to keep rising. Despite global competition and a still-dragging recovery, physical output is forecast to rise over the next five years in nearly every sector in the U.S., including housing, industrial machinery, communications and medical equipment, chemicals and energy, fabricated metal parts, appliances and aerospace machinery, and in public works projects.²⁰

On the Record

“Policymakers should be far less focused on protecting jobs that they fear might disappear. Instead, they should pay more attention to ensuring that enough Americans have the opportunity to get training for the skilled jobs that are required by today’s—and tomorrow’s—technologies.”

Mark Mills, Senior Fellow, Manhattan Institute

Job Opportunities Are Obscured by a Skills Gap

New technologies and tools are making production more efficient, but skilled trades are still needed to fabricate, maintain, and operate virtually everything.²¹ An Accenture survey of manufacturers found a dramatic rise of over 20 percentage points over the past five years in the number of companies reporting a shortage in skilled trades available, especially for operating and maintaining tech-centric equipment.²² Skilled trades vacancies have been the hardest to fill for six consecutive years.²³ The shortage of skilled employees will either stifle growth or cause businesses to find solutions offshore.

The vast majority of Americans overall, and the majority of millennials, don't have and won't have a college degree.²⁴ Many have several years of college and enormous debts and no degree to show for it.²⁵ And others have degrees that earn them the right to marginal employment at low salaries.

Meanwhile the so-called skilled trades often pay more but cost far less in time and money to gain the requisite skills and certifications. There are far more high-paying jobs for welders, for example, than for college teachers,²⁶ and more jobs for electricians and automotive technicians than for software developers.²⁷ The unemployment rate for "two-year occupational" degrees is similar to that for the college-educated, and both are more than 50% below the rate associated with only a high school diploma.²⁸

The Opportunity Will Only Grow

There is not only a shortage of trained workers today; because of the confluence of the aging of the skilled workforce without a commensurate interest in trainees in the pipeline, the skills gap can only grow.

Economists are struggling to forecast the broad implications of the overall aging of America's workforce, the so-called Silver Tsunami, with the wave of retirements expected in the boomer generation. But this wave is coming sooner for the skilled trades. The share of workers over 45 years old in the skilled trades is about 25% greater than for the overall workforce. This "silvering" of the trades varies dramatically, depending on the region and specific occupations, with the asymmetry bigger in Houston and Boston than in New York and Seattle, for example.²⁹ And a recent PwC survey of manufacturing executives found 37% saying that automation will lead to more hiring; only 17% see it reducing hiring (45% expect no change).³⁰

America needs more millennials to join the skilled workforce. But today, the number of people completing apprenticeships has changed little since 2008.³¹ Even though about 150,000 Americans start an apprenticeship each year, that total would be 1 to 3 million a year if as many U.S. millennials signed up as they do *per capita* in France, Germany, England, and Switzerland.³²

The future world will surely need more coders, engineers, and managers. But it will also need a tidal wave of skilled technicians and trades that can build, operate, and maintain our new technologies as well as our old essential ones.

Endnotes

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