

# **HEADCOUNT**

**UNDERSTANDING THE AMERICAN WORKFORCE**

**A Journalists' Guide**

**The Essential Terms, Concepts, and History of Workforce  
Information**

**Occasional Paper №3**

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Headcount: Understanding the American Workforce  
A Journalists' Guide: The Essential Terms, Concepts, and History of Workforce Information  
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# Table of Contents

<b>Preface</b> .....	8
<b>Introduction Workforce Turbulence</b> .....	11
<b>Chapter One Measurement - Sources and Methods</b> .....	13
<b>Present at the Creation</b> .....	13
<b>Current Population Survey (CPS)</b> .....	14
<b>Current Employment Statistics (CES)</b> .....	14
<b>The American Community Survey (ACS)</b> .....	14
<b>U.S. Decennial Census</b> .....	14
<b>State Labor Market Information Agencies</b> .....	15
<b>National Center for Educational Statistics (NCES)</b> .....	15
<b>Bureau of Economic Analysis (BEA)</b> .....	15
<b>Professional Statistical Analysts</b> .....	15
<b>Chapter Two: A Lexicon for the Labor Market</b> .....	17
<b>Measurement</b> .....	17
<b>Multiple Measures of Labor Force Utilization</b> .....	19
<b>Unemployment Insurance (UI)</b> .....	20
<b>Dislocated/Displaced Workers</b> .....	20
<b>Part-Time Employment</b> .....	21
<b>Marginal Attachment</b> .....	21
<b>Contingent Workers</b> .....	22
<b>There Are Jobs and Then There Are Jobs</b> .....	23
<b>Turnover: Job Openings, Hiring, and Unemployment</b> .....	24
<b>Earnings and Income</b> .....	25
<b>Minimum Wage</b> .....	26
<b>Seasonal Adjustment</b> .....	26
<b>Time Series</b> .....	27
<b>Chapter Three Workforce Concepts</b> .....	29
<b>Labor Markets</b> .....	29
<b>Human Capital</b> .....	30
<b>Behavioral Economics</b> .....	31
<b>NAIRU and the Phillips Curve</b> .....	32
<b>Full Employment</b> .....	33

Forms of Unemployment .....	33
Skill Shortages.....	34
Routine and Non-Routine Occupations .....	35
Productivity .....	37
<b>Chapter Four: Occupational Employment.....</b>	<b>39</b>
Defining Occupations .....	39
Skills.....	40
Occupational Credentials.....	40
High-Stakes Certifications.....	43
Other Certifications .....	44
<b>Chapter Five: Industries and Employment.....</b>	<b>45</b>
Sorting Industries .....	45
Goods and Services .....	45
Unions: The People Who Brought You the Weekend .....	46
Winners and Losers.....	50
Loss of Manufacturing Jobs .....	50
Manufacturing Wages .....	50
Good Jobs for Those with Less Than a BA.....	51
Job Growth: Small vs. New Businesses .....	52
<b>Chapter Six: Wealth, Poverty, and Employment.....</b>	<b>56</b>
Wealth and Income .....	56
The Middle Class .....	56
Adjusting Income for Inflation .....	57
Poverty and Unemployment.....	58
The Supplemental Poverty Measure .....	60
<b>Chapter Seven: Workforce Development in the United States .....</b>	<b>63</b>
Human Capital and Workforce Development .....	63
The Long U.S. Educational Tradition.....	64
Colleges then Universities .....	65
Acculturation.....	65
Student Tracking.....	65
Segregation.....	66
The Expanding Education Base.....	67

<b>The New Deal and a Growing Federal Role</b> .....	70
<b>After the War</b> .....	70
<b>The Great Society Education Revolution</b> .....	71
Federal Job Training Initiatives .....	71
<b>Changes in the Education Landscape: 1980–2018</b> .....	72
<b>Charter Schools</b> .....	73
<b>Higher Education</b> .....	74
<b>Proprietary Institutions</b> .....	75
<b>Employer-Sponsored Training</b> .....	76
<b>Varieties of Employer Training</b> .....	76
<b>Chapter Eight: The U.S. Workforce in the International Context</b> .....	79
<b>Gross Domestic Product</b> .....	79
<b>Adjusting GDP for Inflation</b> .....	80
<b>Relative Prices</b> .....	80
<b>Income Distribution: The Gini Coefficient</b> .....	80
<b>Human Development Index</b> .....	82
<b>Employment and International Trade</b> .....	83
<b>Educational Achievement</b> .....	84
<b>Universities</b> .....	84
<b>International Unemployment</b> .....	84
<b>Appendix One: The Employment Impact of NAFTA</b> .....	89
<b>Appendix Two: Chronology of Federal Education Legislation</b> .....	92
<b>Bibliography</b> .....	99

## List of Figures

### Figure

1. U.S. Employment 1947–2017 .....	9
2. Workforce Dynamics .....	12
3. Labor Force Participation Rates.....	18
4. Labor Force Utilization by Each of Six Measures .....	19
5. Reasons for Not Participating in the Workforce.....	22
6. Total Hourly Compensation by Industry .....	24
7. BLS Employment and Unemployment Report .....	25
8. Number of People Making Minimum Wage or Less.....	27
9. Unemployment by Education.....	31
10. Routine Labor.....	36
11. Productivity and Real Wages U.S. 1964–2008.....	38
11b Second Take: Productivity and Real Wages U.S. 1948–2016 .....	38
12. Occupational Certifications Awarded Programs of One Year or Less.....	44
13. U.S. Employment by Industry .....	48
14. Changing Shares in the Industrial Landscape .....	49
15. Union Membership as Percent of Workforce .....	49
16. Manufacturing Employment and Output .....	51
17. Changing Nature of Good Jobs.....	52
18. “Good Jobs” by Educational Attainment .....	53
19. Distribution of U.S. Firms by Size .....	54
20. New Firms Drive Job Growth and Economic Dynamism .....	55
21. Real Median Household Income by Race and Hispanic Origin: 1967–2014 .....	60
22. Number in Poverty and Poverty Rate: 1959–2015.....	61
23. Poverty Rates Using Official and Supplemental Measures.....	61
24. Number of People in Poverty 1966–2016 .....	62
25. The Dramatic Rise of Educational Attainment .....	69
26. Employer Spending on Training 2011–2016 .....	77
27. Comparative Income Distribution .....	81
28. The Human Development Index.....	81
29. Distribution of Income in Selected Countries .....	82

30. Jobs Supported by U.S. Exports in 2014 .....	83
31. International Student Achievement Scores .....	85
32. Unemployment in the European Union .....	86
33. U.S. Merchandise Trade with NAFTA Partners: 1993–2014 .....	90
34. NAFTA Trade with U.S. Minus Petroleum Products .....	90

## Preface

Most journalists follow reports on the workforce once a month, if that. We get the unemployment rate, and maybe the number of new jobs created that month, and then move on. Except in a recession, the public pays more attention to weather reports in San Diego, or to NASDAQ.

Yet like icebergs and mushrooms, most of what journalists (and the public) need to know about the workforce lies beneath the surface. What lies beneath is extraordinarily consequential. It drives the rise and fall of stock markets, the monetary policies of the Federal Reserve, and federal legislation on taxes, federal budget priorities, education, and training funding and much else. Most importantly, the proper (and improper) use of the data affects the lives and well-being of 327 million real people like ourselves — our jobs, pay, taxes, and station in life.

Unfortunately, a lot of us get a large part of this essential information wrong. There is much confusion and misuse of the data by journalists, politicians, and pundits, creating a serious lack of clear understanding and usage by most of the public. Ideologues, politicians, and special interest groups often distort the data for their purposes.

Even the economists sometimes get it wrong. Myths, comforting perhaps, but still false, abound in reporting on employment, unemployment, skills, income, and educational attainment. Uncontested acceptance of such myths only serves to further muddy the waters of public discourse. If journalists get it right, they may ameliorate the damage.

We wrote this Guide in plain English to help journalists and other laypeople better understand the nature and dynamics of the American workforce. Most of us are wary of statistics either out of math phobia, or by way of the old “lies, damned lies, and statistics” canard.<sup>1</sup> For the most part, however, the information, definitions, and sources are not all that complicated. But the words can confuse.

This publication aims to increase the understanding of employment, unemployment, occupations, labor market theory, employment by industries, and the U.S. education and workforce development system. *Headcount* sheds light on Workforce Information sources, methods, and terms, and the concepts behind them.

Along the way, we express our opinion on controversial topics. Don’t be afraid to ignore such opinions — or, you can double-check with other sources. If you should find an error or lack of clarity, please inform us and, after we have each blamed the other for the mistake, we will respond promptly with the necessary correction or clarification. We welcome other comments as well.

Garrison Moore

Robert Bowman

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<sup>1</sup> Statistics are only damned lies when they are flawed, distorted, or poorly understood. It is the journalists’ job to watch for the “alternative facts” foolishness and counter with a clear exposition of the best available knowledge.



Figure 1

U.S. Employment 1947–2017

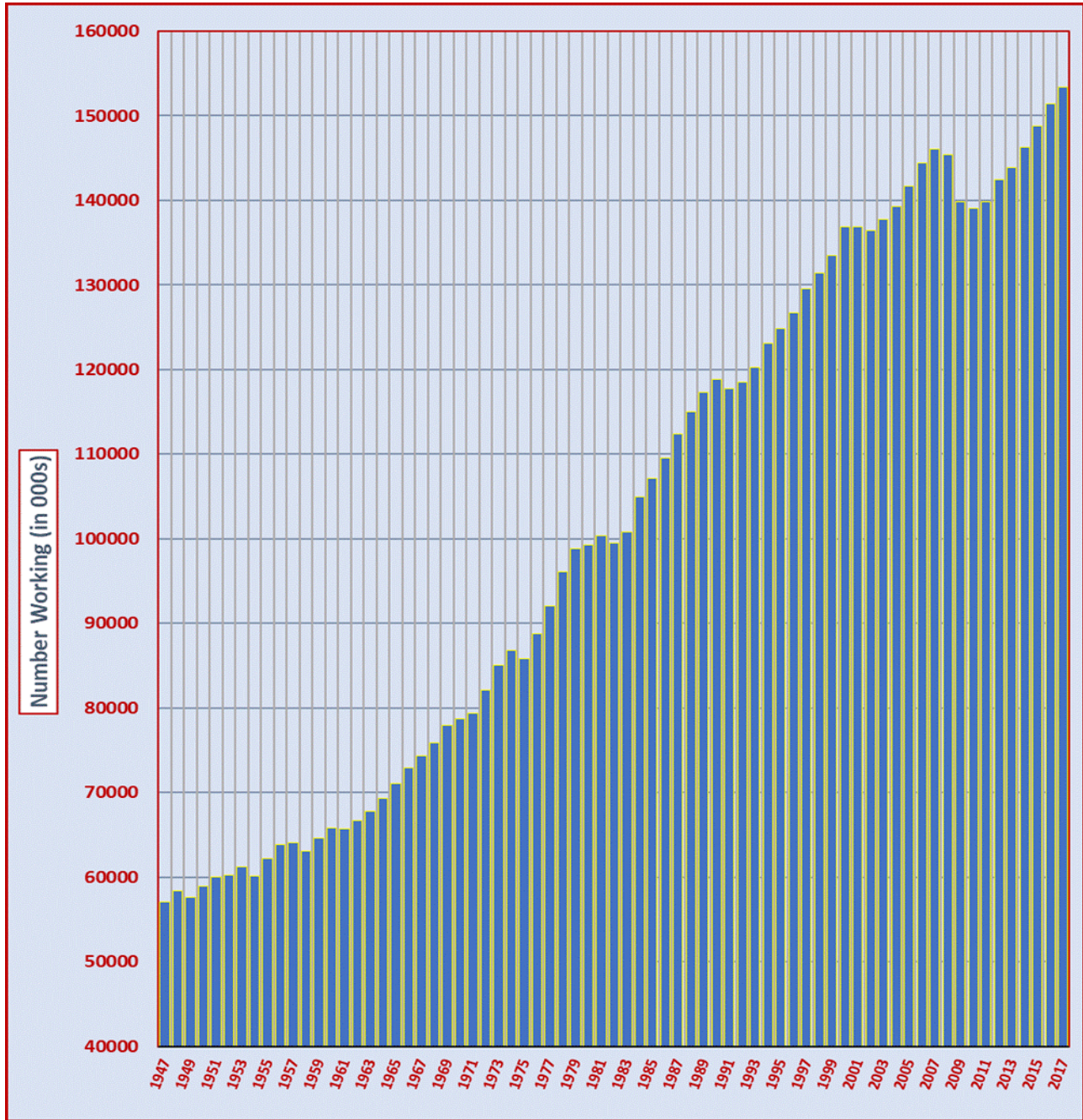


Fig. 1 shows the steady growth of the U.S. workforce over the decades. The dips are recession years, the largest of which were the 1982–84 downturn and the 2009–2011 Great Recession. Even then, the workforce resumed growing after a couple of years and the number of employed Americans soon exceeded pre-recession levels. Numbers above do not include the unemployed — i.e., those actively looking for work. Source: Bureau of Labor Statistics, CPS Series LNS12000000.



## Introduction

### Workforce Turbulence

The American workforce seethes with a continuous change. Apart from relatively brief recessions, it expands and becomes ever more complex. It has done so continuously for 400 years. Although the labor market often seems basically stable, with most people working while the poor and unemployed struggle at the margins, in fact the markets constantly churn as millions change their job status every month. (See *Figures 1 and 2.*)

As a result, monthly unemployment reports never represent the same group of people twice, although the rates may remain the same. Even during a recession millions of people get jobs, and during a recovery millions of people lose their jobs. In recent years, BLS has found that half of the unemployed remain so for less than three months; only about one in ten remain unemployed for more than a year.<sup>2</sup>

The churning of the workforce never ceases. Every spring, millions of high school and college graduates pour into the labor pool. Businesses open and businesses close. Employers create jobs as company sales increase. Employees leave their jobs to return to school, tend to family members, or just move away. Immigrants flow in and emigrants flow out. People take off when they get sick and return when they recover. Older workers retire (and, unfortunately, some die before they retire.)

What drives all this turbulence? How do the statistics measure it? What do the workforce information terms mean? What are the key concepts and theories of workforce economics? What is human capital? Why is it important?

The genius of the American workforce information system is that it can answer all those questions at least once a month, consistently and to the satisfaction of contending interests of all types. Policymakers, equity markets, foreign investors, journalists, and, most important, informed citizens have a uniform system for measuring and understanding the ebbs and flows of a dynamic workforce.

This Guide defines, explains, and provides some of the history behind it all. It remains for journalists to grasp the essentials, understand the information as it becomes available, and communicate it clearly and factually on to the public. Only in that way can voters, as good citizens, use that understanding to choose among policies and to vote for the elected officials who support those policies.

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<sup>2</sup> In Figure 2 we can see that nearly 300,000 young people reached 16 years of age on average each month in 2017 and thus entered the labor pool. The age of 16 is arbitrary but selected because this is generally the age that young people can work (except for such jobs as babysitting and newspaper delivery) in most places. It is also the age at which mandatory schooling ends. Seventy years ago, the age was 14 — reflecting the fact that most children left school after 8th grade at that time. As it is, fewer and fewer of those age 16–24 are working either part-time or full-time, which is largely a factor of more young people remaining in school and going on to college.



**Figure 2**  
**Workforce Dynamics**  
 Average Monthly Change for the Year 2017

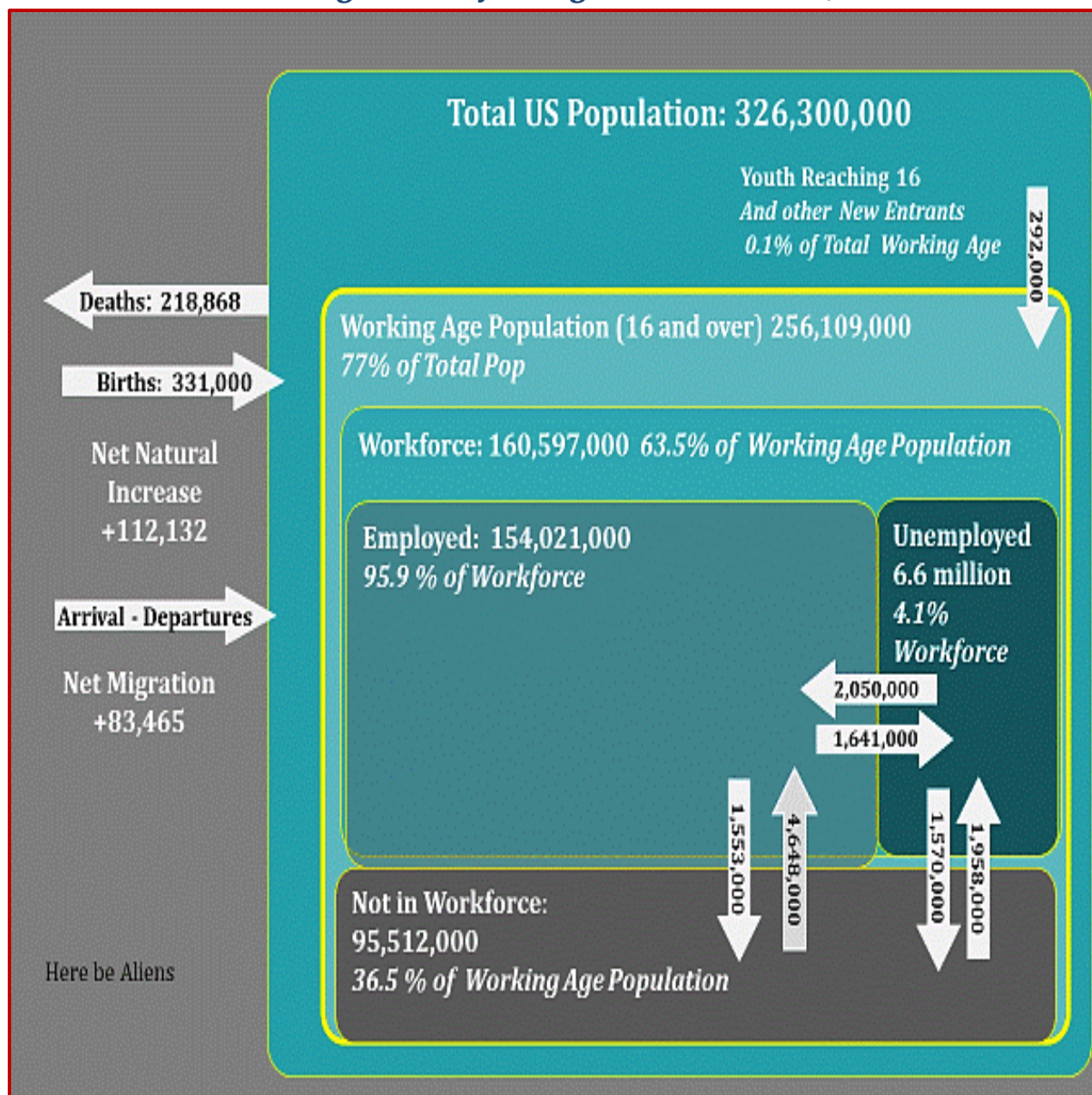


Figure 2 provides a simplified schematic of workforce dynamics using monthly averages for 2017. As the figure demonstrates, the workforce is in a constant state of churn as people move from one work status to another. The chart presents estimates compiled by the authors using data publicly available from the U.S. Bureau Labor Statistics, the U.S. Census, the Centers for Disease Control and Prevention, and World Bank.

# Chapter One

## Measurement - Sources and Methods

### Present at the Creation

Over the past 85 years, the U.S. government has developed a set of standard definitions to facilitate the discussion and study of workforce issues. All federal statistical agencies, state government, local government planners, and economists everywhere — from local chambers of commerce and major corporations to academia — adhere to these definitions and standards. These measures of employment, unemployment, and related matters depend on how the statisticians determine employment status itself.

In the Great Depression of the 1930s, policymakers, economists, and the public had no idea how many people were employed, unemployed, retired, etc. All they knew was that they had a horrible crisis on their hands. There was very little understanding about what was going on in the workforce or how it worked. To address this knowledge gap, Congress established the Bureau of Labor Statistics in the U.S. Department of Labor, which, with the help of outside economists, statisticians, and policymakers, developed a system for measuring the employment status of all Americans.

After considerable debate, they selected an *activity* and *survey* approach. Rather than basing unemployment estimates on highly subjective criteria, the *activity concept* calls for use of information on a person's actual behavior. In other words, what is he or she doing at the time of the survey? Are they working or not? Not working but actively seeking work? If they are not working, what were they doing that prevented them from working?

To determine this, the officials needed carefully defined terms, both technically rigorous and easily understood by the public, and they needed to develop and test survey questions, devise sampling methods, and train interviewers. They determined that well-trained interviewers would survey a very large sample to determine the labor market activity during the relevant period (usually the past week, but sometimes the past year) of all persons in each household contacted. Over time, the Bureau of Labor Statistics (BLS), the U.S. Census, and state labor market information agencies among others came to share the work of conducting surveys and analysis.

Businesses and investors follow these numbers closely — witness the stock market reaction to the unemployment report released on the first Friday of each month. Congress, the executive branch, and the Federal Reserve Board, all depend on this information to make decisions critical to the health of the entire economy.

Such widespread and urgent need requires accurate and consistent numbers and that the data collected and reported meet the highest standards of the statistical profession, immune to political interference of any kind. The Bureau of Labor Statistics' methods and definitions have set the standard for workforce statistics in nations across the globe.

The employment and unemployment definitions are precise and nearly universally admired by a wide range of users, though are sometimes at odds with the popular understanding of the terms. The agencies could have defined some terms differently. But to allow measurement of an inherently fuzzy and ever-changing reality, Congress and the agencies chose these terms and

refined them over time.

Estimates of employment and unemployment derive from two monthly national surveys: The Current Population Survey (CPS) — the “Household Survey” — and the Current Employment Survey (CES) — the “Payroll Survey.” The first surveys people, and the second surveys employers.

### **Current Population Survey (CPS)**

Each month, U.S. Census employees contact *60,000 carefully selected households — or about 113,000 individuals*. (A reliable political opinion poll, by contrast, surveys only about 3,500 people nationally.) The surveyors gather detailed information on the employment status of individuals by age, race, sex, and other variables. The U.S. Department of Labor’s Bureau of Labor Statistics (BLS) and state labor market statisticians analyze and report the results monthly.

CPS surveys form the basis of state and local employment and unemployment estimates. State Employment Service Labor Market Information statisticians working in collaboration with BLS augment national and regional data gathered from state and local areas.

The U.S. Census conducts the monthly CPS on behalf of the Bureau of Labor Statistics. While conducting the CPS, the Census surveyors ask supplemental questions on a variety of other social and economic conditions (poverty, housing, etc.). The supplemental data is available directly from the Census website: <https://www.census.gov/programs-surveys/cps.html>

### **Current Employment Statistics (CES)**

Each month, BLS employees around the country contact approximately *147,000 businesses and government agencies — a sample of approximately 634,000 individual worksites* — to provide detailed industry data on employment, hours, and earnings of all employees on nonfarm payrolls. This large sample allows for detailed employment data for all 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, and about 450 metropolitan areas and divisions.

### **The American Community Survey (ACS)**

This ongoing Census survey continually gathers and reports detailed information on a broad array of subjects including ancestry, employment, educational attainment, income, language proficiency, migration, disability, and housing characteristics. Economists, government planners, and analysts among others use the data to allocate funding, track shifting demographics, plan for emergencies, serve as the basis of urban planning in local communities, and drive business decisions. Sent to approximately 295,000 addresses or 3.5 million per year, it is the largest monthly household survey that the Census Bureau administers.

### **U.S. Decennial Census**

Much of the detailed information known about the American population and workforce derives from the familiar *census of all U.S. residents taken every ten years*. This Constitutionally required count allows for the reallocation of seats in the House of Representatives and much more. The Census Bureau updates this detailed data collection annually using reliable indicators of changes in the population. Though much of the Census information is not directly related to labor market conditions, it provides invaluable information about working Americans beyond

their employment status.

In addition, the Census Bureau conducts surveys of the American public relating to socio-economic issues. The U.S. Census collects data for other agencies such Current Population Survey for BLS.

### **State Labor Market Information Agencies**

Those who want to dive into state and local employment, unemployment, and general economic situations can contact the state labor market information agencies — which prepare state and local information often down to the census tract level. Working in collaboration with the U.S. Bureau of Labor Statistics, the agencies provide data and analysis consistent with national definitions. It is good to check with them when doing local stories that have to do with their areas of expertise.

### **National Center for Educational Statistics (NCES)**

NCES is the primary federal entity for collecting and analyzing data related to education in the U.S. and other nations. NCES is located within the U.S. Department of Education and the Institute of Education Sciences. NCES collects, collates, analyzes, and reports complete statistics on the condition of American education; conducts studies and publishes papers and reviews education activities internationally.

### **Bureau of Economic Analysis (BEA)**

The Bureau of Economic Analysis (BEA) serves as the major provider of primary economic data, including detailed information on: *The National Economy*, including the official estimates of Gross Domestic Product (GPD) — one of the most closely-watched of all economic statistics; *U.S. Regional Economic Activity*, including basic economic information for the country, region, state, metropolitan area, and county; and *The International Economic Situation*, including international trade, U.S. direct investment abroad, and foreign direct investment in the U.S.

### **Professional Statistical Analysts**

Without the services of professional statistical analysts, much of the gigabytes of data would be all but useless. It is these professionals who keep the statistical methods rigorously current and provide the data available in formats readily useful by journalists, researchers, public policy analysts, businesses, and informed laypersons. They also put out insightful publications such as the Bureau of Labor Statistics *Monthly Labor Review*, *The Economics Daily*, the *Occupational Outlook Handbooks*, and from the U.S. Department of Education, the *Digest of Education Statistics*.

BLS and the Census publish detailed national, state, and local results of the CPS and CES surveys in the monthly BLS *Employment & Earnings Online*, providing literally hundreds of tables of data on an immense range of workforce-related topics.

Generally, BLS publishes for the nation, states, and large metropolitan areas. State Labor Market Information agencies provide data for smaller areas. Informed users consider U.S. employment related statistical estimates the most reliable and accurate information available on labor market conditions. (BLS and the other agencies publish the exact statistical methods and levels of confidence in the data for all to see with every release of information.)

As with stock market indexes, the clearly-defined monthly snapshots are vital to

understanding what is going on. Like cameras, they capture what we could not see otherwise. The monthly and annual data series created from this data provides a moving picture of the American workforce



## Chapter Two: A Lexicon for the Labor Market

### Measurement

To understand the workforce, one needs to understand how the professionals define the terms and use those to guide information collection and reporting. There is, in fact, a logical progression of the workforce statistics definitions and the resulting numbers. A selection of the more important definitions follows:

- ❖ At the beginning of 2018, The United States had a *total population* of an estimated 327 million residents. Of the total population, about 255.5 million were over the age of 16<sup>3</sup> and in the armed services, or in prison or other institutions that would prevent them from working. This group forms the *civilian non-institutional population*. This is the potential workforce.<sup>4</sup> Theoretically, all could be working or looking for work.
- ❖ The civilian non-institutional population is composed of two major groups: *the active civilian labor force of 160 million people* and *95 million not in the labor force*.
- ❖ The 95 million American adults over the age of 16 who are *neither working nor looking for work* are *not in the labor force (NLF)*.<sup>5</sup> In early 2018, this amounted to 37 percent of the civilian non-institutional population or 95 million people. Of these some 88 million (or 93%) did not want a job at all. This 88 million who did want a job includes 41.8 million retirees, 17 million nonworking students, as well as voluntary homemakers, and those considered too physically or mentally disabled to work.
- ❖ The *employed* include full-time, part-time, seasonal, contingent, and self-employed workers. The *self-employed* make up between nine and ten percent of total employment. The numbers of self-employed skew toward part time workers over 65 years old, most likely retired from other work.
- ❖ The *unemployed* are not working but are available to work and *actively* looking for work. The *unemployment rate* is the percent of the 160-million-person civilian labor force that is not working but is available for work, and actively looking for work for pay or profit. At the beginning of 2018, the rate had fallen to 4.1 percent.
- ❖ Those *working without pay* (volunteers, homemakers, etc.) do not count as part of the workforce.<sup>6</sup>

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<sup>3</sup> See *Forward* for an explanation of the choices of the age for entering the workforce.

<sup>4</sup> The terms “labor force” and “workforce” are used interchangeably in this document. The term “labor force” dates from the 1930s and is still used in the official statistics. To modern readers this can sometimes imply “unionized labor force,” or “blue collar workforce,” which it is not. The current terminology, in most cases, is “workforce.”

<sup>5</sup> To enter the workforce, any non-institutional adult 16 years or older who is not working and is available for work, simply starts looking for work.

<sup>6</sup> This definition has caused some controversy over the years since people working but not being paid directly such as homemakers, nuns, and full-time volunteers do not count as employed. This is especially important for less-developed countries where large numbers of subsistence farmers rarely use money but house, clothe, and feed themselves. Economists know that their contribution to the economy is significant but have found no reliable way to measure the value.

## How to Calculate Employment, Unemployment, and Labor Force Participation Rates (2018)

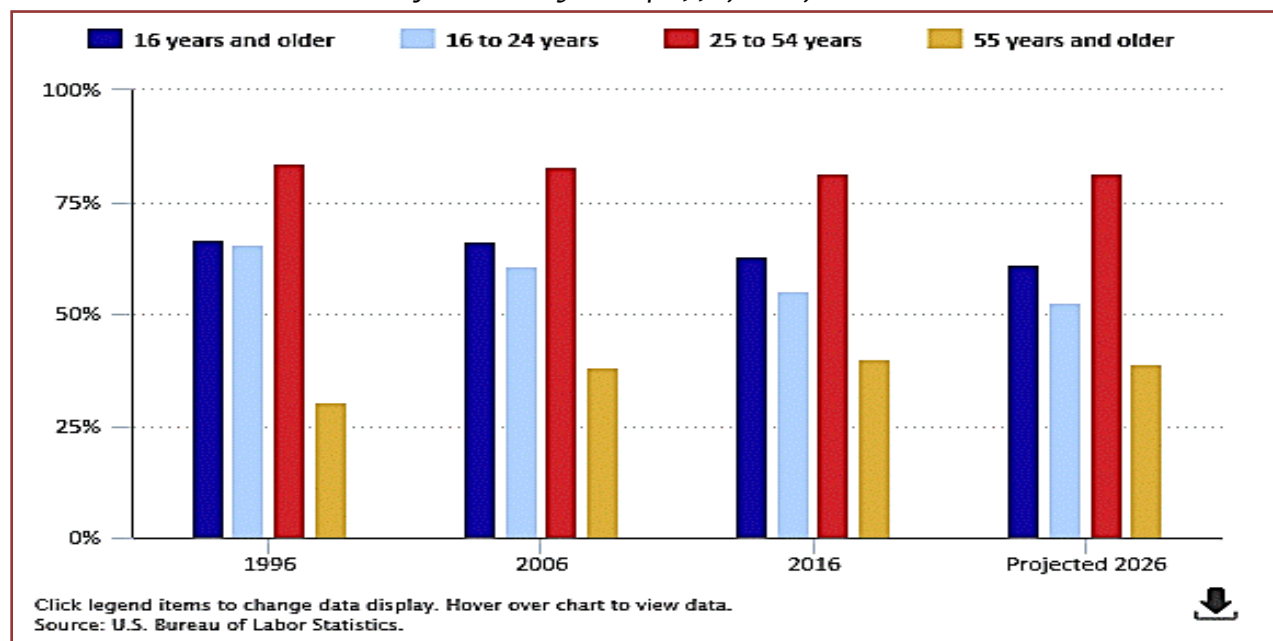
	Number (in millions)	Percent
<b>Total US Population (TP)</b>	327.2	
<b>Civilian Population (CP)</b>	255.7	78.1% of TP
<b>Not in Labor Force (NLF)</b>	95.7	37.3% of CP
Marginally attached	1.7	
Discouraged	.451	
<b>Labor Force (LF)</b>	161.1	<b>62.7% of CP<sup>1</sup></b>
Employed	154.4	<b>60.1% of CP<sup>2</sup></b>
<b>Unemployed</b>	6.7	<b>4.1% of LF<sup>3</sup></b>

(1) Employment to Pop Rate    (2) LF Participation Rate    (3) Unemployment Rate

The Civilian Population is everyone 16 years of age and older and not in the armed forces or institutionalized. Source: Bureau of Labor Statistics

**Figure 3**  
**Labor Force Participation Rates**

by Selected Age Group 1996, 2006, 2016



Note steady decline in youth, age 16–24, participation (largely a result of longer school attendance) and the steady rise of those 55 and older. The Figure 3 shows that the much-discussed decline in participation among those age 25–54 has in fact only fallen modestly.

**Figure 4**  
**Labor Force Utilization by Each of Six Measures**

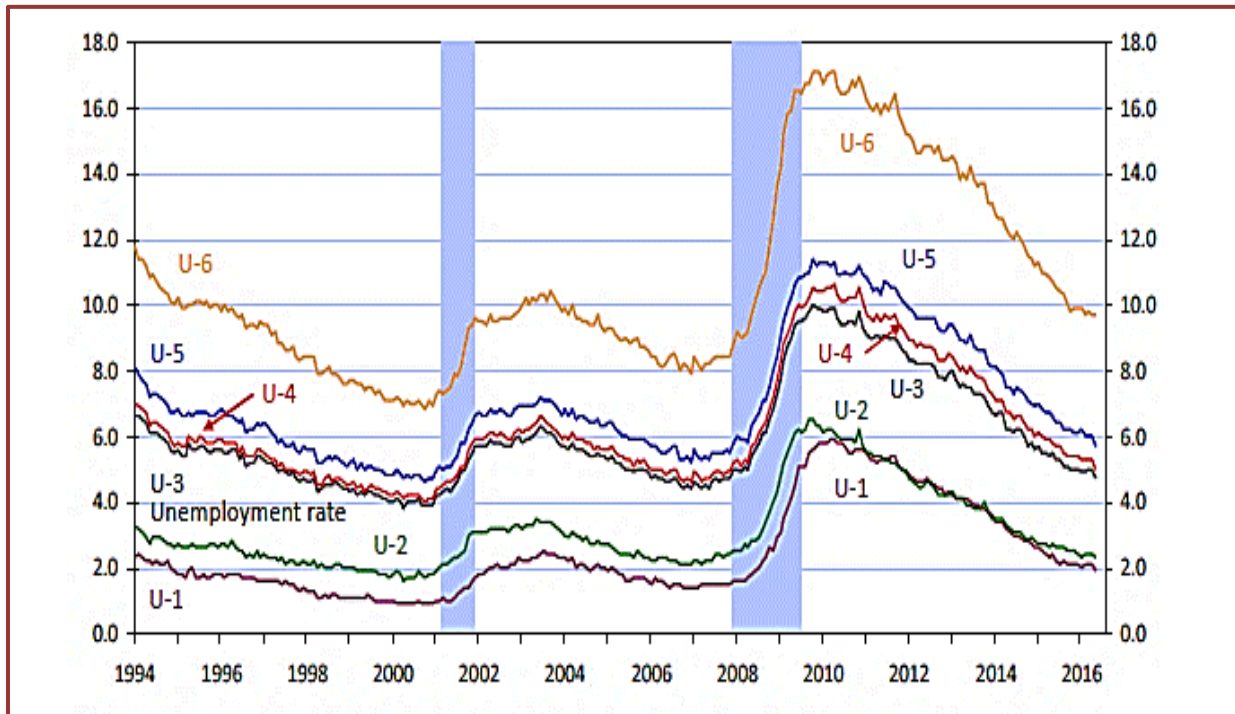


Figure 4 shows the relationship of the six measures of labor utilization over time. As shown here, the various measures track very closely. All shown in percentages. Again, U-3 is the official rate. Shaded areas show recessions. Source: BLS, CPS Employment and Unemployment Data Series.

### Multiple Measures of Labor Force Utilization

Some observers believe that BLS should count discouraged workers<sup>7</sup> and others who do not fit the strict definition of unemployment. To address these concerns, BLS publishes a total of six unemployment estimates, U-1 through U-6. The standard measure is U-3; that is, anyone who is not working, is available to work, and is actively seeking work.

The other five measures range from a very limited measure that includes only those who have been unemployed for at least 15 weeks, to a very broad metric that includes the standard unemployment (U-3) plus all people marginally attached to the labor force and all individuals employed part-time but preferring full-time work. (See definitions of each in box below.) All these measures have tracked closely with the official rate ever since their introduction in 1996. (See Figure 4 showing unemployment using the different measures over time.)

<sup>7</sup> People available for work but not looking because they don't believe there is work for them in the labor market. See discussion under "Marginal Attachment."

## BLS Six Measures of Workforce Utilization

U-1 Persons unemployed 15 weeks or longer, as a percent of the civilian labor force

U-2 Job losers and persons who completed temporary jobs, as a percent of the civilian labor force

U-3 Total unemployed, as a percent of the civilian labor force (official unemployment rate)

U-4 Total unemployed plus discouraged workers, as a percent of the civilian labor force plus discouraged workers

U-5 Total unemployed, plus discouraged workers, plus all other marginally attached workers, as a percent of the civilian labor force plus all marginally attached workers

U-6 Total unemployed, plus discouraged workers, plus all marginally attached workers, plus total employed part time for economic reasons, as a percent of the civilian labor force plus all marginally attached workers

### Unemployment Insurance (UI)

The public sometimes confuses the unemployment rate with the number of people receiving Unemployment Insurance (UI). The latter group is comprised only of those formerly-employed workers who paid state unemployment insurance premiums while they were working and have not exceeded state time limits usually matching the federal maximum of 6 months.

The system is a federal-state cooperative insurance service with generally uniform practices. However, the states set their own payment levels. UI recipients account for less than one third of all the unemployed at any given time.

### Dislocated/Displaced Workers<sup>8</sup>

The term *dislocated/displaced worker* usually applies to mass layoffs of experienced employees. (Programs sometimes use three years on the same job as a cutoff.) Unemployed people 20 years and older who have lost or left jobs because their plant or company closed or moved, the employer had insufficient work for employees, or the employer abolished their position or shift, fall into this group.

The recession of 1981–1983 saw great concern for the employment prospects of workers laid off in the collapse of heavy industry (steel, automobiles, tires, etc.). The public has long feared that these workers, especially middle-aged men, do not have the skills needed to find other work in a rapidly changing economy.

As early as 1962, Congress enacted legislation to train and place these workers as well as workers displaced by automation in new jobs. It turned out that, at that time, experienced workers were relatively easy to place in new jobs with minimal training because of their work

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<sup>8</sup> The terms are used interchangeably.



experience and on-the-job learning (or human capital reserves, an economist might say).<sup>9</sup>

Employers continue to lay off workers, and federal dislocated worker programs continue to train and place them in new jobs. The image of dislocated workers as laid-off middle-aged men in manufacturing continues, although most displaced workers are younger and from industries other than manufacturing. Women make up about half of all dislocated workers.

## **Part-Time Employment**

Part-time jobs have an official definition for labor law purposes. Anyone working less than 35 hours per week qualifies as a part-time worker. Part-time workers often do not receive the same benefits as others working full-time for the same employer. Part-time workers count as employed in the employment estimates, but BLS notes and reports the number who would rather be working full-time. In 2017, about a third of the workforce was working part-time. Eighty percent of those working part-time do so voluntarily. The remainder do so for *economic reasons* — largely because they cannot find full-time work. This number often rises during a recession.<sup>10</sup>

## **Marginal Attachment**

The employment situation is never clear-cut at the margins. Of those not in the labor force, nearly six million nonworking adults — or 3.7 percent of the workforce — comprise those marginally attached to the workforce. These individuals say they would like a full-time job but cite several reasons (discouragement, family responsibilities, health, etc.) for not actually looking for a job. Most have not looked for a job for more than a year. The marginally attached do not count as unemployed because they are not working or looking for work.

Among those marginally attached to the workforce, “discouraged workers” get considerable attention especially during recessions. They tell surveyors they want work but are not looking for work because they don’t believe there are any jobs available for them. However, their numbers are a minuscule portion of the workforce and insignificant compared to the numbers of unemployed. (See *Six Measures of Labor Force Utilization* box.) The estimated number of U.S. discouraged workers in August 2017 was 448,000.<sup>11</sup>

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<sup>9</sup> For those interested, BLS closely tracks layoffs, job openings, and hires through a program called JOLTS. (Job Openings, Layoffs, Turnover, and Separations.)

<sup>10</sup> Some observers have expressed concern that employers might replace full-time employment with part-time jobs because the employers want to save on benefit costs or for other reasons. But in the 10 years from 2007–2017, the economy has created twice as many full-time jobs as part-time positions and not the other way around — which would be the case if this were a major trend in hiring.

<sup>11</sup> To be exact, the discouraged worker rate was 0.34 percent of the workforce.

Figure 5  
Reasons for Not Participating in the Workforce

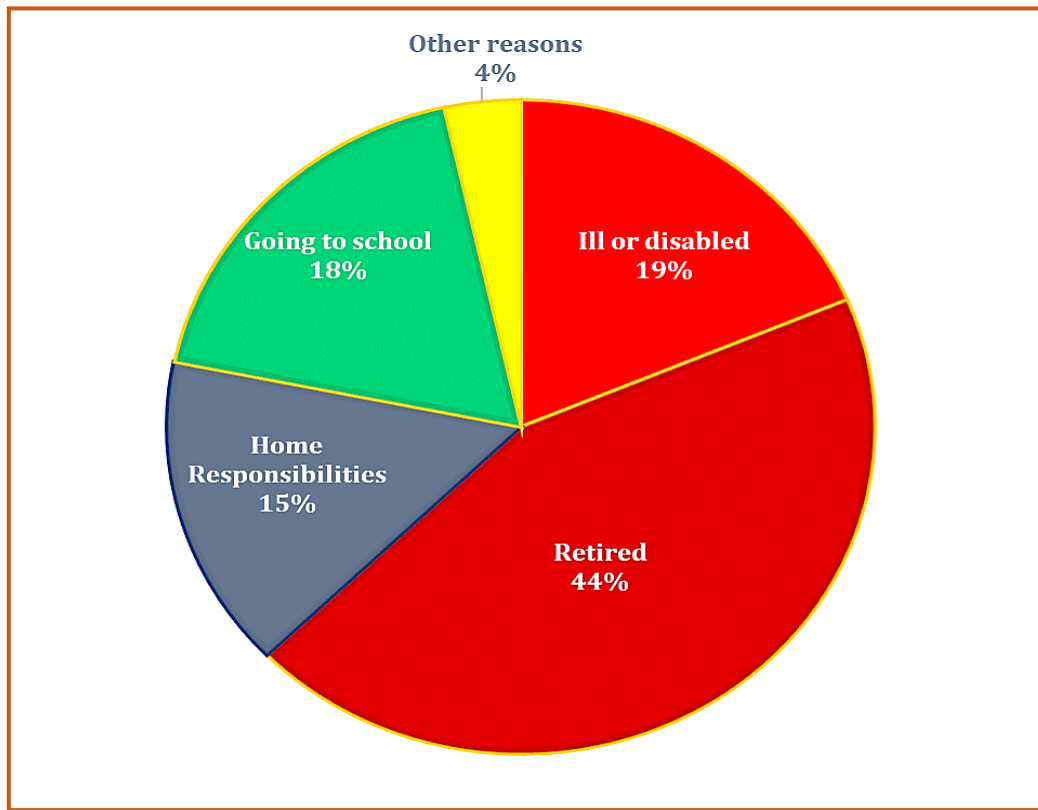


Figure 5 shows the reasons 95 million U.S. residents over the age of 16 in 2017 were not participating in the workforce. Source: Bureau Labor Statistics Series ID LNS11300000.

### Contingent Workers

Working people who do not have an explicit or implicit contract for long-term employment form a mixed bag of “contingent” workers. They are all considered employed if working at the time of the CPS survey. They fall into several sometimes-overlapping categories:

❖ **Short-Term or Temporary Work** is employment where the employee is working only until the completion of a specific project, temporarily replacing another worker, working for a fixed time, filling a job available during certain times of the year, or if business conditions dictate that the job is short-term. These jobs usually attract those loosely attached to the labor market such as students, normally full-time homemakers, and retirees looking to supplement their income. Some people can make enough seasonally to support themselves year-round. But it also includes professional consultants and others who work on a short-term contract basis. Some people take short-term work because they cannot find permanent jobs.

*Seasonal Employment* is the largest category of temporary work. Examples include retailers hiring extra workers for the holiday season, and tax preparation firms hiring employees for

tax season. Sixty-four percent of summer temporary workers are enrolled in school.<sup>12</sup> *Seasonal Farm Work*, where agricultural workers and their families follow crops as they ripen across the country, has policy implications. For example, this pattern of work can have the effect of denying children an education unless special local programs are available.

❖ **“Temp” and Contract Work** refers to those who work for an intermediary, namely a temporary-help agency or a contract company, with no expectation of long-term permanent employment. This type of work includes seasonal workers but also includes full-time and year-round employment where there is no assurance or expectation of permanent work for the primary employer.

These jobs are especially vulnerable during recessions. Employers sometimes use temp work as a way of evaluating a worker for full-time permanent employment. Again, some of these workers would prefer regular full-time work but have not been able to find any.

❖ **Individual Contractors** are all those who are not employees of any organization — consultants, freelance writers, and the so-called “gig” workers such as writers, musicians, actors, independent crafts workers, Uber and Lyft drivers, day laborers, and helpers of various sorts. Much has been made of the new gig economy and many new flavors have popped up in recent years. But gig work has a long tradition and remains a small part of the overall workforce.

❖ **On-Call Workers** are persons called into work only as needed, usually through a formal arrangement with the employers as opposed to informal gig work. Think substitute teachers and nurses.

## There Are Jobs and Then There Are Jobs

A quirk of the monthly employment report is that there are two estimates of employment, as mentioned earlier — one from the Current Population Survey (CPS) and one from the Current Employment Statistics (CES). The estimates are based on two ways of looking at employment — both useful for understanding the workforce.

To greatly oversimplify, CPS measures the employment situation of U.S. residents employed, unemployed, and not in the labor force in a specific month. This includes all residents 16 years of age and older including farm workers, family business workers, household domestic workers, the self-employed, and people with a job but on leave from their job. CES does not count these.

Rather, the CES survey focuses on understanding employers and industries, including the number of employees rather than individuals and their employment status. CES measures only the wages, hours of work, and occupations of nonagricultural employees.<sup>13</sup>

CES surveys 147,000 nonagricultural employers and asks how many workers they have on board at the time. In most instances, the two numbers track closely. The monthly BLS labor employment report uses the CPS unemployment numbers and the CES employment numbers.

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<sup>12</sup> “Summer Employment: A Snapshot of Teen Workers” Domingo Angeles, BLS *Career Outlook June 2017*.

<sup>13</sup> See Bowler and Morisi, “Understanding the Employment Measures of CPS and CES Surveys,” *Monthly Labor Review February 2006*.

**Figure 6**  
**Total Hourly Compensation by Industry**

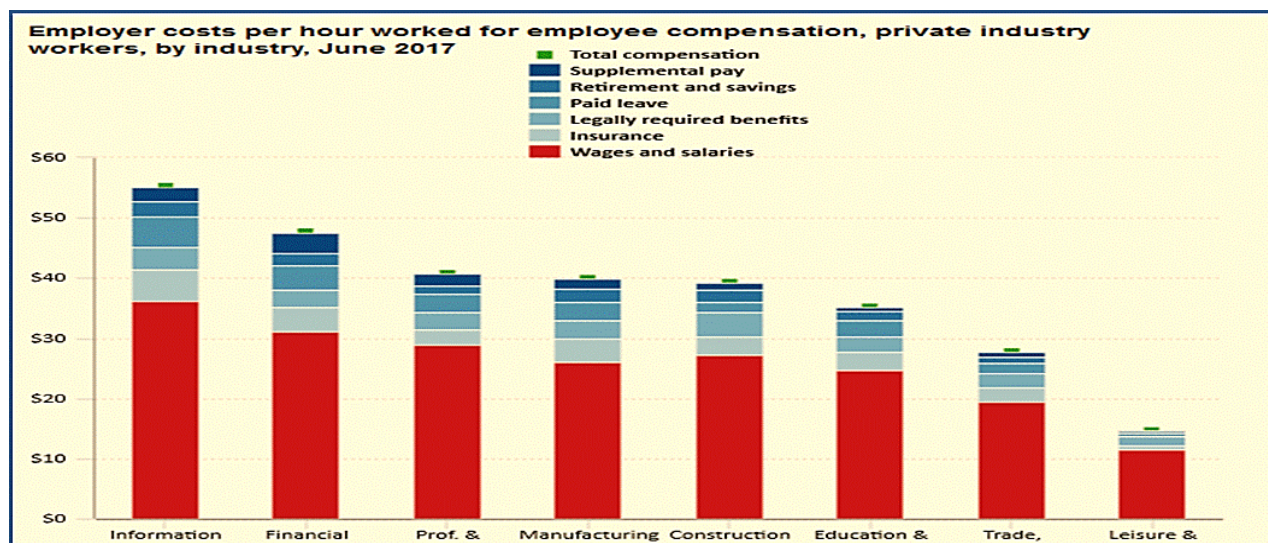


Figure 6 is an aggregation of everything employers spend on personnel by selected industries and types of expense. Source: Bureau of Labor Statistics, *Economics Daily*

### Turnover: Job Openings, Hiring, and Unemployment

Politicians and pundits occasionally assert that there are hundreds of thousands (or sometimes millions) of job openings out there and that if the unemployed just looked a little harder or had the proper search assistance, they would find them. While it is true that a *great many jobs open* all the time, there are *almost always more unemployed than there are job openings* — at least nationally. (See Figure 2.)

As measured by the BLS Job Openings and Labor Turnover Survey (JOLTS) program in December 2018, there were 5.9 million job openings and 7.1 million unemployed people, an historic low ratio and well below the height of the recent recession when there were nearly seven times as many unemployed as job openings.

Turnover is an often-overlooked source of employment. A common misconception is that the fastest-growing occupations offer the most job opportunities. This is not the case. *Turnover* filling jobs left open by people leaving their jobs for any reason — layoffs, quits, illnesses, retirement, etc. — accounts for most job openings. Newly-created jobs account for only five percent. For instance, in December 2018, 5.2 million people left their jobs and employers hired 5.5 million people meaning that 95 percent of hires were due to turnover.

While these ratios can generally show how well the national labor market is doing, it does not show actual surpluses and shortages as these occur where the rubber meets the road in local labor markets. Even within a local area, factors such as the type of jobs available and the skills of the unemployed affect the ratio of job openings to job seekers. (See “Forms of Unemployment” in Chapter Three.)



**Figure 7**  
**BLS Employment and Unemployment Report**

Employment status	Jan 2016	Nov 2017	Nov 2017	Jan 2018
“Civilian noninstitutional Population”	254,082	255,949	256,109	256,780
Civilian labor force	159,718	160,533	160,597	161,115
Participation rate	62.9	62.7	62.7	62.7
Employed	152,076	153,917	154,021	154,430
Employment–population ratio	59.9	60.1	60.1	60.1
Unemployed	7,642	6,616	6,576	6,684
Unemployment rate	4.8	4.1	4.1	4.1
Not in labor force	94,364	95,416	95,512	95,665

Source: BLS Monthly Employment and Unemployment Reports 2017

## Earnings and Income

The multiple definitions of earnings and income can sometimes confuse. Regulatory specifications may differ in detail and nuance for each depending on the legislation concerned. Some surveys also deviate from the standard definitions. It is best to check before citing any income-related data. The definitions most commonly used include:

- ❖ **Wages** are what hourly employees receive in pay, and usually quoted in dollars per hour. For most purposes, quoted wages include neither employee benefits (e.g., an employer’s portion of health insurance premiums) nor payroll deductions (taxes, insurance premiums, retirement savings, etc.).
- ❖ **Salaries** are what those on an annual fixed rate of pay receive. Employers usually quote salaries in annual terms and pay in either bi-weekly (every two weeks) or semi-monthly (twice a month) terms. As with wages, unless otherwise indicated, salary statistics include neither benefits nor deductions.
- ❖ **Earnings** are gross income from work sources including wages (including overtime), salaries, commissions, tips, payment in kind, or piece rates — everything received as pay for work. As with wages and salaries, earnings do not account for deductions from the paycheck. As the term implies, earnings exclude unearned income (e.g., income from trust funds, stocks, bonds, and other financial instruments). *Earnings* and *total employee compensation* are sometimes used interchangeably.
- ❖ **Personal Income** refers to net *individual* income from all sources: wages and salaries

(not including payroll deductions), government payments, trust fund payouts, disability insurance, etc.

❖ **Household Income** concerns the total annual amount of money received by all the people who occupy a “housing unit.” A housing unit may include a single family, one person living alone, two or more families living together, or any other group of related or unrelated people who share living quarters. Poverty and eligibility for many government programs are determined by household income. The statistics usually present household income as a median (half above, half below).

❖ **Average and Median Income.** In using employment-related statistics, it is critical to determine whether the numbers appear as an average (the statistical “mean”) or median.<sup>14</sup> Both are useful for distinct reasons. The most important caution is: do not mix the two in citing data, especially when comparing more than one set of data of any kind.

❖ **Total Compensation** is the *employer’s total cost* of employing a person including wage or salary, employment taxes and insurance premiums (e.g., employers’ share of Social Security, unemployment insurance, workers disability insurance, etc.) as well as all benefits (health insurance, vacation, sick leave, etc.). In some circumstances, compensation includes the cost of administering benefits. (There are other, roughly similar, definitions of compensation used for technical purposes and not covered here.)

## Minimum Wage

The federal government requires that employers pay most employees<sup>15</sup> a minimum amount of money per hour not counting benefits. In 2017, the federal minimum wage was \$7.25 per hour. State and localities are free to set their own minimums. Many do. Some localities have recently set the minimum as high as \$15 per hour, and there is a movement to do so at the national level.

Some oppose the minimum wage, holding that the extra cost will cause employers to hire fewer people. There is little evidence of this in the literature. There are two main reasons that raising the minimum does not reduce hiring.

First, consumer demand as much as employee cost determines hiring. Second, the minimum rarely exceeds the going wage in most industries. In any event, the minimum wage affects a relatively small number of employers and employees — no more than a few percent of the workforce receive the minimum wage or less at any given time. (See *Figure 8*.)

## Seasonal Adjustment

In addition to reporting the raw statistics, BLS adjusts the outcomes to reflect normal seasonal fluctuations in employment and unemployment caused by seasonal recreation, holiday

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<sup>14</sup> Just to review; the **average** is the total of a list of values divided by the number of items, and the **median** is the number in which half the values are above and half below. Researchers use other more sophisticated statistical methods to get a more refined understanding of the distribution of data they are investigating.

<sup>15</sup> Exemptions include: certain disabled workers, teenagers in training, employees of very small companies, family members on small farms, certain home care aides, occasional babysitters, newspaper deliverers, and state and local elected officials. Employers of tipped workers must pay at least \$3.15 an hour plus tips if the total is at least \$7.25 an hour.

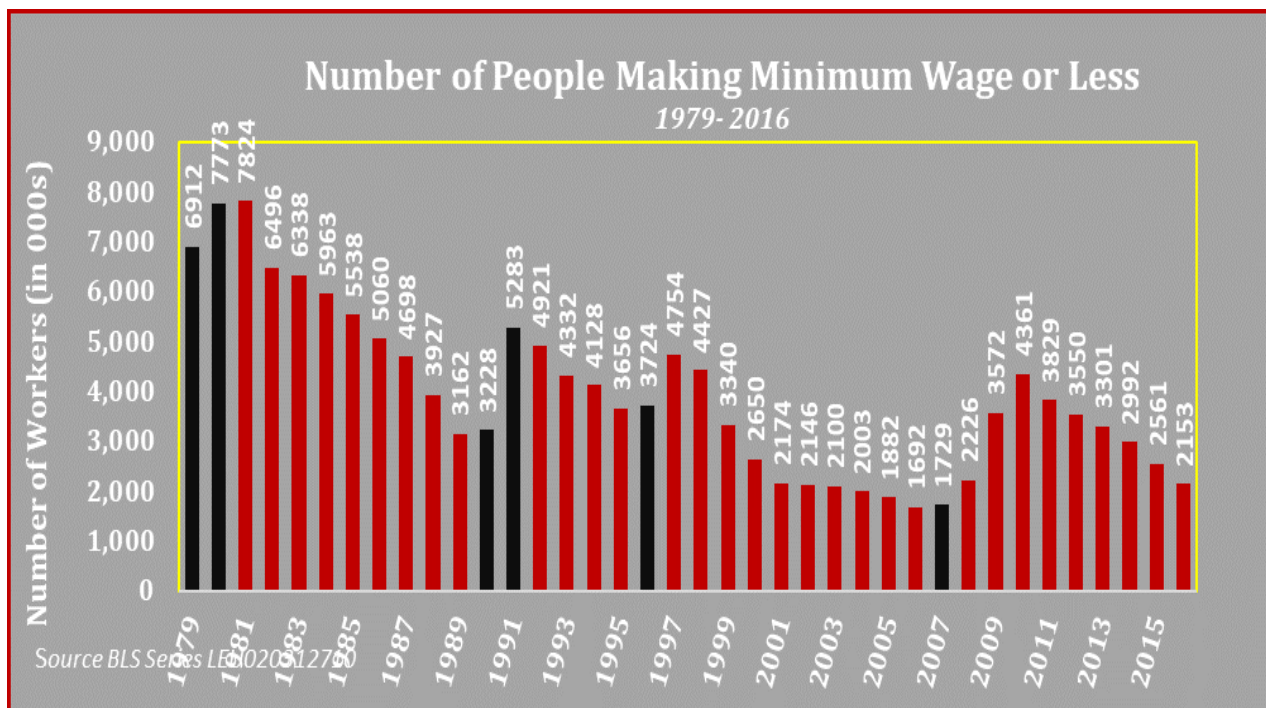
shopping, agricultural growing seasons, and other factors. Without such adjustments, employment and unemployment data would bounce around wildly and give little indication of how the workforce and the economy generally are faring. To make the adjustments, the agency analyzes the hiring and layoff patterns over decades. BLS clearly spells out the methods for the adjustments for the public.

BLS occasionally revises the estimates based on the evolution of the economy with input from the outside experts and internal reviews. In some years, employment patterns do not match the estimates due to major natural disasters or other disruptions. In any event, the agency always releases both the raw and adjusted numbers with each monthly report.

### Time Series

BLS provides time series data going back as far as 1938, when the federal government started collecting data on employment and unemployment. (BLS initiated some of the series later; these series only go back to the start of collection.) Graphs of the data are available, and users can download the data in Excel format to allow independent analysis.

**Figure 8**  
**Number of People Making Minimum Wage or Less**



For all the heated debate about minimum wage, those affected never amount to more than a few percent — usually because the minimum is below the market wage. About one percent of the workforce was earning minimum wage or less in 2016. Black lines show when the federal government raised the minimum in two cases (1979–80 and 1990–91) raises took places in stages. Source BLS. CE Employment Data Series.

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# Chapter Three

## Workforce Concepts

Any discussion of the workforce rests on several fundamental concepts and theories of what the labor markets are and how they work. The following describes major concepts.

### Labor Markets

The concept of a *market* for labor is relatively recent. From time untold, markets have served as the primary means of exchange of goods and services — even of people.<sup>16</sup> Until well into the industrial revolution nearly all labor was personal and voluntary — farmers, individual merchants, shop owners, servants, etc. — or involuntary — slaves, serfs, indentured servants, and peons.<sup>17</sup>

The idea that there might be an open market for labor arose with mass industrialization and intensive urbanization in the 1900s. Without going into the social and economic turmoil this caused, well into the 20<sup>th</sup> century economists treated workers as a fungible commodity — one worker was essentially the same as any other for economic analysis purposes. Plus, the theory held that both workers and employers were economically “rational” — that they responded solely (or primarily) to market conditions as measured in money.

As economists of the time tended to see it, there might be labor shortages or labor surpluses, but labor is labor and perfectly rational in its economic choices. Workers were fungible (interchangeable, one for another, like dollar bills). Economists and employers considered workers as commodities, the price of which rose and fell as a simple function of supply and demand. Government policies were, and often still are, based on this perception that employers and workers would always act rationally in their best financial interest. Economists call this theoretical species “*Homo Economicus*.” (See *Behavioral Economics*.)

But, as Daniel Gross, executive editor of *strategy+business* magazine writes, “The labor market isn’t like the stock market, where buyers and sellers conduct deals instantaneously with the stroke of a key or the instructions of an algorithm. In fact, the labor market is in many ways remarkably inefficient. And people and institutions often can’t move fast enough — or may lack or lose the potential to move — to fill open positions.”

Gross continues, “Demand for labor tends to rise (and fall) in relatively short periods of time. But it takes much more time, and more planning, for companies to develop apprenticeships, for community colleges to establish new programs, and for people to acquire the skills that are

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<sup>16</sup> Other means of exchange include barter, government services provided in return for taxes, government expropriation, piracy, and plain theft. The latter two, however, largely rely on markets because the loot isn’t worth anything if you don’t use it to buy something or invest in income producing assets (e.g., land). In other words, you need to fence the stuff somewhere.

<sup>17</sup> In peonage, an employer loans money to workers in an amount that the worker cannot hope to repay from their wages and they cannot leave the job until they have repaid the loans. In the 19th century U.S., foreign workers were lent the fare to sail from Europe, an amount that they would never be able to repay. In some industries and countries, loans for weddings, dowries, required purchases of necessities at unreasonable prices, and the like did the trick.

As the old song goes: “You load sixteen tons, what do you get? /Another day older and deeper in debt/ Saint Peter don’t you call me ’cause I can’t go/I owe my soul to the company store.” (“Sixteen Tons,” Tennessee Ernie Ford, Capitol Records, 1955) Such practices are now illegal in the U.S.; except, by analogy perhaps, in the practices of some payday lenders.

most desired. Pursuing a career in a specialized occupation, like being a pilot or a nurse, requires people to make a series of long-term calculations, investments, and commitments: complete the educational prerequisites, apply to a program and get accepted, figure out how to finance it, complete the multiyear program.”<sup>18</sup>

As the economy grew larger and more complex<sup>19</sup> and the need for myriad sets of complex skills arose, the market itself became immensely more complex. Today, it is less a *labor* market than a market for the knowledge, skills, and aptitudes of people. There are uncounted *micro labor markets* across the economy as employers look for certain types of education, training, and experience in their hiring and millions of potential employees consider which employer to work for based on interest, potential pay, desperation, and other factors.

It also well to remember that *labor markets are asymmetrical* (lopsided) in the favor of employers who know more about what they want and what they will pay than potential employees know about the value of their skills.

Nonetheless, the *labor market still functions as a market* even if the decisions don’t meet economists’ definition of rational. Supply and demand still exist. Companies and workers do react to economic incentives, whether these are pay, profits, interest rates, or taxes. Money still talks, just not as loudly as the economists assert.

## Human Capital

In the 1950s, Gary Becker of the University of Chicago<sup>20</sup> and Jacob Mincer, also at the University of Chicago and, later, Columbia University, proposed to replace the undifferentiated laborer model with something they called *human capital*. Human capital refers to the stock of knowledge, skills, habits, creativity, and cultural and personality attributes embodied in the ability to perform work to produce economic value.

Investing in these raises the value of the human capital, leading to greater productivity and wealth creation. On the other hand, political and social dysfunction, war, limited education, addictive substance abuse, discrimination, and the like, limit human capital.

Knowledge and technical skills are important, but a broad range of other factors go into forming human capital including social stability, values inculcated by parents, standards set by the general culture, availability and attitudes toward education, an effective public health system, and personal work habits.

Just as investing in physical capital — whether building a new factory or upgrading computers — can pay off for a company, now economists could see that investments in human capital can pay off for a company, for the workers with the improved skills, and the economy as a whole. Generally, better work habits, a willingness to learn, and more education and training result in higher earnings and far lower unemployment.

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<sup>18</sup> Daniel Gross, “The Imperfect Job Market,” *strategy+business* magazine, February 7, 2017.

<sup>19</sup> One tends to forget that, as late as 1960, the entire U.S. economy was smaller in real (inflation adjusted) terms than the current federal Defense budget.

<sup>20</sup> Becker received the Nobel Prize in Economics for 1992 for his work in this area.



## The Policy Question

Which of the beneficiaries of human capital investment — students, employers, investors (capitalists) or taxpayers at large — should pay for developing human capital and in what proportions?

**Figure 9**  
**Unemployment by Education**

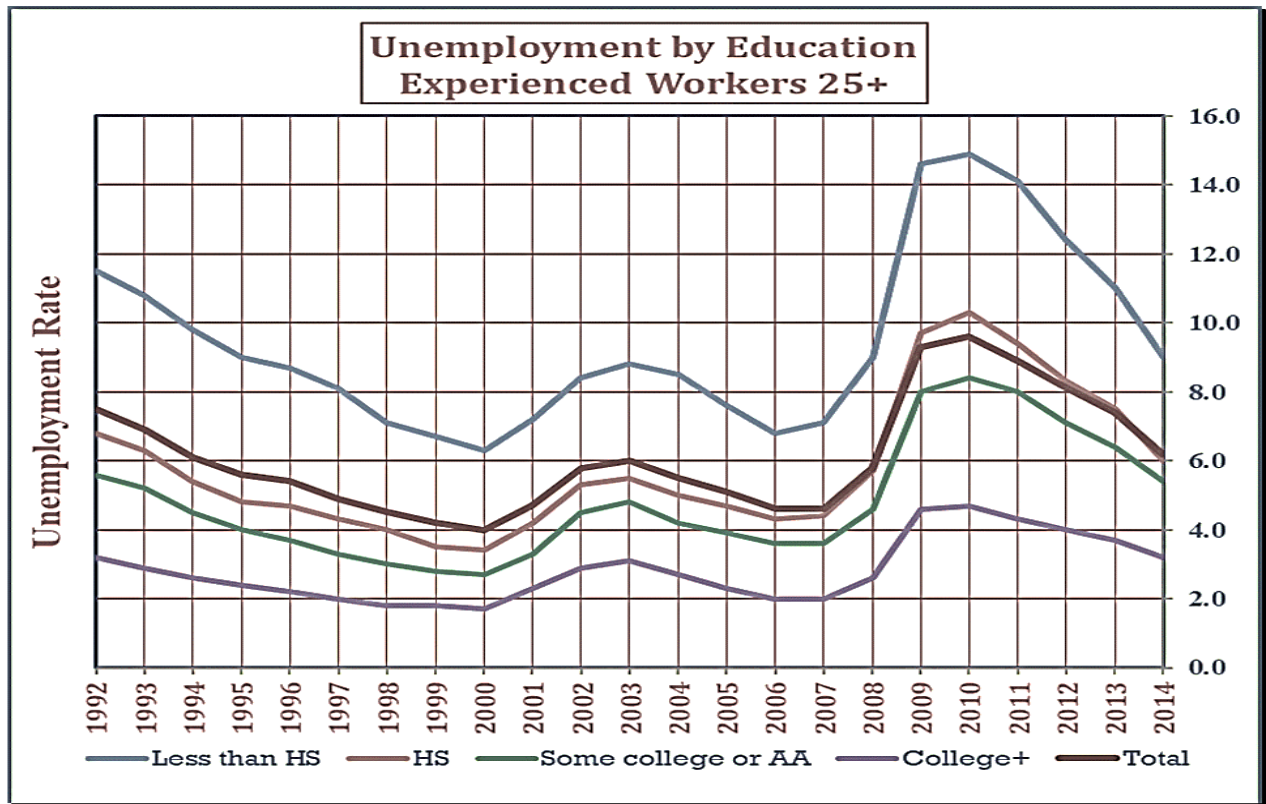


Figure 9 shows the impact of educational attainment (an imperfect proxy for human capital development) on unemployment. While college graduates have unemployment rates well below the national average, high school graduates and those with less than a high school education suffer the pains of unemployment four and five times the national average. Those with less education are also much more likely to have been engaged in routine occupations. As the number of routine jobs plummet, they are most likely to have difficulty finding new jobs. Source: BLS Series LNS13027659, LNS13027659Q, LNS13027660, LNS13027660Q LNS13027662 LNS13027662Q LNS13027689, LNS13027689

## Behavioral Economics

The finer points of labor markets continue to puzzle neoclassical economists. Why do people continue to major in fine arts in college when there are so many much-better-paying fields? Why do employees leave good-paying jobs to take jobs for less pay elsewhere? Why don't employers always lay workers off when the company is losing money in a downturn?

Beginning in the 1970s, Richard Thaler,<sup>21</sup> Daniel Kahneman,<sup>22</sup> and others began work on a

<sup>21</sup> Thayer of the University of Chicago received the Nobel Prize in Economics for his work in this area in 2017.

theory — Behavioral Economics — which holds that *people do not usually respond solely to financial incentives* and disincentives in making economic decisions. Thaler has said: “Conventional economics assumes that people are highly-rational — super-rational — and unemotional. They can calculate like a computer and have no self-control problems.”<sup>23</sup>

In the real world, people are not like that. Rather, psychological factors often play a leading role in our economic decisions. In other words, economic decisions are often *irrational*, or partially so, from a maximizing-income perspective. But then stock markets are sometimes irrational as well. Why economists took so long to learn this is something of a mystery. Advertisers have operated on the premise that people respond to much more than rational self-interest. Advertisers use sex appeal, prestige, and other drivers rather than the rational self-interest side of our minds alone.

In labor market decisions, as in other areas, *fairness* matters a great deal. A worker may find out that her co-workers get paid more than she does for doing the same work even though she may be getting a very good salary. She does not put this down to the workings of the classical market supply and demand, but to unfairness.

Another useful tool to come out of behavioral economics is the “*nudge*.” This is something to encourage you to do something as opposed to directly instructing you to do it. An example of *nudge* is the countdown timer on pedestrian crossing signals that show pedestrians how many seconds left until the light turns in their favor. When you see you have only five seconds till the signal shows *WALK*, you are much less likely to impatiently jaywalk.

The same thing applies to speed indicator signs that tell you how fast you’re driving. Drivers tend to slow down to the posted speed (or near it) when they see the display on those pesky *YOUR SPEED* signs. The nudge has possibilities in workforce areas as well. An example is the “*job club*,” where jobless workers get together once a week to describe their job search and receive guidance that nudges them all to look for work — since each thinks the others are looking harder than they are.

## **NAIRU and the Phillips Curve**

The *non-accelerating inflation rate of unemployment*, or *NAIRU*, is a speculative “*natural rate of unemployment*” below which many neoclassical economists believe inflation will accelerate. The assumption is that when unemployment gets too low, employers will raise wages to attract scarce workers (or unions will force them to do so) and this, in turn, will cause the companies to raise prices and workers to demand more to pay for the increased cost of things and the vicious cycle continues.

The so-called “*Phillips Curve*” seems to show how wages rise as unemployment falls and inflation increases as wages rise. First proposed by A.W. Phillips, a New Zealander working at

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<sup>22</sup> Kahneman is the 2002 recipient of the Nobel Prize in Economics for this and other work. He is the author of *Thinking Fast and Thinking Slow*.

<sup>23</sup> Richard Thaler and Cass Sunstein, *Nudge: Improving Decisions About Health, Wealth, and Happiness* (Yale University Press, 2008).



the London School of Economics in 1958,<sup>24</sup> it gained wide popularity among economists.

The argument sounds plausible. Unfortunately for the theory, history is not very supportive. In 1968, at the height of the Phillips Curve's influence, Milton Friedman<sup>25</sup> stated bluntly that the Curve was nonsense, at least in anything but the very short term. Friedman predicted that the coming years would see inflation and unemployment rise together, something the dominant Keynesian paradigm, of which the Phillips Curve was part, said was impossible. Yet this is exactly what happened.

Between 1969 and 1975, inflation in the United States rose from 5.9 percent to 9.1 percent while unemployment rose from 3.8 percent to 8.5 percent. Friedman's predictions resurfaced in the early 1990s when both unemployment and inflation remained low for years. The pattern has returned since the recovery from the 2009 recession.

The fundamental flaw in the reasoning is that labor is not the only thing that can be in scarce supply. In the early 1970s, it was the oil price shock that set off a huge and sustained jump in inflation even though unemployment remained unacceptably high.

Experience and research have also shown that inflation comes *before* wages rise. As a result, the workforce is always playing catch-up to stay even with inflation — often not successfully.

## Full Employment

The call for “full employment” addresses the flip side of the NAIRU concern with inflation. It arises from the belief that “everyone who wants a job should have a job.” Though widely applauded, *full employment has no measurable definition*. Unemployment can't be zero for reasons discussed under “Forms of Unemployment” below. Some economists arbitrarily assign a number to it for economic modeling purposes, but these have never caught on.

Though it sounds like a good thing, the term “full employment” is, at best, a pleasant ideal and, at worst, a cynical platitude. For policymaking purposes, some want to define it higher for fear that low unemployment will cause price inflation. Others want it lower so that everyone who wants a job can have a means of livelihood. As with the NAIRU, it has no consensus definition.

## Forms of Unemployment

Not all unemployment is equal. For policymaking purposes, decision-makers draw distinctions as to the source or form of unemployment, each of which suggests different measures to address the issue. Any of these may be present at the same time or may affect one group and not others. Addressing each requires a mix of policies and programs.

- ❖ **Cyclical.** Most people are familiar with the rise and fall of unemployment in economic cycles of recession and recovery. As the economy goes into recession, demand for goods and services falls and employers lay off workers. When the economy recovers, employers hire workers back. The appropriate policy response to this kind of joblessness is to find ways to

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<sup>24</sup> *The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861–1957*. Based on data going back nearly a century, Phillips discovered a close inverse relationship between unemployment and percentage changes in the average nominal wage rate; as one rose, the other fell.

<sup>25</sup> Later awarded the Nobel Prize in Economics, Friedman spent his career at the University of Chicago.

revive the economy as a whole. There are obvious differences about which policies will best accomplish this — spend more or tax less, etc. — but other types of policies, more funding for education or training, for example, while worthy in themselves, will have negligible effect on cyclical unemployment.<sup>26</sup>

❖ **Frictional.** Unemployment will *never* fall to zero no matter how robust the economy. The reason: the economy and the labor force are in constant *churn* (see Foreword and *Figure 2*). Young people enter the workforce looking for work, a couple gets married and decides to move to another city, people leave one job for a better one, etc.

Normally this type of joblessness is short-lived, but it keeps unemployment from falling to anywhere near zero. There are few policy options available, or for that matter needed, although some economists and policymakers worry that frictional employment can be *too low* to the point that serious labor shortages occur. (Also see *NAIRU* above.)

❖ **Structural.** This is sort of the flip side of cyclical. In this case, there are jobs or potential jobs, and there are many unemployed people — but the two don't match. This arises from the structural deficiencies in either the workforce or local economic conditions, or both. Structural problems may include:

- Loss of jobs in the labor market such as a decline of the local economy as major local employers go out of business or move away and not replaced;
- Lack of transportation (public or private) needed to allow people to get to available employment, especially to low-paid jobs;
- Wages too low to afford the cost of employment (child care, transport, etc.); or
- Skill deficits due to the lack the education, technical training, or appropriate job experience among the available population. (See previous discussion of *Human Capital*.)

## Skill Shortages

Both general and technical skill shortages have received a great deal of attention since the late 1980s. The concern is that in a rapidly changing economy, fewer jobs require mere physical labor, and that the retirement of large numbers of skilled baby boomers are creating what some see as a crisis in the failure of the U.S. education system to provide workers with appropriate skills.

However, there is little hard data as to the nature and extent of these shortages. National surveys usually come up with a vague set of needed “soft skills”<sup>27</sup> and some concern about science and math in certain industries (most jobs don't require much of these) but little on specific occupational skills. Perhaps this is because the shortages are specific to certain employers, niche industries, or critical occupations with few workers.

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<sup>26</sup> This is not to say that education, job training, and job-search assistance programs cannot be effective during recessions. Because of labor market churn, employers, unless they go out of business, keep filling positions vacated of employees retiring, moving on to other jobs or locations, etc. (See *Figure 2*.) It is also true that recessions are an appropriate time for the unemployed to be retrained or return to school.

<sup>27</sup> These include critical-thinking skills, clear communication, time management, and organization. Others are what might be called responsible adult behavior: show up on time, be polite to your colleagues and customers, don't give the boss too much lip, be pleasant and smile at the customers. Some people seem to have missed that day in kindergarten.

The most likely reason for not finding much evidence of specific technical skills shortages is that employers respond to skills shortages as they occur. A primary response is to train existing workers to meet the new skill requirements. Often these changes are incremental and require relatively little new learning at any one time.

Further, employers can upgrade skills of workers laid off from other industries with similar skill requirements.<sup>28</sup> Finally, over time, employers can and do meet skill shortages by using more advanced technology that requires less specialized technical skills and less long-term occupational preparation.

Nonetheless, a great deal of money and effort has gone into improving education, especially in literacy, *STEM skills* (science, technology, engineering, and math), and the so-called “soft” skills, as well as getting young people to finish high school, obtaining additional training, or go on to college.

During the technical and productivity revolution in manufacturing in the 1980s and early 1990s when American manufacturers were losing a great deal of market share to more efficient and nimble foreign firms, many employers became heavily committed to the education and training of both their own employees and in the public forum.

In education, school test scores seem to have improved in places around the country, and high school and college graduation rates have risen sharply in recent decades. Similarly, the work environment in formerly blue-collar industries has changed dramatically as more (and differently) skilled employees make the best use of new technologies and work processes.

## **Routine and Non-Routine Occupations**

Some economists prefer to analyze the workforce in terms of skill requirements to demonstrate the effect that work requirements have on employment. They divide the workforce into four categories:

- ❖ **Routine Manual Occupations** (e.g., machine operators, assemblers, packers) involve repetitive tasks that machines, or computers, could potentially do.<sup>29</sup> The number of jobs in these occupations fell by nearly 10 percentage points in the most recent recession and most did not and will not come back.
- ❖ **Routine Cognitive Occupations** (e.g., bookkeepers, bank tellers, janitors, etc.) involve more decision-making and planning than strictly manual jobs. Nonetheless, between 2000 and 2014 the number of jobs in these occupations fell nearly as fast as routine manual jobs.
- ❖ **Non-Routine Manual Occupations** (e.g., skilled members of the construction trades, pest-control specialists, repairers, machinists, maintainers of complex equipment, and technicians of all types) require planning and decision-making, as well as manual skills.

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<sup>28</sup> One factory owner in South Carolina told one of us (Moore) that the vital skills needed for his plastics processing plant were those gained from experience working in any industrial situation. He considered an experienced worker laid off from the local textile plant as ideal. He found teaching the specific skills needed for polymer processing relatively easy.

<sup>29</sup> “Routine” and “unskilled” are not the same. Some jobs are skilled but routine. Any neophyte who has ever harvested fruit or vegetables alongside an experienced farmworker will recognize the difference. Listen to the song “John Henry” for an example of skill against machine. Still, in many cases, the two terms are similar enough for understanding the changes in the workplace.

These occupations are not likely to face total automation in the near term. In fact, between 2000 and 2017, growth in these jobs has far outpaced all others — growing by 25 percentage points, although from a low base.

❖ **Non-Routine Cognitive Occupations** (e.g., traditional professionals, academics, executives, engineers, office professionals of all types, independent business owners, etc.) usually demand a college degree and sometimes-extensive postgraduate preparation. These require considerable knowledge of the field, flexibility, and problem-solving skills. The skills can change — sometimes radically — over time, requiring continuous skills upgrades. The Great Recession barely touched working adults in these occupations, and the occupations resumed healthy growth more quickly than others did.<sup>30</sup>

Aside from the fact that it is hard to remember which jobs fall in which category, the drawback of the academic work so far is that the data used has not been the best. For instance, labor economists often take “service occupations” to mean low-skilled (like domestic servants) when in fact this fast-growing field includes police officers, firefighters, and other skilled “middle-class” jobs. As a result, the researchers’ analysis can sometimes be misleading.

**Figure 10**  
**Routine Labor**

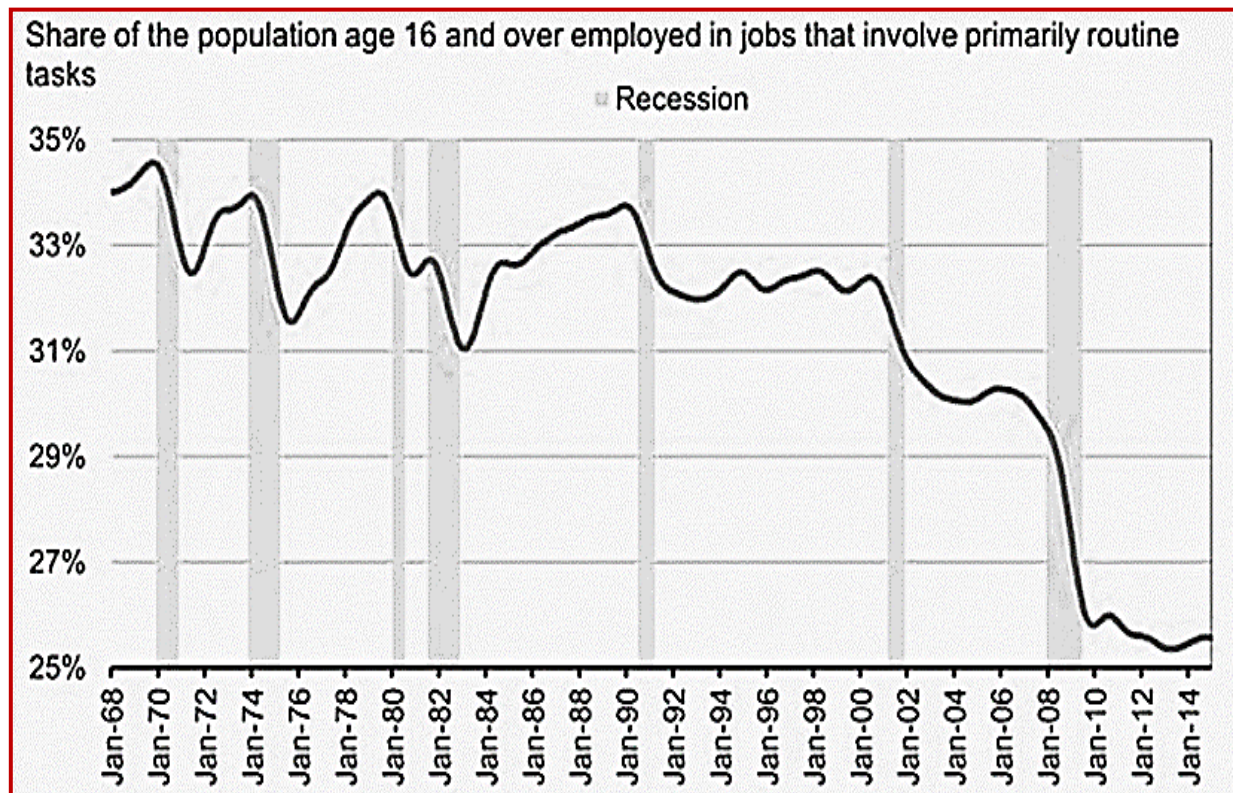


Figure 10 demonstrates the dramatic fall in the number of jobs in routine occupations since 1990. Few of these jobs have come back. Source: Jaimovich and Siu

<sup>30</sup> “The Trend is the Cycle: Job Polarization and Jobless Recoveries,” Nir Jaimovich, Duke University and National Bureau of Economic Research, and Henry Siu, University of British Columbia and NBER



## Productivity

In formal economics, productivity is a measure of “*the relationship between inputs and output, which can be applied to individual factors of production or collectively.*”<sup>31</sup> Labor Productivity is the most widely used measure of productivity. Economists calculate labor productivity by essentially dividing total output by the number of workers or the number of hours worked.<sup>32</sup>

Increased productivity increases wealth. Companies and their employees produce more for the same cost. More goods and services become available for the same or lower cost to the consumer (given competitive markets) and average per capita income rises.

Productivity improvement raises the size of the overall economy, i.e., the size of the *Gross Domestic Product*.<sup>33</sup> This can be a good thing for general prosperity if the gains from productivity spread to employees through higher wages and to consumers through lower prices, but not so good when investors and senior executives take the bulk of the gains for themselves.

Productivity growth is due to more than employees simply working harder or faster. It is a sign of greater investment in more efficient equipment, improved work processes, and greater training of employees to allow them to take advantage of potential efficiencies. (See discussion of GDP in *Chapter Eight*.)

Sometimes temporary extraneous factors can deceive in measuring productivity. For instance, when employees lose their jobs in a recession, productivity may appear to increase as output does not fall as fast as employment. Conversely, productivity can fall when the economy improves, and employers hire more workers without an immediate commensurate rise in output.

*Measuring productivity changes in services can be tricky.* In banking, for instance, if you divide the value of loans by the number of loan officers you get a meaningless number — processing a big loan doesn't make you more productive than processing a smaller one. They both take approximately the same effort. Measuring the productivity of software development firms is even more difficult. The same issue applies for lawyers, professors, and dog groomers. One would do well to take discussions of productivity with a grain of salt.

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<sup>31</sup> Source: The Economist: A–Z Economics Dictionary, 2017

<sup>32</sup> Total factor productivity is another less-used measure of productivity. It attempts to measure more than labor productivity. This is potentially more accurate but much more difficult to measure. Furthermore, firms and countries may use different definitions of their inputs, especially capital, defeating any consistent comparisons.

<sup>33</sup> See discussion of Gross Domestic Product in Chapter Eight. Rising per capita income is another one of those potentially misleading phrases. It is determined by dividing a country's wealth (GDP) by the number of people in the country (or state or city). The rising average can still mean disproportionately unequal sharing — with the rich getting richer, and the poor not so much.

**Figure 11A**  
**Productivity and Real Wages U.S.**  
*1964–2008*

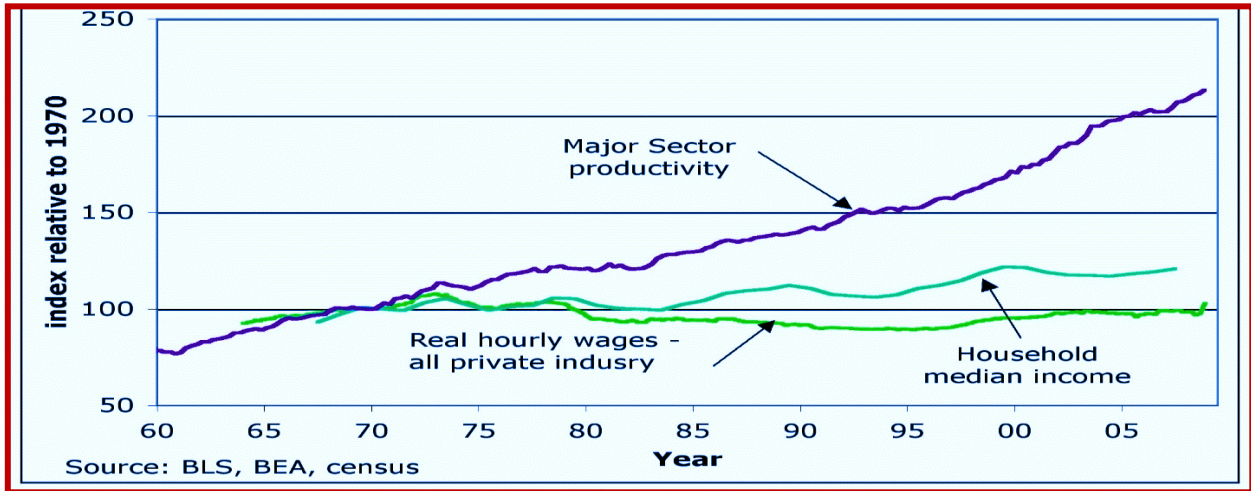
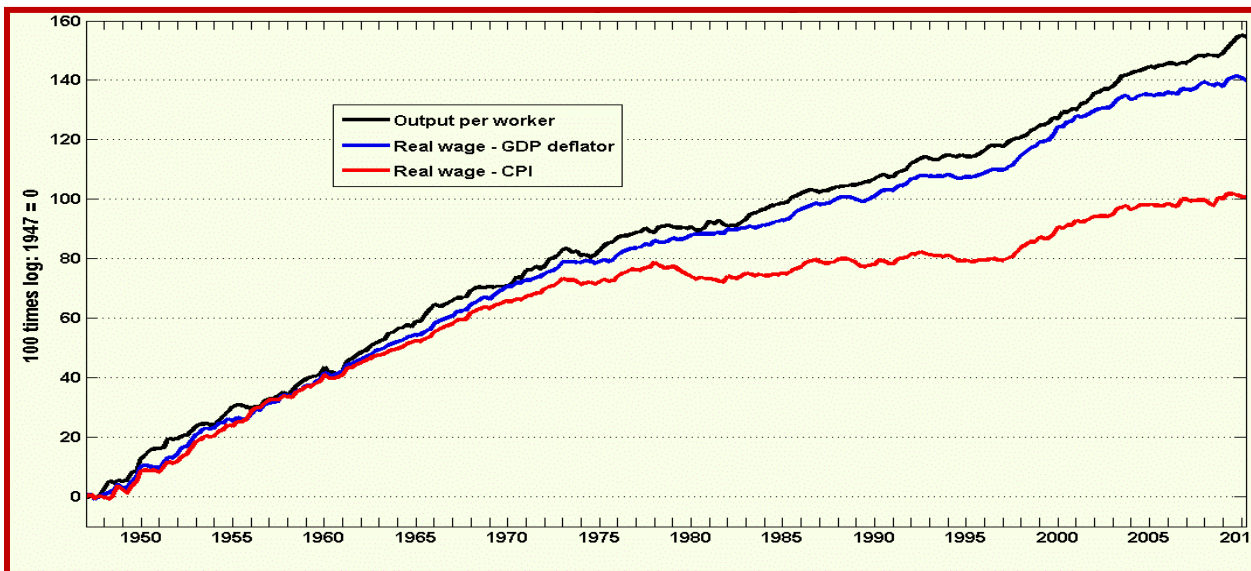


Figure 11A above shows the rather dramatic divergence of slow-growing real hourly wages and rapidly rising productivity between 1960 and 2010. While real household income rose somewhat, it did not match the rise in productivity. A different measure of inflation — the so-called “GDP Deflator” — shows a narrower gap between productivity and wage increases. See Figure 11B, following. Source: U.S. Department of Commerce Bureau of Economic Analysis.

**Figure 11B**  
**A Second Take: Productivity and Real Wages U.S.**  
*1948–2016*



Source: “The Growing Gap Between Real Wages and Labor Productivity,” Richard Lawrence (PIIE) Peterson Institute for International Economics, July 21, 2015 2:30 pm.

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## Chapter Four:

# Occupational Employment

We tend to think of occupations as neatly defined categories, but job titles and skill requirements that should define them overlap all over the place. Though often used interchangeably, technically, the terms “jobs” and “occupations” differ fundamentally.

*Jobs* are what we go to every day while *occupations* are abstractions based on perceived similarities among jobs. Any given job title may include quite different skillsets — “managers” of auto plants and coffee shops, for instance.

The requirements of a job are whatever the individual employer says they are. He or she can call the job whatever he or she wants. The government requires that employers refrain from discrimination based on race, gender, religion, etc. The educational requirements should be justifiable for each job, although even this is hard to measure or enforce. The rest is the boss’s judgement.

### Defining Occupations

Despite the difficulties, economists, employers, and regulators need *some* way of classifying jobs into occupational titles for determining wage levels, health and safety of workers, training requirements, and general economic analysis.

The U.S. Department of Labor at one time published something called *The Dictionary of Occupational Titles (DOT)*. The DOT listed over 13,000 distinct occupations among the 120 million jobs in the American economy when last published in the 1990s. However, most of the DOT titles represented unskilled work, occupations that involved very few workers, or jobs which were so much like others that the DOT did not give a useful picture of occupational supply or demand.<sup>34</sup>

To deal with these issues, the Department of Labor, the U.S. Census, and other interested parties developed a new classification system, the *Standard Occupational Codes (SOC)*, now available through an online service called *O\*NET*. The new classification system takes a more fruitful approach in trying to get a general picture of job requirements.<sup>35</sup> SOC descriptions cover about 800 distinct occupations and clusters of closely related occupations.

The SOC describes the number of jobs, tasks, skills, and preparation for each occupation through the O\*NET online and through various publications such as the *Occupational Outlook Handbook*. The U.S. Department of Labor keeps the information up-to-date through the rolling *Occupational Employment Statistics (OES)* survey in which state labor market statisticians contact one third of all employers each year.

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<sup>34</sup> Some of our favorite DOT occupational titles include: *Feather Renovator*, *Lump Inspector*, *Drifter*, and *Whizzer*, respectively, a refresher of down pillows, a tobacco quality-control worker, an operator of a machine that removes scale from inner surfaces of pipe, and an operator of a machine that spins the water out of felt hats in the hat-making process.

<sup>35</sup> “Requirement” is something of a misnomer, especially for educational requirements. The data only show the educational attainment of most workers in each field. Thus, it is often the case that an individual worker will have less (and sometimes more) education than the SOC and other sources indicate.

## Skills

Most employees in about 60 percent of Standard Occupational Code occupations have no more than a high school education, though many of these occupations call for training or experience beyond high school. The number of jobs in those occupations where most workers have less than a HS diploma has been declining steadily for decades as general educational attainment and job complexity have risen.

The area with the strongest job growth is in those occupations that generally call for a high school education plus some post-secondary education or training. Most jobs in health care, technical product sales and services, office administration, repair, maintenance, and construction occupations fit this category. There are some surprises as well. For instance, 43 percent of all managers do not have a college degree.<sup>36</sup>

The primary credential for most white-collar professional jobs, at least those not requiring a formal occupational credential, is a college degree (a person's academic major often doesn't matter) and intangible personal traits — “Is this candidate articulate and service-oriented?” “What kind of experience do they have?” “Will this person fit in with our team?” etc. Employers expect workers to learn the details of the job from managers, coworkers, or through in-service training. Even for credentialed jobs, employers look for intangible attributes beyond educational qualifications.

Occupational credentialing took hold in the late 19<sup>th</sup> century, as interest grew around concerns for greater public health, safety, and consumer protection. Many professionals wanted to improve the confidence and trust in the profession as well. Within a few years, states assisted by professional organizations began setting and enforcing occupational standards. Independent of licensure, trade associations and individual corporations created their own credentials as conditions of employment or promotion.

## Occupational Credentials

Credentials are an implicit guarantee that a person has the necessary training and education to perform a job competently. Legitimate occupational credentials describe, and test for, the essential skills needed to perform in each occupation, job, or set of tasks. The quality of any occupational credential or *certification* system depends on how close the standards match actual tasks performed on the job. Weak standards result in weak certification.

All legitimate certifications require independent and objective assessments of knowledge and skills. Along with occupational licensing and skills certification, employers have increasingly required a general level of education attainment — a high school diploma, bachelor's degree, and now postgraduate degrees (e.g., master's or doctorate).

*Exponential Growth of Licenses.* The number of occupations requiring licenses to work surged in the second half of the 20<sup>th</sup> century. The *White House Conference on Occupational Licensing Final Report* noted that: “More than one quarter of U.S. workers now require a license to do their jobs. More than 1,100 occupations are regulated in at least one State “(See *State Licensing Issues*

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<sup>36</sup> Source: “Employed Persons 25 Years of Age and Older by Occupation and Sex,” BLS Current Population Survey.



sidebar.)

The share of workers licensed at the State level has risen five-fold since the 1950s. According to the National Center for Educational Statistics (NCES) about two-thirds of this change stems from an increase in the number of professions that require a license; the remaining comes from growth in the number of jobs in the licensed occupations themselves.<sup>37</sup>

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<sup>37</sup> “Occupational Licensing: A Framework for Policymakers,” July 2015, report prepared by staff of the U.S. Department of the Treasury Office of Economic Policy, the Council of Economic Advisers, and the Department of Labor, White House, Washington, D.C.

## Creeping Credentialism?

Many jobs that not so many years ago required no more than a high school diploma now require a college degree. This may indicate the jobs are more sophisticated or that employers just feel more comfortable hiring college graduates, especially if incumbent staff are all college graduates – what one commentator called “creeping credentialism.”

*“The construction supervisor with a bachelor's degree is becoming increasingly common in today's workforce. Employers more often are looking for college graduates to fill job openings that once required a lower level of education, and that's both good and bad in the debate over the value of a college degree, according to a new analysis from Burning Glass Technologies. Matt Sigelman, chief executive officer of Burning Glass, calls the phenomenon "upcredentialing."\**

In a recent Harvard Business School article on degree inflation, “Dismissed by Degrees,” Joseph B. Fuller and Manjari Raman assert that:

*“...the rising demand for a four-year college degree for jobs that previously did not require one—is a substantive and widespread phenomenon that is making the US labor market more inefficient. Postings for many jobs traditionally viewed as middle- skills jobs (those that require employees with more than a high school diploma but less than a college degree) in the United States now stipulate a college degree as a minimum education requirement, while only a third of the adult population possesses this credential.*

*This phenomenon hampers companies from finding the talent they need to grow and prosper and hinders Americans from accessing jobs that provide the basis for a decent standard of living. In an analysis of more than 26 million job postings, we found that the degree gap (the discrepancy between the demand for a college degree in job postings and the employees who are currently in that job who have a college degree) is significant. For example, in 2015, 67% of production supervisor job postings asked for a college degree, while only 16% of employed production supervisors had one. Our analysis indicates that more than 6 million jobs are currently at risk of degree inflation.*

*A survey of 600 business and human resource leaders shows that two key factors drive degree inflation: the fast-changing nature of many middle-skills jobs and employers' misperceptions of the economics of investing in quality talent at the non-graduate level. As more middle-skills jobs require mastery of one or more technologies, employers find it difficult to hire non-graduate talent with the requisite skills. While candidates often lack hard skills, such as proficiency in Microsoft Excel, they are equally likely to suffer from soft skills deficits, such as poor written and verbal communications.”*

With one third of the adult workforce now holding college degrees, the degree may simply be a ticket to a better job just as the high school diploma became in the mid-20<sup>th</sup> century, when less than half of the workforce had a high school diploma. On the other hand, the jobs may now require more of the skills imparted by a college education. It is probably a bit of both.

In any event, it is the skills, abilities, and interests that make for a successful employee. Lest we forget, Steve Jobs, Bill Gates, and a host of other very successful entrepreneurs never completed college. Nor did Harry Truman. Going back a little further, Thomas Edison, Mark Twain, and Abraham Lincoln never completed elementary school.

*\*Alice Bidwell, “How 'Upcredentialing' May Close the Middle-Class Path, Employers” [US News](#) | Sept. 11, 2014*

*\*\*Joseph B. Fuller and Manjari Raman, “Dismissed by Degrees,” [Accenture, Grads of Life, Harvard Business School](#), October 2017. 2017”*

Median income for full-time workers with a certification or license is 35 percent higher than earnings for those who do not hold such credentials (\$1,032/week versus \$765/week, respectively). This difference partially reflects the fact that people with certifications or licenses tend to have higher levels of education.<sup>38</sup>

As with any reform, licensing followed the law of unintended consequences, namely that the industries and professions which were the target of the regulation captured the regulatory process. Incumbents seek to exclude or limit the number of competitors from entering the market.<sup>39</sup> The fact that there are more than 1,100 state-licensed occupations raises suspicions.

The most common scam occurs when schools lure students into training and education programs that offer official-sounding credentials, but which neither independent credentialing bodies or employers recognize as valid. This is usually because the schools have not provided the students with the skills employers need. Such fake credentials are illegal, especially when federal direct or guaranteed loans are involved.

### **High-Stakes Certifications**

These are any certifications that directly affect an employee's employment, pay, and promotion opportunities. Such certifications and licenses exclude unlicensed individuals from working in the field at all. Though high-stakes certifications do not provide everything employees need to thrive and advance in the workplace, they are a critical first requirement. They include the types of certifications listed as follows.

**State Licensure.** Without an occupational license, a person cannot practice or work in certain state-designated occupations. States award licenses through official state licensing agencies based on predetermined criteria. The criteria may include some combination of degree attainment, license exams, skills certifications, formal internships, apprenticeships, or other work experience. Licenses are time-limited and require periodic renewal.

**Mandatory Educational Credentials (diploma, degree, etc.).** Occupational credentials often combine a requirement for an appropriate degree (medical, law, etc.). For occupations where no agreed-upon standards or training curriculum exist, even within the company, employers generally rely on *academic degrees and experience* as a sorting mechanism.

**State Certification.** For occupations that do not require a license, but where the state wishes to exert quality control, states require a credential awarded by a certification body based on an individual demonstrating through an examination process that he or she has acquired the designated knowledge, skills, and abilities to perform a specific job. Most are time-limited credentials renewed through a recertification process.

**Private Sector Certifications.** Private organizations also issue high-stakes certifications. Industry associations often give their imprimatur to workers who have met their standards of

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<sup>38</sup> BLS "2016 Data on Certification and Licenses," Labor Force Statistics Series from the CPS, April 2017.

<sup>39</sup> The most egregious we have come across was the old requirement years ago and since abolished that to become a licensed dentist in Arizona, a person had to have graduated from an Arizona Dental school — of which there was one — excluding all others. This was a blatant effort to keep dentists from colder climes from moving in and poaching the lucrative practice of the teeth-pullers in sunny Arizona. The Grand Canyon State dentists had no health, safety, or competence argument to make and didn't bother to try. The state also licensed palm tree trimmers.

knowledge and skill to practice a given occupation, which employers require for hiring or promotion. For example, in the 1970s, the automotive services industry created the Automotive Service Excellence (ASE) certification which became widely adopted in the industry.

Private companies, especially software firms, also certify specific sets of skills in the use of their products (Cisco Systems, C++, etc.). Some employers require such certifications for hiring or promotion, especially when they address specific technical skills needed for the job.

### Other Certifications

**“Right to Title” Certification** means that individuals seeking to assume a profession’s official title must obtain the permission of the government, but anyone can perform the duties of the profession regardless of whether they have the right-to-title certification or not.

**Registration** is the least restrictive form of occupational regulation. It generally involves individuals paying a fee and filing their names, addresses, and qualifications with the government. This ensures customers and officials can reach them in the event of a complaint, thereby supporting civil remedies for consumer harm.

**“Certificates of Attendance”** and the like are not true certifications. They may provide a boost to attendee’s morale but have little value in documenting skill attainment even though some professions allow such certificates as “continuing education units” to meet required in-service training.

**Figure 12**  
**Occupational Certifications Awarded**  
**Programs of One Year or Less**

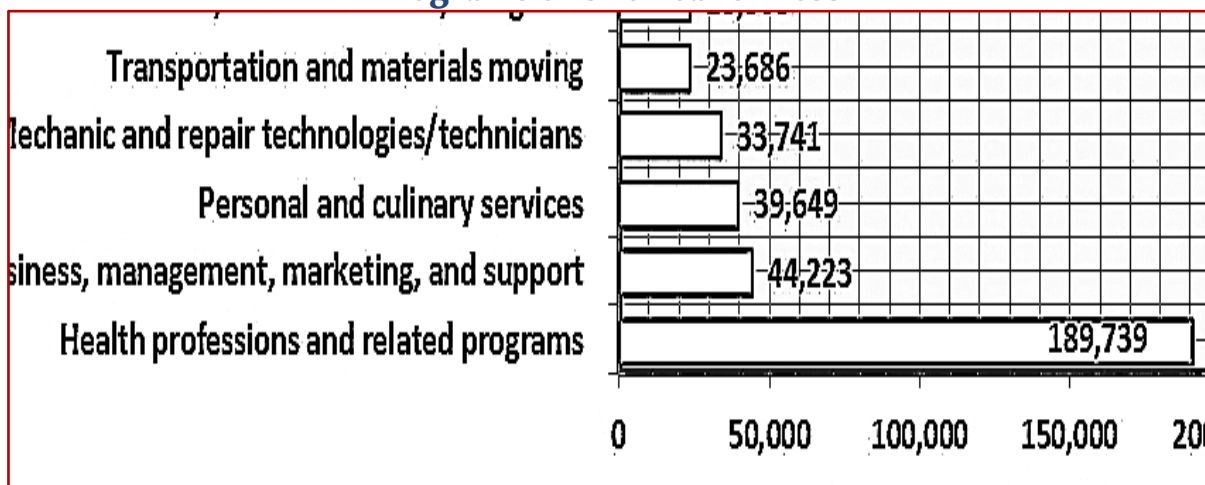


Figure 12 shows licenses and certifications by selected occupational groupings. In addition to health occupations, many others have to do with protecting health and safety. Source: National Center for Educational Statistics Data Series.

# Chapter Five:

## Industries and Employment

### Sorting Industries

As with employment and occupations, to discuss industries one needs a carefully designed, properly researched and up-to-date classification system. The United States has the *North American Industry Classification System (NAICS)*. The Current Employment Survey and the Bureau of Economic Analysis (BEA) use NAICS to determine the number of employees — and much else — in each industry, and to track this over time.

NAICS provides the framework for industries in the U.S., Canada, and Mexico. These countries developed the framework to provide a consistent system for the collection, analysis, and dissemination of industrial statistics used by the business community, government policy analysts, economists, and by the public.

NAICS is a classification system for *establishments*. NAICS defines an establishment as the smallest operating entity for which records provide information on the cost of resources — materials, labor, and capital — employed to produce the units of output.

NAICS defines *output* as goods or services sold to end users (consumers), to outside business establishments for which recorded sales exist, or within the organization (that is, “sold” to other establishments in the company itself). This approach avoids the complications presented by using a corporation or organization as the primary statistical unit because many companies operate in more than one industry and in many locations.

The Bureau of Economic Analysis (BEA), Bureau of Labor Statistics, the U.S. Census, and most other federal agencies<sup>40</sup> use NAICS as the framework for all data and reporting by industry. Using this method, BLS estimates there are 5.9 million private companies within which are 7.7 million establishments, more than 1.5 million nonprofit organizations,<sup>41</sup> and 89,058 state and local governments, and, of course, one federal government. (See *Figure 13*.)

### Goods and Services

The most fundamental industrial distinction is between the production of goods — agriculture, mining, and manufacturing — and services, which covers everything else. Within this broad framework, the NAICS system divides the economy into *industry sectors*. *Figure 13* shows employment in these sectors.

Traditional economists have long regarded the *growth of service employment as a secondary result of goods production* — especially highly-paid factory workers, spending their income on services. In other words, the argument was that if there were no manufacturing, mining, and agriculture, there would be no service industries. This mechanism sometimes works in local labor markets. When the mining town mine closes, for instance, the result is a ghost town. In more formal terms, a “basic” industry supports non-basic activities. The steel mill makes the

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<sup>40</sup> A few agencies still use the older Standard Industrial Classification (SIC) for regulatory reasons unrelated to statistical estimates.

<sup>41</sup> Source: National Center for Charitable Statistics (NCCS)

McDonald's possible.

However, even local basic industries do not have to be goods-producing. Several old-line U.S. manufacturing centers such as Cleveland and Pittsburgh have regained prosperity after losing their manufacturing base through such service industries as health, education, and finance.

Similarly, tourist services support a great many communities which lack goods-producers entirely. It has taken many decades for analysts to understand that intangibles such as services, innovation in intellectual property, and transport are as important to employment as goods production. In the 21<sup>st</sup> century, the much-feared digital automation of work has resulted in more jobs and not fewer.

To take one example, twenty years ago, commentators were sure that the then-new internet would wipe out millions of irreplaceable jobs. Yet now the online retailer Amazon has some 350,000 employees — while General Motors, once largest employer in the country, has 202,000 employees worldwide.

Furthermore, as of this writing Amazon is looking to plunk another 50,000 jobs on some lucky city for its second headquarters. Amazon is entirely a creature of the internet. It did not exist 20 years ago. The concern now is that ever-newer technology (robots, artificial intelligence, and all that) will finally wipe out jobs. Maybe, but it is likely that people will find things to do for a living.

### **Unions: The People Who Brought You the Weekend**

During the roughly 50 years between 1935 and 1985, American labor unions had a tremendous influence on the pay, hours, and working conditions of the entire workforce well beyond their own membership. Before 1935 they struggled against discriminatory laws forbidding union organizing, negotiation, and striking for better wages and working conditions. After 1985, unions lost influence as their share of the workforce sank. (See *Figure 15*.)

At the height of their influence, unions were the main force behind sweeping changes in wages and working conditions in the workforce. These include: the establishment of the 40-hour work week — thus the weekend — unemployment insurance, the minimum wage, overtime pay, limitations on child labor, occupational health and safety protections, the rights of unions to negotiate for better wages and working conditions,<sup>42</sup> to take job action if necessary, and much more. The entire working population of the US enjoys the benefits of nearly all these initiatives.<sup>43</sup> (Some, like minimum wage and overtime provisions, apply only to wage earners.)

Union membership reached a high of a little less 28 percent of the workforce in 1970, then fell steadily to less than 11 percent in 2017.<sup>44</sup> While the U.S. workforce has increased by 50 million

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<sup>42</sup> As a result, the average median weekly wages of union members remain 25percent higher than that of non-union workers in 2107 (\$1,041 vs. \$829 for non-union workers).

<sup>43</sup> Some, like minimum wage and overtime provisions apply only to wage earners.

<sup>44</sup> The union share of the workforce would be even smaller but for the growth of public sector unions. Union, growth in state and local government, education, and other service-oriented fields somewhat offset the decline in the core manufacturing union base. Union membership in the private sector has fallen from 34 percent in the 1950's to 6.5 percent today. Union membership in the public sector grew from less than 10 percent then to just over 34percent in 2017

since 1985 the number of union workers has fallen by almost 3 million workers.<sup>45</sup>

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<sup>45</sup> Sources Recent statistics: Economic News, Bureau of Labor Statistics, January 19, 1980, US DOL 18-0080.BLS, January 2018. Historical numbers: Barry T. Hirsch and David A. Macpherson, "*Union Membership and Coverage Database from the Current Population Survey*. Industrial and Labor Relations Review, Vol. 56, No. 2, January 2003, pp. 349-54.



**Figure 13**  
**U.S. Employment by Industry (in 000s)**

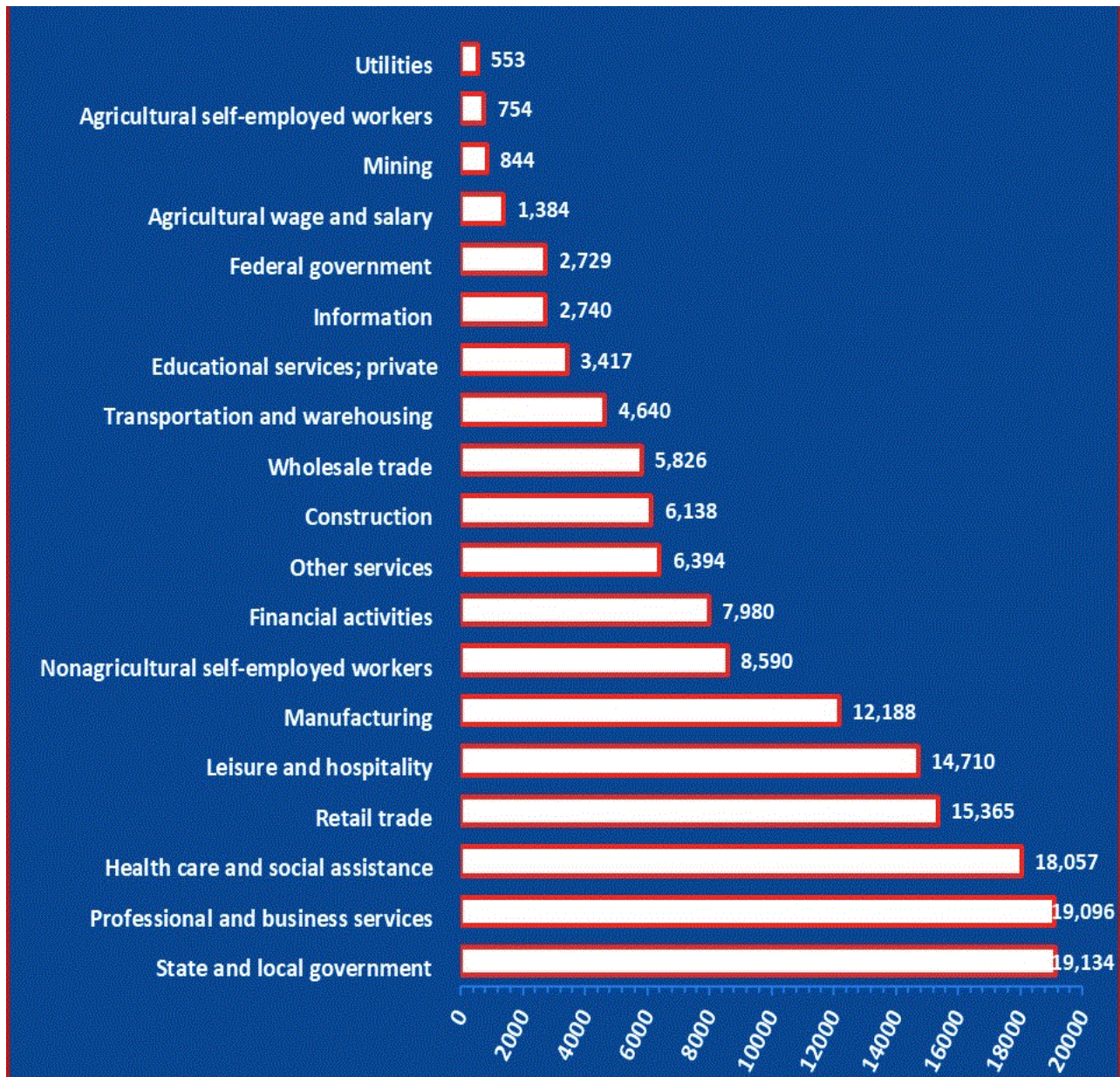


Figure 13 shows BLS estimates of all U.S. employees (including the self-employed and agricultural workers) by the 20 top-level NAICS-defined industries. If the state and local government employment looks large, it is because there are so many of these entities. According to the U.S. Census in 2012, there were 89,004 local governments in the United States. Local governments included 3,031 counties, 19,522 municipalities, 16,364 townships, 37,203 special districts, and 12,884 independent school districts.



**Figure 14**  
**Changing Shares in the Industrial Landscape**

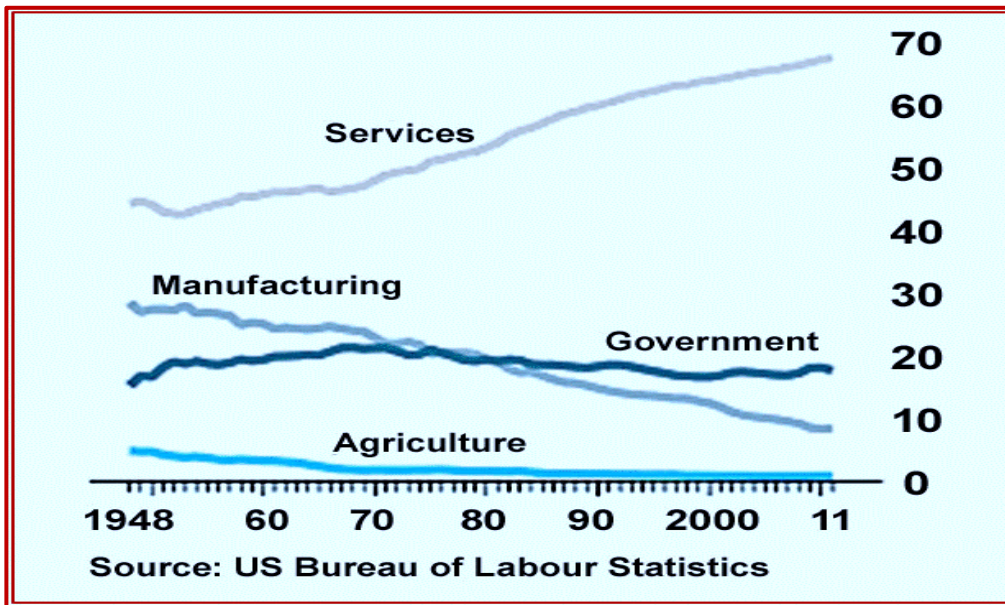
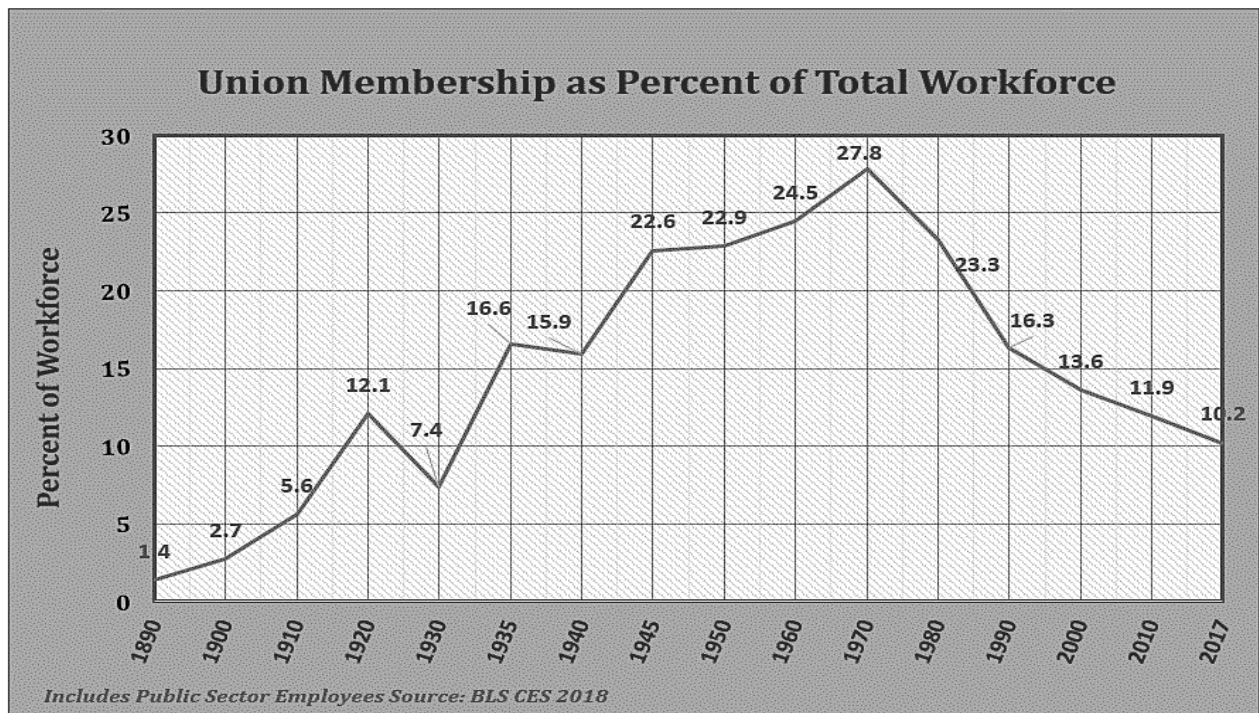


Figure 14 illustrates the massive shift in the industrial composition of the United State in the past 70 years. Commentators have expressed much concern about the decline in manufacturing employment in recent decades. But other industries have more than made up the difference. Source: Special Table Prepared by the Bureau of Labor Statistics, Employment, and Unemployment Series staff.

**Figure 15**  
**Union Membership as Percent of Workforce**



## Winners and Losers

Throughout history U.S., employment has shown impressive growth despite the occasional recession. (See *Figure 1.*) However, growth has not been equal among industries. In 1939, there were slightly more than 29 million nonfarm employees (not including the unemployed) in the U.S. By 2017, the number had grown to 147 million — a five-fold increase.

However, this growth has been far from equal among industries. At the turn of the 20<sup>th</sup> century, nearly 40 percent of workers were farmers or farmworkers. Now, they make up less than one percent of the workforce. Manufacturing work has been following the same path the past 50 years. (See *Figure 14.*)

## Loss of Manufacturing Jobs

Much has been made of the erosion of U.S. manufacturing in the past several decades. “America doesn’t make anything anymore,” and “The Chinese [or insert here Japanese or Mexicans] are stealing our jobs,” etc.

The fact is that manufacturing output (measured in sales) has risen from \$400 billion in real dollars in 1950 to more than \$2.2 trillion today, a six-fold increase. (See *Figure 16.*) It is manufacturing employment that has plummeted, not the dollar value of manufactured goods made in the United States.

Manufacturing *employment* rose to a peak of nearly 19 million around 1979 and fell to just over 12 million in 2017. Rapid and widespread adoption of production efficiencies has drastically reduced the manufacturing workforce to a shadow of its former self.

One reason it often seems foreigners make everything is that foreign goods tend to be consumer goods — clothes, toys, housewares, cars — which come to our attention. Airplanes, pharmaceuticals, and agricultural commodities, which America sells a lot of, do not.

Despite the decline in manufacturing employment over the past 20 years, the overall number of jobs in the U.S. has soared. As the prominent British economics journalist, Tim Worstall, has written in *Forbes* magazine:<sup>46</sup>

“The truth is that America has lost some 7 million manufacturing jobs and added some 53 million jobs in services. This is just what happens with advanced economics... Further, of those 53 million new jobs some 62% of them were in higher paying occupations than those “high-paying Good Jobs” in manufacturing we lost. In other words: 33 million higher paying jobs came along to replace those 7 million lost.”

## Manufacturing Wages

Contrary to conventional wisdom, today manufacturing workers are not particularly well-paid compared to other wage earners. CPS reports that the average hourly wages for all U.S. hourly workers was a little over \$22 an hour or about \$44,000 a year in 2017, compared to manufacturing hourly wages of \$21 an hour or roughly \$42,000 a year. Wages differ within the types of manufacturing, with durable goods (those expected to last more than three years) wages running to over \$43,000 and nondurable goods wages coming in at around \$19 an hour

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<sup>46</sup> Tim Worstall. October 15, 2016 issue of *Forbes* magazine.

or about \$39,000 a year.<sup>47</sup>

## Good Jobs for Those with Less Than a BA

All is not doom and gloom for those without a college degree. While it is well known that those with a college degree have a leg up in getting a well-paying job, there is much less discussion of decently-paying jobs for those without a BA.

A recent study by the Georgetown University Center for Education and the Workforce estimates that 30 million workers without a BA have what the Center considers “good jobs”<sup>48</sup> with a median income of \$55,000. This compares to the 36 million such jobs for workers with a four-year college degree or higher.<sup>49</sup> The study finds that the number of these non-BA jobs is increasing while the number of poorly-paying non-BA jobs is decreasing.

Education and training still matter. One difference between the good and not-so-good non-BA jobs is that the former usually require some post-high school education or training and an Associate Degree provides a distinct advantage in getting a good non-BA job. (See *Figure 17*.)

**Figure 16**  
**Manufacturing Employment and Output**  
Output in Billions of Dollars                      Millions of Workers

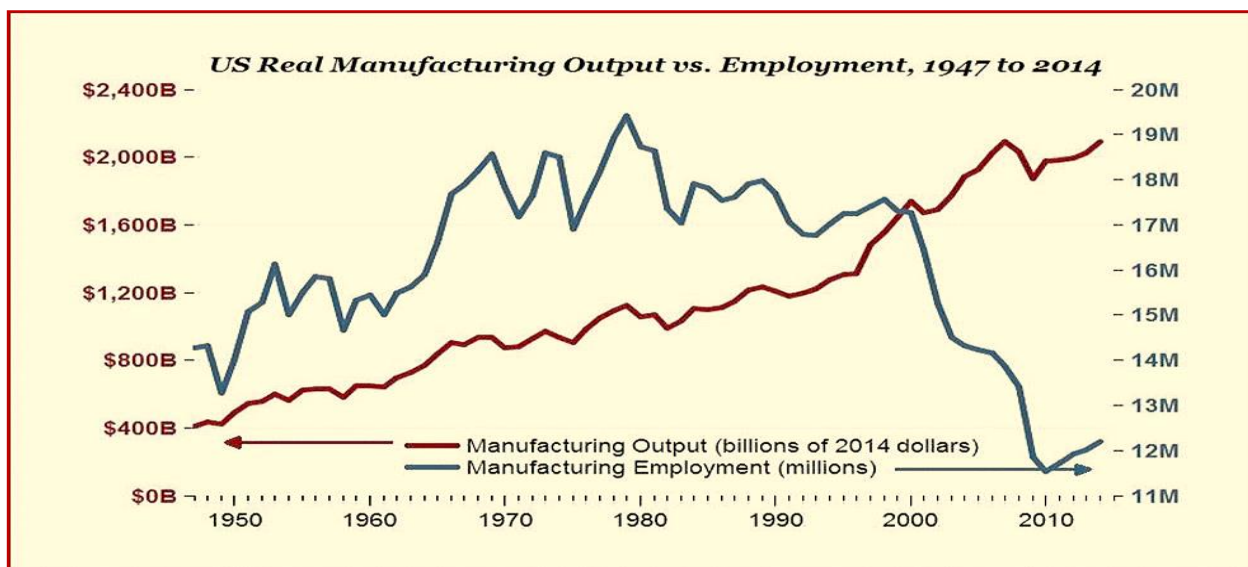


Figure 16 illustrates that, contrary to popular opinion, America still manufactures a huge amount of stuff. Made in America is alive and well, at least for the companies. Between 1990 and 2015, the value of U.S. manufactured goods more than doubled. At the same time, manufacturing jobs fell off a cliff. More than one third of 1990 jobs were gone by 2011. Source: Mark J Perry, “US Real Manufacturing Output vs. Employment,” American Enterprise Institute, October 2015 from BLSdata.

<sup>47</sup>BLS, Establishment Data Table B-8. Average hourly and weekly earnings of production and nonsupervisory workers, October 2017.

<sup>48</sup> The Center uses pay as its yardstick for good jobs.

<sup>49</sup> Source: Georgetown University Center on Education and the Workforce analysis of Current Population Survey Annual Social and Economic Supplement (March), 1992–2016. The formula for determining the wage range for “Good Jobs” is a little complex. Please see the study for further explanation.



**Figure 17**  
**Changing Nature of Good Jobs**  
**1992–2016<sup>50</sup>**



Figure 17 shows that shift in Good Jobs not requiring a four-year college degree from traditional blue-collar to skilled services jobs. Source: Georgetown University Center on Education and the Workforce analysis of Current Population Survey Annual Social and Economic Supplement (March), 1992–2016.

### Job Growth: Small vs. New Businesses

For years, the almost universally-held belief has been that small businesses create most of the jobs in the U.S. — a belief expressed by nearly all politicians and policymakers, both elected Republicans and Democrats, U.S. presidents included.

Small businesses are the economy’s engine, the argument goes, and do more than any other sector to spur jobs and growth. As a result, Congress has enacted laws that reduce taxes, provide special priorities for government contracting, and offer subsidized loans for small firms. The facts, however, are not as clear-cut.

The U.S. Small Business Administration (SBA) reports that small companies accounted for 64 percent of new jobs created in the U.S. between 1993 and 2011. But SBA defines a “small” business as any business with fewer than 500 employees or 99.7 percent of all U.S. companies.<sup>51</sup> (See Figure 19.) To reverse that calculation, firms with more than 500 workers — only 0.3 percent of

<sup>50</sup> Source: Georgetown University Center for Education and the Workforce analysis of Current Population Survey Annual Social and Economic Supplement (March) 1992–2016

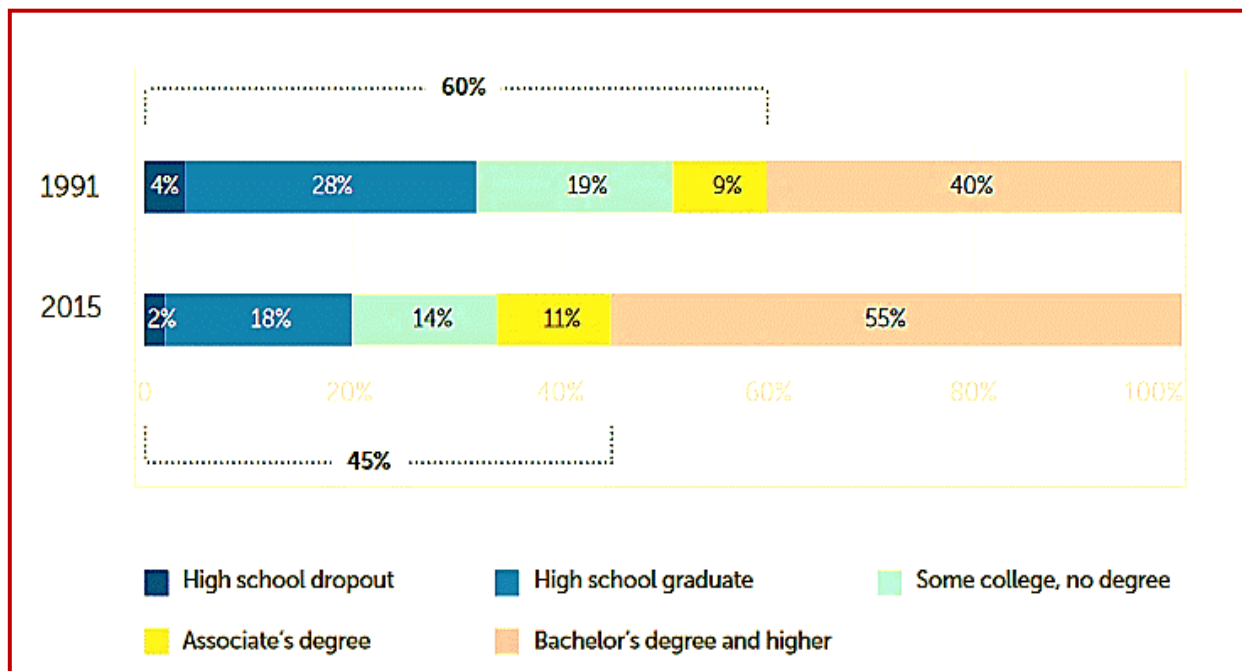
<sup>51</sup> Firms with fewer than 100 employees, a more intuitive number for “small,” still account for 98 percent of all firms. In fact, nearly 80 percent of all U.S. firms have fewer than 10 employees, and just over 86 percent of all firms in the U.S. have 15 or fewer employees. So, when people discuss small businesses, they should realize most really are “Small.”

all firms, or 19,500 firms — created 36 percent of all new jobs.

In fact, “It is not the size of the business that matters as much as it is the age,” say Jason Wiens and Chris Jackson, authors of a 2015 study by the Kauffman Foundation.<sup>52</sup> They further state, “New businesses, not necessarily small ones, account for virtually all new job creation in the U S in the last three decades.” The study adds that firms under a year old have created 1.5 million jobs annually over the past two decades, versus uneven and sometime negative growth among more established firms. (See *Figure 20.*)

An earlier study, relying on 2010 data from the U.S. Census Bureau,<sup>53</sup> reached a similar conclusion. Researchers found that a more precise method of predicting job creation is a company’s age, not size. Younger companies, the authors note, create more jobs, regardless of size. Of course, since most new firms are small, the small-business advocates do have something to hang their hat on. The dilemma is that the number of new firms has been declining. These warnings mesh with findings in the Kauffman Foundation study, which claims that the rate of new business openings has been in steady decline.

**Figure 18**  
**“Good Jobs” by Educational Attainment**



Source: Georgetown University Center on Education and the Workforce analysis of Current Population Survey Annual Social and Economic Supplement (March), 1992–2016.

<sup>52</sup> Jason Wiens and Chris Jackson, “The Importance of Young Firms for Economic Growth,” Kauffman Foundation September 14, 2015.

<sup>53</sup> “Who Creates Jobs? Small vs. Large vs. Young,” John Haltiwanger, University of Maryland and NBER, Ron Jarmin, U.S. Census bureau, Javier Miranda, U.S. Census Bureau, August 2011.



**Figure 19**  
**Distribution of U.S. Firms by Size**

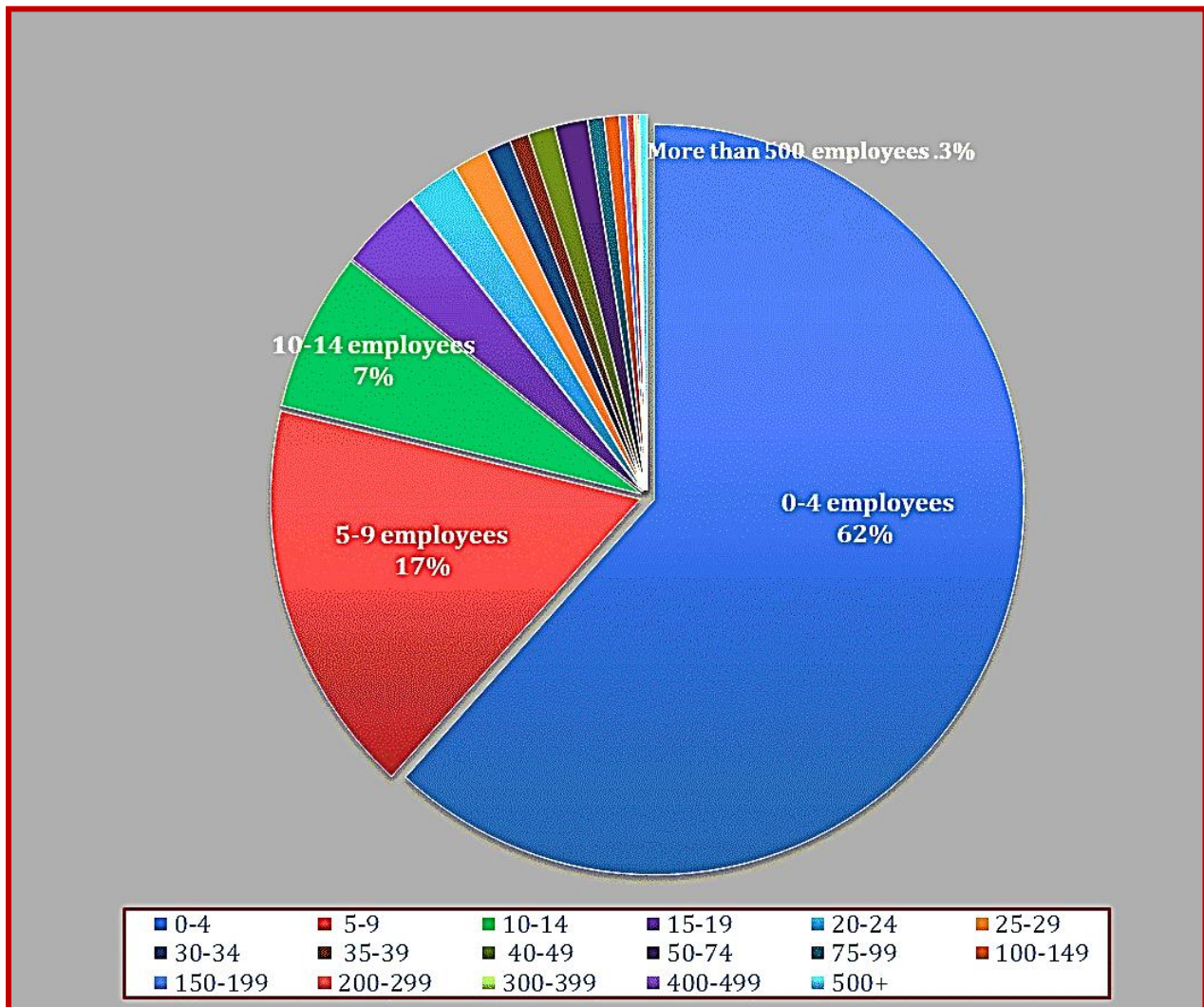


Figure 19 illustrates the overwhelming number of small firms in the U.S. Eighty-six percent of all firms have fewer than 15 employees. Small firms account for more than half of all workers and a great deal of job growth. However, size alone is not the main factor in the steady increase in the number of workers. Rather, it is new companies (small and large) that drive growth.

**Figure 20**  
**New Firms Drive Job Growth and Economic Dynamism**

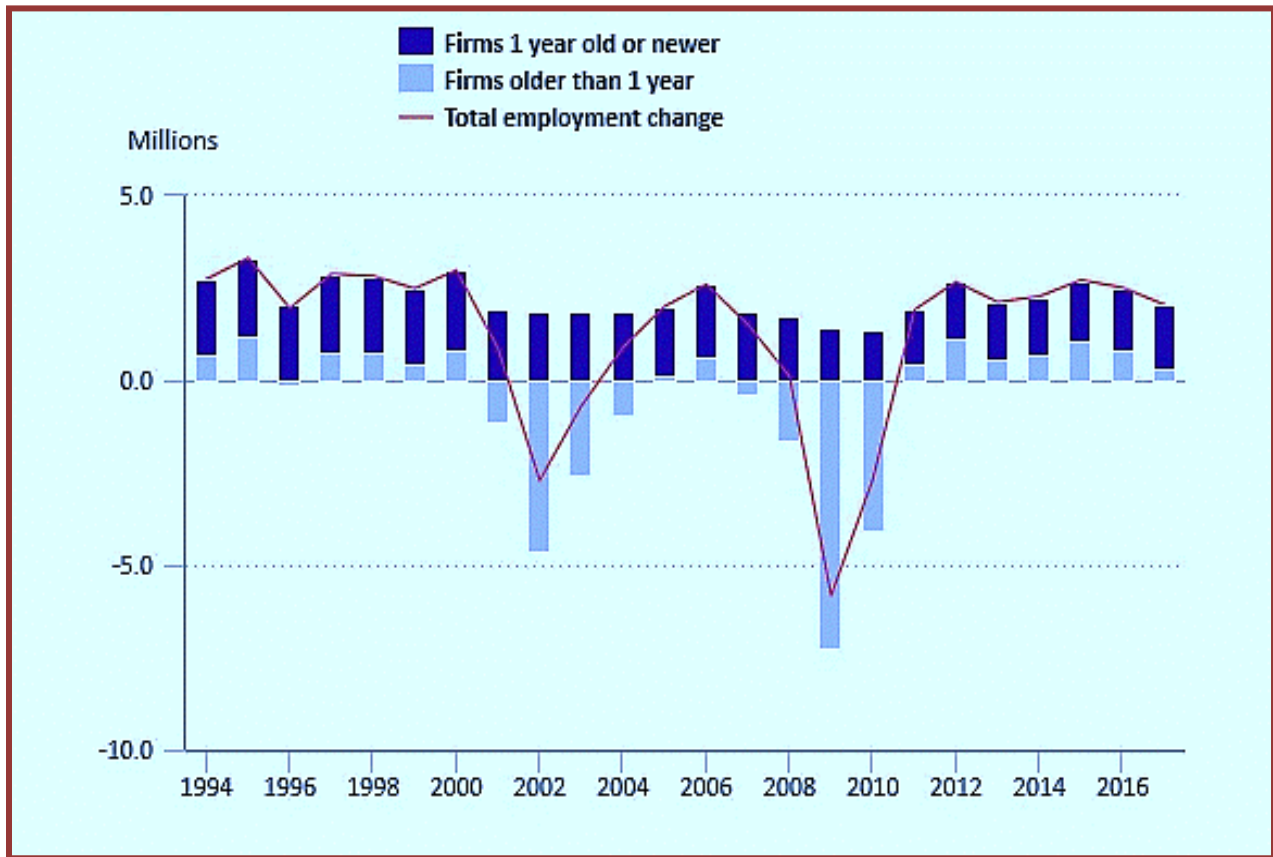


Figure 20 shows the BLS's estimate of job creation by size of new and older firms in the years between 1994 and 2016. As the figure shows, companies in business for less than one year consistently outperform more established companies — creating about two million new jobs every year. Employment growth in new businesses is less affected by recessions, especially compared to older businesses. Source: BLS CES Employment Data Series.

## Chapter Six: Wealth, Poverty, and Employment

Wealth, income, and poverty closely intertwine with employment — and often mentioned together in news reports — but rarely clearly defined. The following provides an overview of the issues involved.<sup>54</sup>

### Wealth and Income

The terms *wealth* and *income*, often used interchangeably, are not the same. *Wealth* is what you own, and *income* is what you receive — your paycheck plus any other outside source of money (Social Security payments, trust funds, earnings from investments, etc.).<sup>55</sup>

In the United States, at least, *home ownership* strongly affects middle class wealth. For most people the value of their house is the *primary source of their wealth*. The wealth of those who rent, is usually much less. For the better off, ownership of securities (stocks, bonds, etc.), real estate, cash savings, and other assets takes on a much greater role.

For most working Americans, static wealth is less important for their well-being than income from the wages and salaries which make up the bulk of personal income. For retirees, income sources shift to Social Security, pension payments, drawing down savings, and disposing of assets such as homes and other property.

### The Middle Class

The term *middle class* defies any precise definition. In most surveys, 70–75 percent of Americans consider themselves middle-class though their incomes range widely. The general opinion holds that “middle class” can be determined by some range of dollar income. Those who make less are “poor” and those that make more are “rich.”

However, neither approach holds up to closer scrutiny. This is because, among other things, the term “middle class” is a:

- ❖ **Social Status** as well as an economic one. Since the U.S. has never had a rigid class or caste system, there are no criteria or even general consensus as to what the sociological definition is.
- ❖ **Relative Condition.** “Middle” is just something between two ends. So, you can define the middle class as any income range of less than 100 percent. One person making more and one person making less would still leave everyone else in the middle.
- ❖ **Matter of Self-Perception.** Quite prosperous people do not consider themselves rich because they see others who are much richer than themselves. On the other hand, people with modest incomes — retirees living on a fixed income, say — may consider themselves middle-class and live a middle-class lifestyle.

But pollsters, journalists, and economists are uncomfortable with such vague and variable terms as “lifestyle” and “relative.” So, they gravitate towards some hard, measurable money

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<sup>54</sup> See also discussion of earnings and income in Chapter Two.

<sup>55</sup> See Chapter Two for a discussion of the various uses of the word “income” and related terms.

definition, which has a certain intuitive appeal. Middle class does after all have “something” to do with income. Unfortunately, there is little agreement as to what a dollar definition might be.

We know that median income for all households in the U.S. was around \$60,000 in 2016. As Figure 21 shows, the median household income has risen by about \$12,000 in inflation-adjusted dollars — or about 30 percent — over the past 50 years. That is not the same as “middle class.” An economic “class” requires a group with a range of incomes.

Here’s a sampling of the dollar estimates of middle class:

- ❖ The Pew Research Center defines middle class as those earning 67 percent to 200 percent of the median income — \$39,560 to \$118,080 in 2016;
- ❖ Sociologist Leonard Beeghley<sup>56</sup> says a male making \$57,000 and a female making \$40,000 with a combined household income of \$97,000 comprises a typical middle-class family;
- ❖ *The Washington Post* decided it was household incomes between the 30<sup>th</sup> percentile mark and the 80<sup>th</sup> percentile mark or from \$35,000 to \$122,500 in annual income;
- ❖ Gary Cohn, President Trump’s top economic adviser, recently referenced the middle class in discussing how a “typical family” making \$100,000 a year would benefit from the 2018 tax bill.

Two other things tend to defeat fixing of class to income. The first is geography. The *median* income in six cities highlights how much it varies by location: Newton, MA: \$122,100; Washington, D.C: \$70,800; Dallas, TX: \$43,800; Birmingham, AL: \$31,200; and Flint, MI: \$24,900. If a family’s income was \$70,000 in Flint, Michigan it would be well-off, but close to poverty in Newton, Massachusetts.

The second is family size. In *The Washington Post*’s formula, the median middle income for single people is \$30,400; a household of two, \$65,600; for three, \$77,000; for four, it’s \$91,000 (not far from Cohn’s definition of \$100,000 for a family of four). But the numbers are still arbitrary.<sup>57</sup>

## Adjusting Income for Inflation

BLS publishes the “*Consumer Price Index*” or *CPI*, which is the official estimate of price inflation in the U.S. Adjusting for inflation makes it possible to compare like things over time, whether it is national GDP or the price of bread. Is my income rising or eaten away by rising prices? Are there more or fewer people in poverty? Why doesn’t a candy bar cost a nickel anymore?

The CPI is based on a monthly survey of the prices of a “*market basket*” of *literally thousands of goods and services in hundreds of locations* throughout the country. BLS takes great pains to keep the survey consistent over time. But it doesn’t take much digging to realize that there are issues. My market basket is probably different from yours (children, no children? pets, no

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<sup>56</sup> The Structure of Social Stratification in the United States, Beeghley, Leonard. Allyn & Bacon, NY, NY, 2007

<sup>57</sup> One of the authors (Bowman) took the opportunity while having coffee one December 2017 morning with six friends (two small business owners, one financial advisor, two construction workers, and one retired steel worker) to ask each what they believed to be the annual earned income necessary to be considered middle class. The responses ranged from a low of \$36,000 to a high of \$200,000.

pets?) and prices of some things may rise much faster than others, etc. BLS takes great care to compare prices in one month with that of the next, but it is nearly impossible to make exact comparisons over many decades.<sup>58</sup>

Two issues arise when comparing prices over time: changing technology and changing buying habits. A \$2,000 computer sold 40 years ago was not nearly as powerful or useful as one that costs half that much today, plus the whole concept of “computer” has changed dramatically. Is a smart phone a telephone, a computer, an internet link, or a camera? How do you compare?

Today, nearly all houses have air conditioning; in 1950 the census was still asking people if they had indoor plumbing — which a lot of people didn’t — let alone air conditioning. How do you compare the price of housing in the two eras?

The other issue is that when something goes out of fashion the prices can drop dramatically without affecting the welfare of the consumer. Beanie Babies aren’t nearly as costly as they were when they were the rage and people thought they would be collectable. BLS does weigh the relative importance of the items in a typical budget so that Beanie Babies don’t make much difference, but other items can over time.

One way of putting it is that the “standard of living” has risen more than the “cost of living.” In other words, we can purchase better goods and services for a same or smaller portion of our income. Nonetheless, the Consumer Price Index is invaluable for adjusting for inflation particularly when comparing years rather than decades or centuries.

## Poverty and Unemployment

A mantra in the workforce development field, “The best weapon against poverty is a job,” seems to hold true in the data. As late as 2014, 46.6 million Americans lived in poverty. By 2016, with the steady drop in unemployment (8.3 million fewer unemployed) the number of poor fell to 40.6 million — *a drop of six million people in poverty in just two years* even as the U.S. workforce continued to grow.

**Measuring Poverty.** The U.S. Census Bureau determines poverty status by comparing cash income against a threshold that is set at three times the cost of a minimum food diet in 1963 — updated annually for inflation. For a family of four, the poverty level was \$24,000–\$25,000 in 2017.

In 2011, the latest year for which this information is available, the number of households living in extreme poverty (*households living on less than \$2 per day or \$730 a year*) before government benefits, *was double the 1996 level at 1.5 million households*. The “poverty line” is the dollar level of income that determines whether you are poor.

Since the poverty depends on the size of family and other factors, journalists often use the income that defines poverty for a family of four. The official poverty measure defines “family” as persons living together who are related by birth, marriage, or adoption. The “poverty rate” expresses the percent of the total U.S. population with incomes below the poverty line. (See *Figure 22.*)

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<sup>58</sup> The agency publishes price changes by type of product so that businesses, economists, and others can track the price subsets of the CPI. Since the prices of food and energy experience considerable volatility from month to month, BLS reports CPI with and without these components.





**Figure 21**  
**Real Median Household Income by Race and Hispanic Origin: 1967–2014**

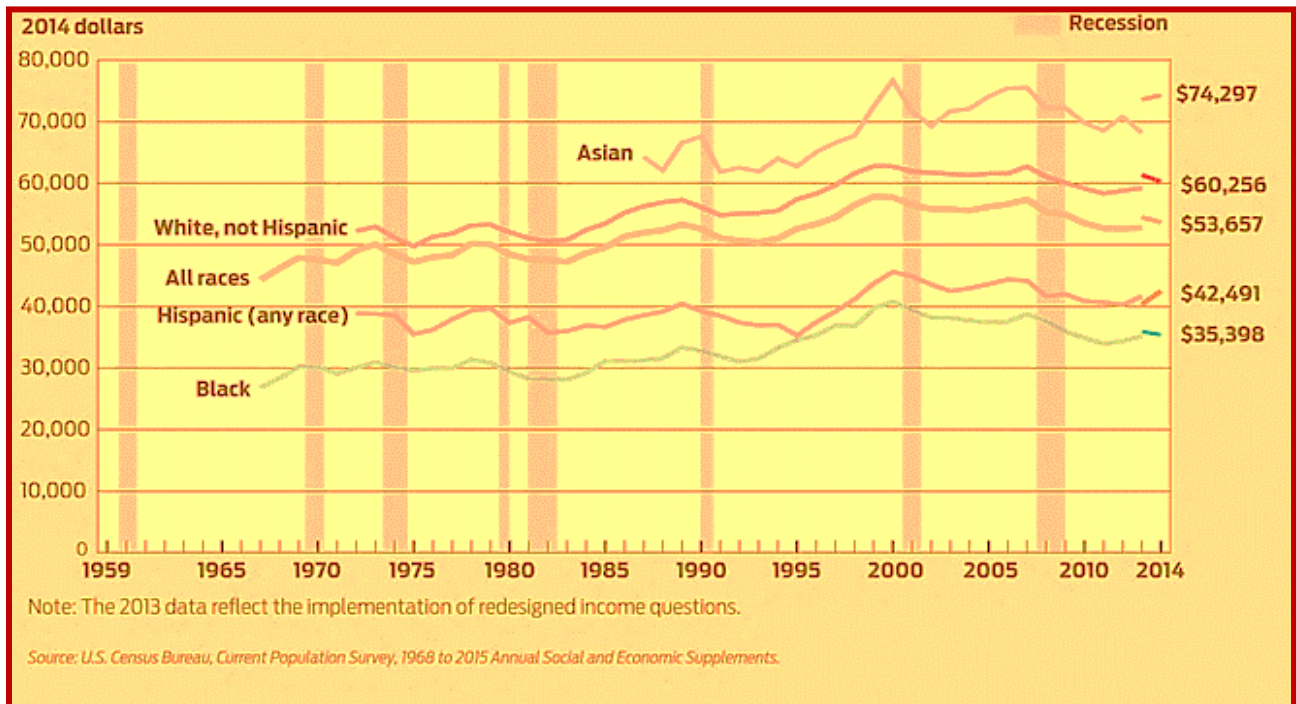


Figure 21 shows the median income (half make more, half make less) by ethnicity between 1965 and 2017. It seems everyone was better off before the great recession. The break at the end of the lines represents change in the Census measurement methodology. Sources: U.S. Census Bureau, (Census.Gov) Poverty Data Tables 2017.

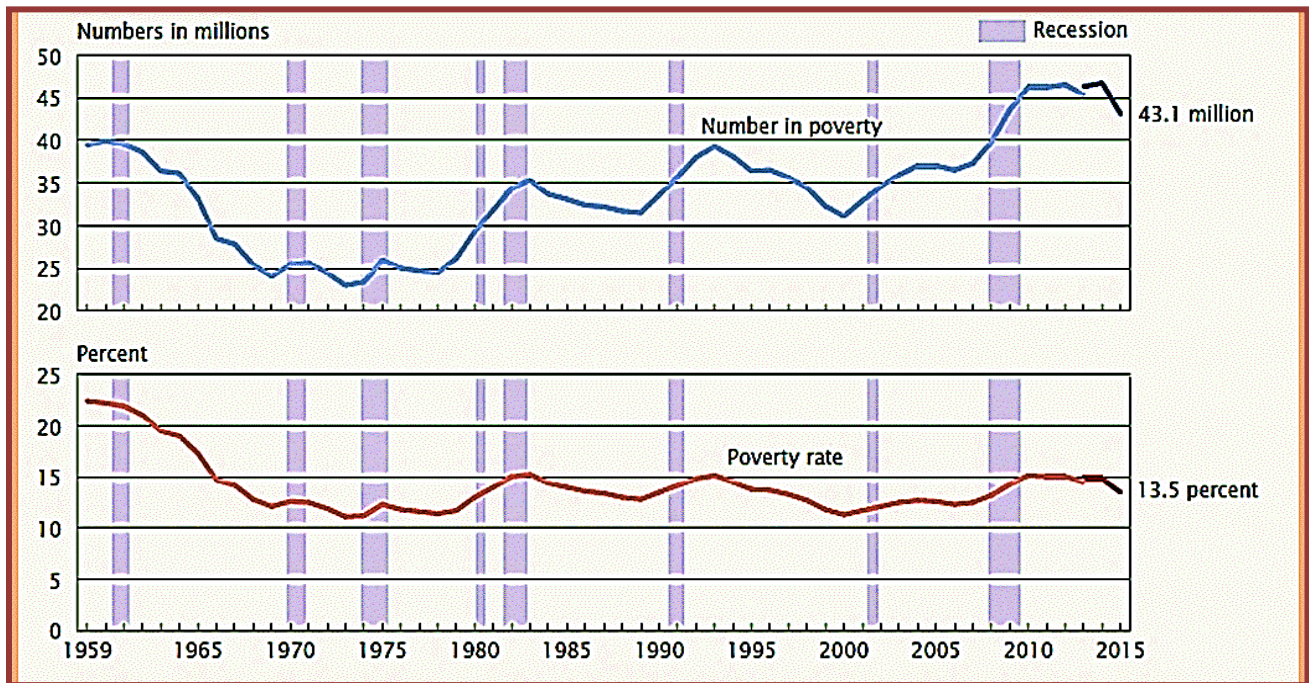
### The Supplemental Poverty Measure

Over the years, critics have argued that the official measure of poverty left out both income and expenses that affect a person’s standard of living. One side argues that the measure should include government payments (like welfare or Social Security) and thus lower the rate of poverty. Meanwhile, the other side argues that the measure does not consider expenses needed to cover basic needs (medical co-pays, transportation, etc.), thus showing that there are more poor people than the official rate indicates.

In response to this criticism, beginning in 2011, the U.S. Census began issuing a Supplemental Poverty Measure (SPM) designed to more fully account for the resources that individuals require to meet their basic needs. As such, unlike the official poverty measure, the SPM adds the value of cash (e.g., Social Security) and in-kind benefits received (e.g. food stamps) and of payments made (income and sales taxes paid), medical expenses, and work-related costs (commuting and childcare costs).

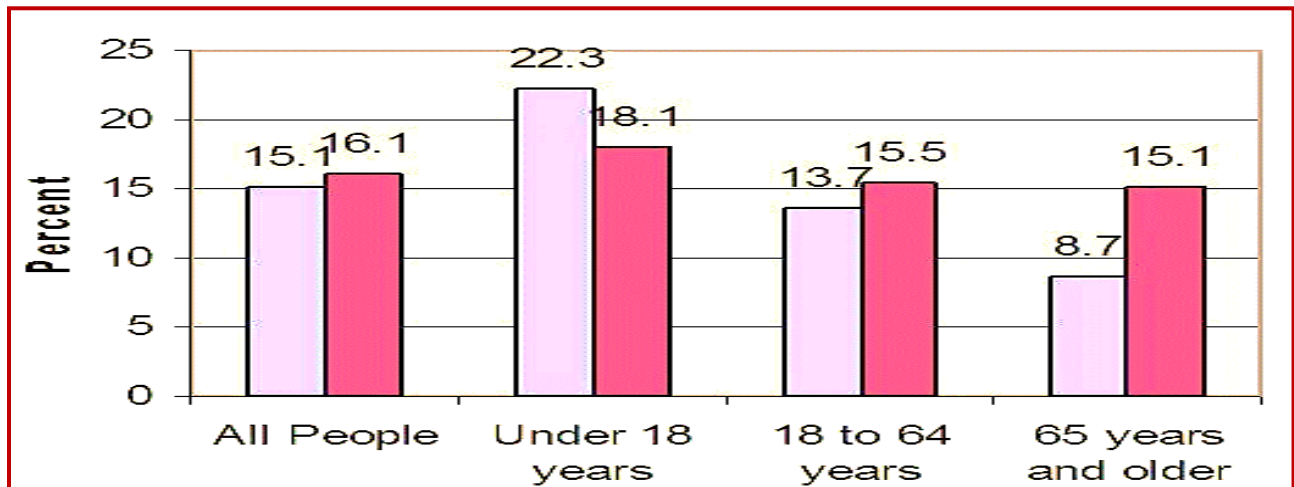
The net result of the Supplemental Poverty Measure does not change either the poverty numbers nor the overall rate much, but it shifts the poverty rate among age groups. The poverty rate for children dropped while the rate for those over 64 jumped substantially. (See Figure 23.)

**Figure 22**  
**Number in Poverty and Poverty Rate: 1959–2015**



In Figure 22 the data for 2013 and beyond reflect the implementation of redesigned income questions. Source: U.S. Census Bureau, Current Population Survey, 1960–2016 Annual Social and Economic Supplement.

**Figure 23**  
**Poverty Rates Using Official and Supplemental Measures**



The lighter column in Figure 23 represents the Official Poverty Rate and the darker column represents the Supplemental Measure. This U.S. Census chart shows the differences in the poverty among different age groups using the official formula and the Supplemental Measure. The difference between the two is not great, but children’s poverty rates fall and rise for those over 65. Source: U.S. Census Poverty Tables.



**Figure 24**  
**Number of People in Poverty 1966–2016**  
**In 000s**

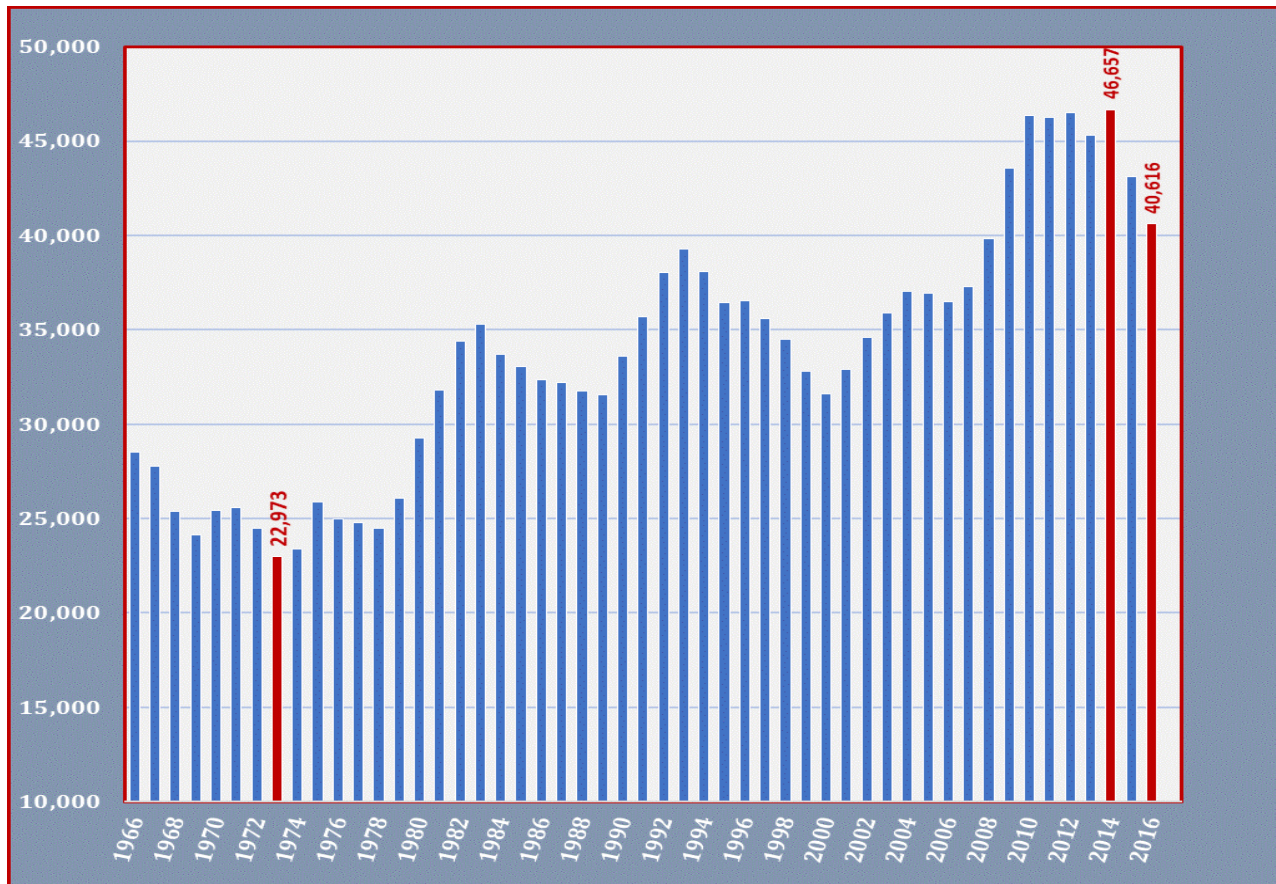


Figure 24 takes a closer look at the number of people in poverty using the official rate in the 50-year period from 1966 through 2016. The numbers, if not the rate, rise as general population rises. As might be expected, the numbers rise substantially during recessions and drop as the economy recovered and unemployment declined. The number of people in poverty dropped precipitously — by six million — between 2014 and 2016 in response to falling unemployment. However, in looking at the entire period, it is easy to see that number in poverty has never been as low as it was at the height of the Great Society programs in the early 1970s. The blue columns indicate years with highest and lowest numbers as well as the recent fall in the number in poverty. Source: U.S. Census, Poverty Data Tables.

# Chapter Seven:

## Workforce Development in the United States

### Human Capital and Workforce Development

Workforce Development or Human Capital Development<sup>59</sup> refers to the entire process by which people gain the skills and knowledge — that is, the human capital — needed to sustain a prosperous, innovative economy. There are essentially six drivers of workforce development. Most human capital derives from some mixture of sources including:

- ❖ Family and cultural environment,
- ❖ Formal education,<sup>60</sup>
- ❖ Skills training,
- ❖ Individual learning initiative,
- ❖ Work experience, and
- ❖ General social and economic conditions – e.g., health,<sup>61</sup> infrastructure, etc.

Setting aside family and cultural environment, individual factors, and general conditions, this section concentrates on education and training as the basis for human capital formation in any society but especially the U.S.

Workforce professionals and educators make distinctions among workforce development activities, particularly education and training. By nature, *education is general and training specific*. Education provides a broad understanding of many subjects. It is meant to be long-lasting and lays the intellectual groundwork for training. Training provides detailed understanding and the ability to perform in a specific subject area. It is generally understood, though sometimes forgotten, that people need both for success in the workplace.

Preparation for many occupations combine education and training during the initial formal education process, and through continuing education and training after graduation and during employment — think engineers, medical personnel, teachers, crafts workers. Preparation for many other occupations often requires separate initial education and follow-on employer training.

Education and training in the U.S. is a massive multi-billion-dollar enterprise employing tens of thousands of people with millions of students enrolled in any given year. In principle, U.S. schools (K–12) and colleges provide the broad initial education while employers, graduate programs, local community colleges, and trade schools fill in the specifics. In information technology and some other fields, the specifics increasingly come from online courses and

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<sup>59</sup> The two terms can be used interchangeably, but ‘human capital development’ is rarely used.

<sup>60</sup> To be very clear, workforce development is not the only purpose of formal education. A love of learning, an appreciation of the arts, an understanding of science, civic participation, and personal development are among the other purposes of education. These have sometimes been lost in the rush to improve American’s vocational skills. In our opinion, they should not be.

<sup>61</sup> Poor public health can prevent large numbers of people from participating fully in the workforce, or keep children from attending school, resulting in diminished human capital for society as a whole.



certification tests.

Today, 50 million American students go to public and private K–12 schools.<sup>62</sup> An estimated 20 million attend colleges and universities. Another several-hundred thousand, mostly employed adults, study in adult basic education programs<sup>63</sup> (English as a second language, remedial reading, math, etc.).<sup>64</sup>

Employers provide a considerable but unmeasured amount of inhouse training including apprenticeship, courses directly related to the employees' work, upskilling (training for more skilled jobs within the company) and basic literacy and numeracy needed for the job. With this many people enrolled in education and training programs today, it is important to understand how the US got here and its impact on American human capital development.

## **The Long U.S. Educational Tradition**

Education first gained its place among American virtuous endeavors, not so much for its economic value — although that has become paramount in recent decades — but for religious and civic reasons. From the outset, the public linked education to religious and political freedom. Many early European immigrants to America — Puritans, Quakers, Presbyterians, etc. — were dissident Protestants for whom *reading the Bible was a duty*.

The early colonists formed *community religious schools* to educate their children. The growth of commerce and incipient democracy supported the desire that every child should be able to read, write, do simple arithmetic, and use common measurement systems. The first formal schools began appearing in the 17<sup>th</sup> century, including the Boston Latin School in Massachusetts, and the Syms School in Virginia, both of which opened in 1635, soon followed by others in the remainder of the colonies.

American independence spurred the drive to widespread literacy. For the first time in history, the founding of a nation depended upon documents — the Declaration of Independence, the Constitution, the Federalist Papers, Thomas Paine's *Common Sense*.<sup>65</sup> One of the first pieces of legislation that the new U.S. Congress enacted was the 1787 *Northwest Ordinance Act*, which rationalized the distribution of federal land west of the Appalachians and, in doing so, making provision for local schools.

Secular public schools often began as "*pauper schools*" for those who couldn't afford private education. Since few people wanted to admit they were paupers, states and localities soon expanded public elementary education to all children regardless of income.

Over time, elementary education became mandatory under state law. States began to provide some support and standardization of education, yet funding remained almost exclusively local until well into the 20<sup>th</sup> century.

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<sup>62</sup> NCES, The Condition of Education, Elementary and Secondary Enrollment, May 2017.

<sup>63</sup> NCES Digest of Education Statistics, Table 306.2, 2015.

<sup>64</sup> NCES Digest of Education Statistics, Table 507.3, 2015.

<sup>65</sup> In his book *46 Pages*, Scott Liell states that *Common Sense* sold over 500,000 copies when it was published. That would have represented most of the adult population at the time and indicates the level of literacy as well as an abiding interest in the life of the country. Other estimates are somewhat lower but agree that the pamphlet book racked up at least 100,000 copies in sales in the first three months. (*46 Pages*, Scott Liell, Running Press Book Publishers.)

## Colleges then Universities

The colonists established the early colonial institutions of higher education mainly to train clergy, with the first being Harvard in 1636. Later, in the 18<sup>th</sup> century, curriculums expanded to include law and later medicine (Philadelphia Academy in 1765 to become the University of Pennsylvania), followed by business and education towards the end of the century. The first colleges were private, followed by state and locally-funded institutions.

The movement to expand higher education and training accelerated in the mid-19<sup>th</sup> century through the 20<sup>th</sup> century. This expansion received a major push with passage of the first effort of the federal government to support states in funding higher education, the Morrill Act of 1862. *The Morrill Act* provided each state with 30,000 acres of federal land for every Congressional seat for use (lease or sale) to generate funds to establish institutions to teach agriculture and the mechanical arts including engineering and military tactics.

These institutions, known as *Land Grant Colleges*, soon appeared in every state and eventually became the basis of most state university systems. The states also used Land Grant funds to support primary education — and still do in some states. Provisions of the companion *Homestead Act* expanded the requirement that land be set aside for school buildings in every township where the federal government distributed land. These laws did much to promote universal education and became the basis for far more extensive federal support for education well into the 20<sup>th</sup> century.

## Acculturation

In the late 19<sup>th</sup> century and early 20<sup>th</sup> century, education increasingly became *a means of incorporating immigrants into the new American culture*, a role that education continues to play to this day. With education, the sons and daughters of illiterate, non-English-speaking parents could move into the mainstream of American society. Acculturation remains a major function of the elementary and high school education to this day.

## Student Tracking

Around the same time, at the end of the 19<sup>th</sup> century, educators began advocating the sorting of elementary and secondary students into three broad groups.

- ❖ The first group would receive a *general education*. This included basic reading, penmanship, and arithmetic — the “3 Rs” — along with civics, home economics, and the like, to allow these students to function in society and work in generally low-skilled jobs.

Educators (and many parents) assumed that general track students required no more than an eight-grade education. Though a high school credential might be desirable, the lack of a high school degree left no stigma. By the law of unintended consequences, in fact, schools shunted most students into this group, even after high school became the norm in the 1950s. Such students received a limited (and cheap) education, but one that left them unprepared for higher education.

- ❖ The second group received a *vocational education* to prepare them for trade and technical occupations. Courses usually related to specific occupations. The system expected vocational students to complete high school but rarely to go on to college.

Such programs did sometimes prepare students to go on to become engineers and other technical professionals. Over time, however, this came to be the “track” in which educators placed students they believed couldn’t make it academically. Minority and poor children ended up in the vocational education track as a matter of course.

❖ The third track, *college preparatory*, served those expected to go on to a college and to eventual entry into the professions. Elite private “prep” schools and college preparatory tracks in public schools attended to the needs of those students seeking to enter the professions.

Throughout the 20<sup>th</sup> century, this sorting of K–12 students — or “tracking” — was common practice if not official policy<sup>66</sup> in the U.S. The approach involved teachers, counselors, and administrators making (sometimes unconscious) decisions as to which track a student should fall into.

However, as educational requirements for jobs grew and access to higher education expanded, the tracking approach served as a brake on the entire economy. It wasn’t until the 1990s that educators faced the situation head-on as employers and reformers lobbied for a new, more rigorous education for all.

Thus, such slogans as “Every Child Can Learn” and “No Child Left Behind” appeared. A push for tougher educational standards became a controversial point of contention in school districts, states, and in Congress — and remains so today as witnessed in the controversy surrounding the “Common Core Curriculum.” (See *Changes in the Landscape: 1980–2017*.)

## Segregation

Unfortunately, after the Civil War, educational opportunities were denied to most African-Americans as segregated and unequal education became institutionalized throughout the American South. Housing segregation and biased attitudes led to similar, though unofficial, segregation in Northern cities. Despite this, many private donors founded African-American educational institutions to offer opportunities denied elsewhere.

Private interests established more rigorous vocational training institutions like the Tuskegee Institute founded by George Washington Carver. Beginning with the First World War, large numbers of African-Americans began leaving the South for Northern cities where both economic and educational opportunities were better.

School desegregation, mandated by the Supreme Court in 1954, but not implemented until well into the 1960s, radically altered the education system in much of the country. For the first time, African-Americans attained many of the same opportunities that others had enjoyed all along. The African-American high school graduation rate rose steadily until, now, it is approximately the same as the general population.

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<sup>66</sup> Over the years, research repeatedly indicated that tracking offered an inferior education. In fact, teachers and parents often railed against “tracking.” But what they were usually against, until recently, was the sort of rigorous vocational education on the order of the German Apprenticeship program. Yet little was done to reform the existing system, to the detriment of many students and especially those in the general track.

## The Expanding Education Base

With the rapid growth of the American population and economy beginning in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, higher levels of education became more common and sophisticated:

❖ **From Prep School to High School.** It wasn't until the latter part of the 19<sup>th</sup> century that high schools became at all common. The few high schools that existed before that were almost all “preparatory” schools for those relatively few planning to go on to college. *Even as late as 1910 only about 10 percent of all children attended high school*, and up until the Second World War many rural high schools remained two-year institutions. In 1950, more than 75 percent of adults had not achieved more than an eighth-grade education. (See *Figure 25*.)

❖ **Higher Education Takes Shape.** As the economy became more industrialized, vocational training at all levels began to take hold. The respective professions formalized medical and legal training. Universities began to organize as a collection of specialized schools following the German model. Liberal arts colleges remained the most common major, the rationale being that a diverse education gave a student the broad understanding of the world needed to enter most fields of endeavor.

❖ **Community Colleges and Technical Education.** Few community colleges or other two-year institutions existed before the Second World War. After the war, public community colleges proliferated and now there are over 1,600 such institutions throughout the U.S.

Initially formed as local “junior” colleges to prepare young people to attend four-year colleges elsewhere, community colleges increasingly began to offer technical degrees, short training courses, and general self-improvement classes for millions of Americans.

Originally funded by county governments, states, and student tuition (the original “one-third, one-third, one-third,” model), the funding approach has recently changed as local and state funding decreased and tuition and fees have increased.

❖ **Occupational Training.** Through much of the 19<sup>th</sup> century, occupational preparation remained largely a family and employer responsibility in a country where the great mass of people worked on farms and businesses which tended to be small family operations. Even formal apprenticeship, with its connotations of old-world class distinctions, failed to take hold except in a few skilled trades.<sup>67</sup>

In a mobile, democratic society and rapidly-expanding economy faced with continuous skill shortages, general education and the self-taught jack-of-all-trades overwhelmed prolonged apprenticeship. The apprentice printer Ben Franklin was the exception; the self-taught rail-splitter and informally instructed lawyer, Abe Lincoln, became the rule.

Historians of technology have argued that the shortage of skilled laborers combined with the generally elevated level of literacy did much to shape the American Industrial Revolution. In other words, the mechanization of work received an extra push by the fact that the country had few highly-skilled artisans but a large, literate, and numerate workforce.

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<sup>67</sup> Employers tried indentured servitude in the 17th and 18th centuries, but they were never able to get enough takers for the four-to-seven-year commitment.

In 1917, Congress passed the first Vocational Education Act to encourage preparation of students for the “trades.” Agriculture, home economics, and machine-trades training predominated in such vocational training until well past the middle of the 20<sup>th</sup> century. Until recently vocational education in all occupational areas, especially at the high school level, retained this “low-tech” image.

❖ **Apprenticeship.** Apprenticeship revived at the beginning of the 20<sup>th</sup> century for the training of skilled craft workers. It found ready acceptance among European, especially German, immigrants and organized labor. Wisconsin established a state apprenticeship system in 1915, but it wasn't until 1937 that Congress enacted the Fitzgerald (National Apprenticeship) Act.

Unions, mostly associated with the American Federation of Labor (AFL) adopted formal, registered, apprenticeship as the primary means of training their members. Non-union employers adopted apprenticeship for many of these trades as well. However, despite numerous effort to expand this form of training to other occupations, remains largely attached to the skilled construction and manufacturing trades.



**Figure 25**  
**The Dramatic Rise of Educational Attainment**  
**Educational Attainment of U.S. Adults (25+) 1940–2013**

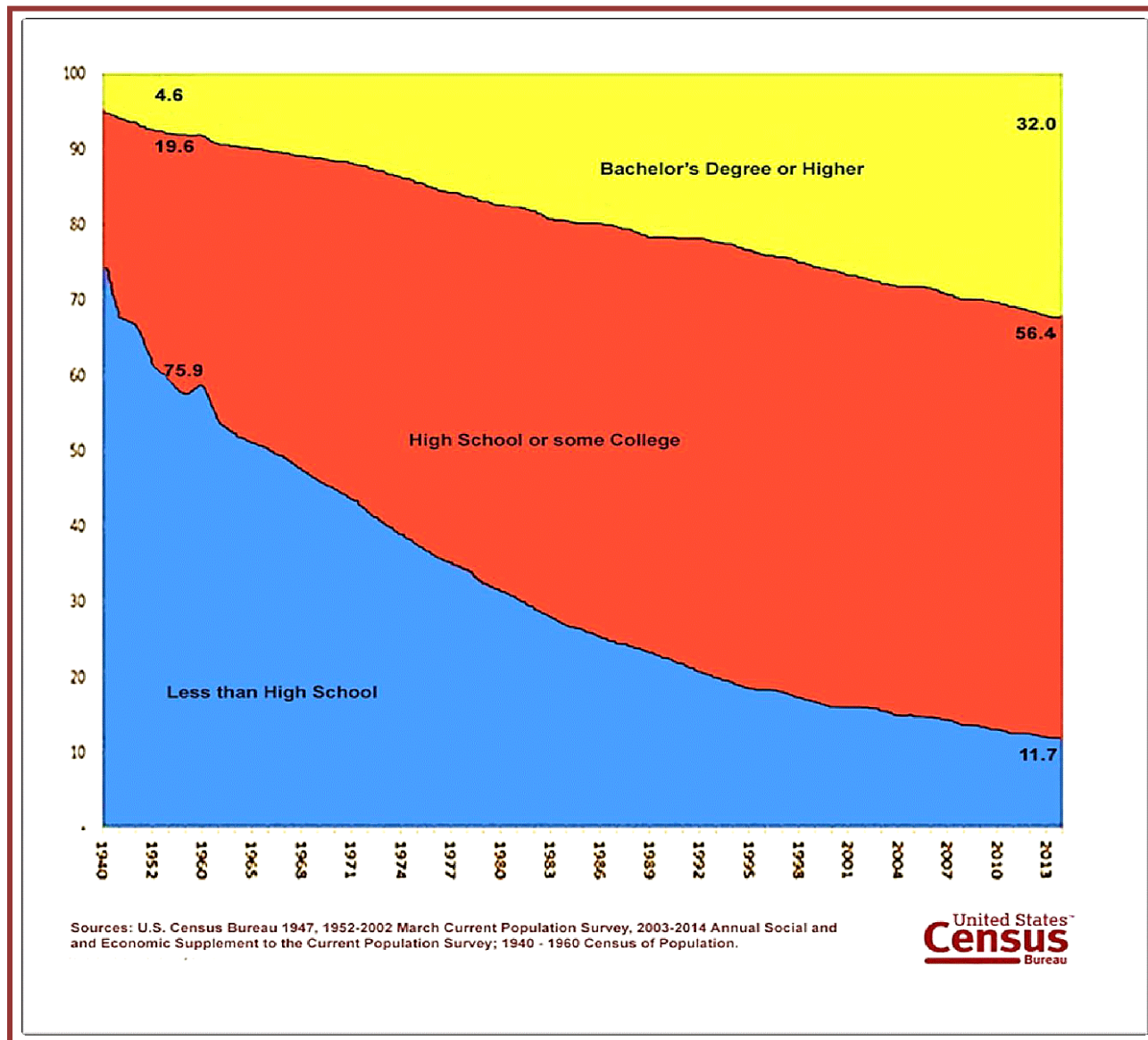


Figure 25 illustrates the dramatic rise in educational attainment of adult Americans over the past 65 years. In 1940, 76 percent of the adults (25 and over) did not even have a HS diploma. Today, that number is 11.7 percent and falling. At the other end of the spectrum, college graduates have risen from a mere 4.6 percent to nearly one third of all adults today. Source: U.S. Census CPS Historical Time Series Tables Online Table A-1. Years of School Completed by People 25 Years and Over, by Age and Sex: Selected Years 1940 to 2017 [ $<1.0$  MB]

## The New Deal and a Growing Federal Role<sup>68</sup>

Federal involvement in workforce training and employment-focused programs had its origins in the 1930s and included:

❖ **New Deal Work and Education Initiatives.** In the crisis of the Great Depression, Congress created the *Works Progress Administration (WPA)* and other NEW Deal work related programs including apprenticeship and vocational education programs, the National Youth Administration, the Civilian Conservation Corps, and direct hiring of the unemployed. The initiatives included work-study funds supporting students in high school and colleges (including graduate schools).

❖ **The Employment Service.** Congress also created the federal-state *Employment Service (ES)* as an adjunct of the *Unemployment Insurance* system. The government formed ES in part to reduce unemployment insurance costs by helping beneficiaries get jobs. The government established Employment Service offices in nearly all local communities in every part of the country.

The Employment Service still serves anyone who walks through its doors. It now delivers its testing and job placement services at local “One-Stop Career Centers” in conjunction with job training programs and specialized placement services (tailored to youth, the handicapped, migrant farmworkers, etc.).

❖ **Armed Services Training.** After WWI Congress slashed funding for the Armed Services to the bone. However, a few leaders, including the future Army commander and Secretary of State George C. Marshall developed a detailed training template for every kind of military specialty in preparation for mass recruitment and training in case of war. With the coming of WWII this system proved its worth as the Army alone went from fewer than 200,000 soldiers to more than 16 million well-trained and prepared members of the military in the course of less than four years.<sup>69</sup>

❖ **Just in Time Training.** The civilian employers and union joined together to streamline training in parallel to that of the armed forces including Job Instruction Training (JIT) to rapidly train workers on the job for the war effort. Unfortunately, once the war was over the civilian sector largely abandoned this approach to training in favor of hiring skilled returning veterans.

## After the War

By the end of the Second World War, elementary education had become nearly universal and about one quarter of all adults had a high school education though fewer than 10 percent had a college education of any kind. This all changed dramatically after the war.

As high school attendance became common in the 1950s, public concern for the first time focused on “*dropouts*.” In other words, a consensus formed around the expectation that everyone should complete high school. Where previously there had been little stigma attached

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<sup>68</sup> See Appendix Two for a more complete timeline of federal workforce development and education-related legislation.

<sup>69</sup> An official report on the causes the series of four major U.S. Naval accidents in 2017 resulting in at least 17 deaths said a primary cause was a lack of rigorous training for officers and men operating the vessels, citing online rather than hands on instruction, and testing as an example. That is a long way from WWII.

to leaving school before graduation, now there was. The public came to see education as the required ticket to economic prosperity and the middle-class life.

The nation began operating on the premise that if some schooling is good, an indefinite amount of education must be better. College education began to move from the ideal of the broadly-educated liberal arts students learning in a community of scholars to a largely vocational bent intended for all young people with gainful employment the goal. (In a way, it was returning to where it began — educating clergy, teachers, and business students.)

A major shift came about with the passage of the *GI Bill (1944)*, which provided federal funds to millions of returning military veterans to cover education and living expenses to attend college. The GI Bill provided another benefit to the economy transitioning from war to peacetime in that, by providing college access and support to returning veterans, it kept them off the unemployment rolls.

With its passage and the end of the war, college enrollment soared, contributing to the belief that young people needed a college education to get a decent job, replacing the high school diploma as the entry card to a middle-class life.

## **The Great Society Education Revolution**

With the advent of President Lyndon Johnson's "Great Society" and "War on Poverty," federal legislation proliferated and transformed education and workforce training in the United States.

**The Higher Education Act of 1965** and its subsequent amendments built on the GI Bill concept and stressed access to higher education. The Act provided federal funds for *student grants (Pell Grants)* and federally-backed loans based upon the student's financial needs.

The Act also authorized funding for institutional and state efforts for graduate schools, libraries, and continuing-education programs — including establishing new community colleges, graduate schools, and state student grant and loan programs. Federal research grants poured into universities. College enrollment soared with rising prosperity and the arrival of the baby boom generation in the 1960s.

**Elementary and Secondary Education Act of 1965** authorized grants for elementary and secondary-school programs for children of low-income families; school library resources, textbooks, and other instructional materials for school children; supplementary educational centers and services; strengthening state education agencies; and educational research and research training.

### Federal Job Training Initiatives

**The Manpower Development and Training Act.** In 1962, Congress passed the first legislation to address concerns about the *dislocation of workers caused by automation and the advent of computers*. Congress originally passed the Manpower Development and Training Act (MDTA) with the goal to retrain these "dislocated" workers losing their jobs to automation.

However, for the most part the booming economy of the 1960s absorbed those who lost jobs due to automation without additional training. MDTA changed its focus on those who lacked the skills needed to get a job in the first place — that is, those left behind by the growing prosperity, specifically the young, the poor, and others without the necessary skills required for the modern economy.

**Program Expansion and Consolidation.** The Great Society saw an explosion of specialized job training and placement programs, including the *Neighborhood Youth Corps*, the *Job Corps*, the *Work Incentive (WIN) program for welfare recipients*, and many others in the late 1960s and into the 1970s. With the recession of 1969, Congress created federally funded *Public Service Employment (PSE)* to provide jobs for the unemployed in the public sector and private nonprofit agencies.

By the early 1970s, the proliferation of federal employment and training programs had become unmanageable. By then, the U.S. Department of Labor was directly funding some 10,000 individual contracts under 15 different programs.

In response, Congress passed the 1973 *Comprehensive Employment and Training Act (CETA)*. CETA consolidated most federal employment and training programs and decentralized their administration to state and local governments called “Prime Sponsors,” who in turn contracted for services with local community organizations, training providers, and employers. Further reforms created Private Industry Councils (PICs) to provide oversight and direction of state and local program policies and priorities.

In 1983 Congress replaced CETA with the more training focused Job Training Partnership Act. However, JTPA retained the primary mission of offering employment services to the poor and unemployed. Private Industry Councils continued to provide oversight.

Since then the workforce programs have gone through several reauthorizations<sup>70</sup> — the most recent being the Workforce Investment and Opportunities Act of 2014 — but the mission to service low-income, unemployed, and dislocated workers has not changed. These programs have trained and placed many millions of poor and unemployed people, mainly in private sector jobs, over the decades. PICs go by the name Workforce Investment and Opportunity Boards today.

**Performance.** Over the years the federal workforce programs have generally done well in placing participants in jobs at decent wages. A 2015 review of review of Workforce Investment Act program performance showed job *placement rates generally exceeding 75 percent* (especially for dislocated worker programs). *Workforce Investment Act program wages at the time of job placement exceeded the national minimum wage, poverty for a family of four, and the national median wage for all workers.* Again, the dislocated workers program performance far exceeded these benchmarks.<sup>71</sup>

## **Changes in the Education Landscape: 1980–2018**

By the mid-1970s, after a long infatuation with education, the public was becoming disillusioned with rising costs and student achievement failing to keep pace with the needs of the economy. The decade saw a series of taxpayer revolts beginning with *Proposition 13* in California followed by similar state and local tax-cutting initiatives elsewhere aimed at controlling rising property taxes — which are the main funding source for education at the

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<sup>70</sup> The various iterations have included in addition to the Job Training Partnership Act of 1983 (JTPA), the Workforce Investment Act of 1998 (WIA), and most recently the Workforce Investment and Opportunities Act of 2014 (WIOA). Each of these pieces of legislation has had essentially the same mission and structure: state and local government entities train and place low income and unemployed people in full-time unsubsidized jobs under strict performance standards.

<sup>71</sup> Benchmarks: A Review of Recent Workforce Investment Act Program Performance, An Occasional Paper, Moore, Garrison, February 2015.

local level. The result was declining public support for education at all levels.

In 1983, the Secretary of Education, Terrell Bell, released a report called “*A Nation at Risk*” which had a profound impact on education. Warning of a “*rising tide of mediocrity*” threatening to swamp the education system, the report called for major education reforms. The increasing skill demands of the workplace and a perceived devaluation of the high school diploma caused employers to raise their voices in concern as well.

These events set off a chain of efforts aimed at reforming and restructuring the K–12 education system. State after state passed legislation providing additional resources and calling for *more accountability* for teachers and schools while at the same time increasing state financial support for education. During the 1980s, for the first time, state funding exceeded half of all support for primary and secondary education and foresaw the *erosion of local control* of education.

This lessening of Americans’ long-standing belief in the superiority of its educational system led to the adoption in 1964 of *The National Assessment of Educational Progress (NAEP)*, the largest nationally-representative and continuing assessment of what America’s students know and can do in various subject areas.

Assessments are conducted periodically in mathematics, reading, science, writing, the arts, civics, economics, geography, U.S. history, and in technology and engineering literacy. In 2017, NAEP began administering digitally-based assessments for mathematics, reading, and writing, with tests in additional subjects planned for 2018 and 2019.

National concern over the quality of education was more than lip service. Total local, state, and federal funding for elementary and secondary education in “real” 2015–2016 dollars (i.e., inflation-adjusted) rose more than two and half times from \$271 billion in 1969 to nearly \$696 billion in 2015. The federal spending share for K–12 education in real dollars rose from \$6 billion in 1970 to \$79 billion in 2012–2013.

## **Charter Schools**

The charter school movement grew out of the reform movement in the late 1970s and early 1980s. Charter schools, both for-profit and non-profit, are designed to offer parents a choice in the elementary and secondary school their children attend — to act as a competitive spur for public schools to improve performance.

Public funds finance charter schools, and they must meet the same academic standards as public schools. The number of charter schools in the U.S. in 2018 numbers almost 7,000, with just over 3 million students enrolled in 42 states. These institutions often provide education for special purposes such as language immersion.

The growth of charter schools has caused controversy in that funding for public schools has in some cases suffered from the shifting of resources to the private charter schools, and charter schools too often fail to meet the same standards as public schools.

Charter schools should not be confused with *school vouchers*, in which parents receive publicly-funded vouchers to pay for any school of their choosing including religious schools. Voucher systems do not usually require the schools to meet any specific educational standards.



## Higher Education

The growth in higher education institutions in the U.S. has been impressive in recent decades. In 1981 there were 3,231 degree-granting U.S. institutions, and 4,724 in 2014. Overall spending for higher education rose in real (2014–15) dollars from \$131 billion in 1969 to almost \$646 billion in 2015. The federal budget for higher education has grown from \$3.4 billion in 1970 to more than \$70 billion in 2015. Add federal student loans to the mix (\$104 billion)<sup>72</sup> and the federal pot rises to \$174 billion.

Change in higher education has, however, been more profound than mere growth in the number of students, schools, and spending. Change has come from many sources since the 1980s and continues today.

❖ The first is a significant shift from state and local support to federal support (part of this shift has come about as the result of a movement of federal support away from institutional aid to individual student assistance). The PEW Charitable Trusts reported on this shift in 2015 stating:

“States and the federal government have long provided substantial funding for higher education, but changes in recent years have resulted in their contributions being more equal than at any time in at least the previous two decades. Historically, states have provided a far greater amount of assistance to postsecondary institutions and students; 65 percent more than the federal government on average from 1987 to 2012.

But this difference narrowed dramatically in recent years, particularly since the Great Recession, as state spending declined and federal investments grew sharply, largely driven by increases in the Pell Grant program, a need-based financial aid program that is the biggest component of federal higher education spending.”

Although the funding streams for higher education are now comparable in size and have some overlapping policy goals, such as increasing access for students and supporting research, federal and state governments channel resources into the system in separate ways. The federal government mainly provides financial assistance to individual students and specific research projects, while state funds primarily pay for the general operations of public institutions.<sup>73</sup>

❖ A second source of change was a shift in demographics, specifically, the aging of the baby boomer generation which fueled college and university enrollment in the 1960s and 70s. The numbers of young people age 17–19 has dropped, causing a corresponding reduction in the pool of incoming freshmen enrollments in higher education. The participation rate of young people attending college has increased and partially offset this change.

❖ A third factor is increased tuition costs, partly resulting from the reduction in direct institutional funding to colleges and universities and the increased emphasis on federal

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<sup>72</sup> The latest information available from the U.S. Department of Education. Source Digest of Education Statistics, 2017, NCES.

<sup>73</sup> Pew Charitable Trusts, [www.pewtrusts.org/en/research-and-analysis/issue-briefs/2015/06/federal-and-state-funding-of-higher-education](http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2015/06/federal-and-state-funding-of-higher-education)

student grants and loans. The schools often offset the sticker price of tuition by the increasing practice of “tuition discounting,” mostly in private nonprofit schools, or so-called institutional undergraduate “scholarships.”

In some instances (mostly in the private sector), tuition discounting today ranges from 40% to 60% of the published tuition amount. This new environment has especially hurt the revenue of small private non-profit institutions, since they rely mostly on tuition and gift support and are hard pressed to discount their tuition — but they must to compete.

❖ Another growing concern is “*degree inflation*.” This results from the practice of many employers using the college degree as a minimum requirement for employment today, replacing the high school diploma as the fallback requirement of the 1950s.

## Proprietary Institutions

Private for-profit post-secondary schools and colleges offering occupational education and training programs have a long history in the U.S. Traditionally, what these institutions offered was pretty much limited to such practical career courses as computer programming, office and clerical preparation, paralegal studies, mechanical drafting, commercial art, cosmetology, etc.

Recently, proprietary institutions have greatly expanded their offerings to include academic degrees (associate, bachelor’s, master’s, etc.). Many have taken to calling themselves “universities.”<sup>74</sup> Nationally recognized academic accreditation organizations, which accredit all educational institutions in the U.S., have aided this expansion by permitting these institutions to offer academic degrees. These schools received accreditation from such organizations as the Accrediting Commission of Career Schools and Colleges. (ACCSC), and the Accrediting Council for Independent Colleges and Schools, among others.

Notably, national accreditation allows proprietary schools access to federal student-aid funds, resulting in a growth in enrollment in the sector from 766 thousand students to 2.1 million in the decade 2000–2010 and with new proprietary colleges and universities springing up in this period. More recently, however, these institutions have begun to experience a financial squeeze brought about by a decline in enrollment not unlike that impacting the non-profit colleges and universities.

There are certain caveats about the price and quality of proprietary institutions. They vary widely in both quality and cost. A sizable portion of the typical proprietary institution’s student body consists of low-income young people and veterans. Graduates of proprietary schools have the highest rates of student loan defaults; recent reports lay the responsibility for the defaults at the doorstep of the schools themselves.<sup>75</sup>

Nonetheless, many such schools offer high-quality education and training for fast-growing non-routine occupations. They are often willing to work closely with employers to modify schedules and curricula to meet the company needs.

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<sup>74</sup> This may be legitimate in some cases, but in some states any organization can call itself “university.”

<sup>75</sup> See *Lower Ed: The Troubling Rise of For-Profit Colleges in the New Economy* (Tressie McMillan Cotton, 2017, The New Press) for discussion of questionable practices among these institutions.

## Employer-Sponsored Training

Employers increased their involvement in the education enterprise dramatically over the decade of the 1990s. By one count, there were *fewer than 10,000 “business-education partnerships” at the beginning of the decade and more than 140,000 by the end.* These partnerships took many forms, from the donation of equipment and staff time to colleges and universities — particularly to community colleges — to major efforts at institutional reform exemplified by the citywide Boston Compact, and similar efforts in cities around the nation.

Although it is likely that employers provide a significant amount of employee training in the U.S., hard information on employer-sponsored education and training is difficult to come by. The Association for Talent Development, a trade group representing employer education and training professionals, estimates that employers of all types — public and private — spent a total of \$71 billion in both 2015 and 2016.<sup>76</sup> Some employers have close working arrangements with colleges, especially community colleges, for training and retraining of both potential hires and their current employees.

## Varieties of Employer Training

Employer training falls into four broad categories, presented below in roughly the order of their frequency:

- ❖ **Routine Training.** The most common, and covers the kind of routine information and skills development required by all organizations: employee orientation; learning new software, new policies, procedures, and reporting formats; improving customer services; team-building, etc. Such training varies widely in format and formality. It can be one-on-one as in individual orientation, or online, or internal classroom training. Routine training includes all or most employees at all levels.

- ❖ **Specialized Occupational Training.** Employers support such training to keep technical, professional, and managerial staff current in their field of expertise. Traditionally, employers have accomplished this through mentoring or apprenticeship for crafts workers. Such training includes outside classroom training and professional conferences. Suppliers of new equipment and software, outside consultants, and specially-trained in-house staff usually provide specialized training.

However, two changes have forced employers to reconsider these approaches. First, as unemployment drops, and experienced workers retire, shortages in specific jobs have begun to crop up requiring training of new workers. Second, as work has become more complex and technical, lower-skilled employees often need remedial help with math and literacy before they can move on to the technical component of the new position.

- ❖ **Upskilling.** Many employers find they need, or simply want, to design longer-term programs to develop skilled staff from their own less-skilled workers. Such *upskilling* applies to occupational training intended to prepare an employee to take a more skilled position within the firm or to retain employment as less-skilled jobs fall by the wayside.

- ❖ **Employee Educational Assistance.** Such assistance usually takes the form of help in

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<sup>76</sup> Source: Association of Talent Development, “2016 ATD State of the Industry Report” 2017.

attending degree-granting institutions, including tuition support, and time off to take higher-education courses. Occasionally, this includes paid leave for staff to pursue a degree (most often a graduate or specialized degree) with the employer covering the full costs.

**Figure 26**  
**Employer Spending on Training 2011–2016**  
 In \$ Billions

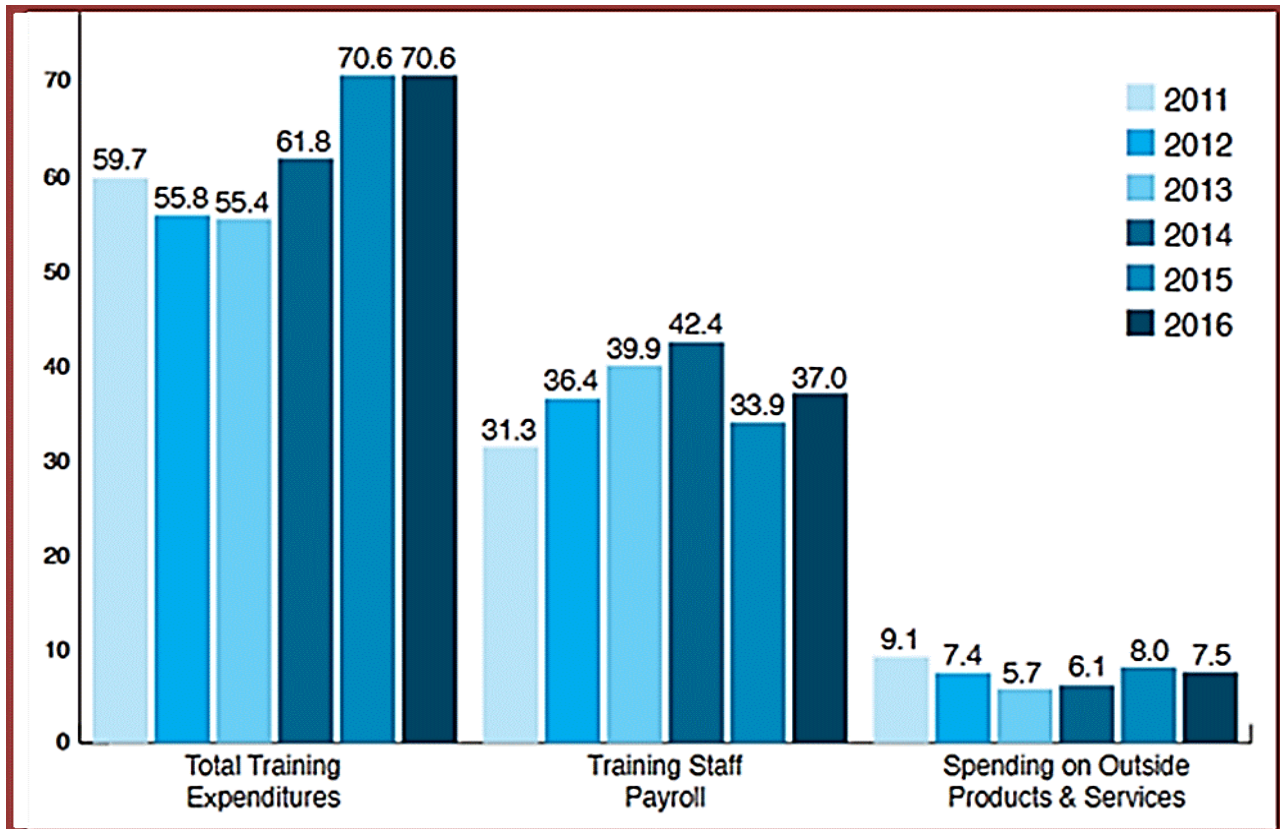


Figure 26 provides information on spending training as reported by the Association for Talent Development, a trade group. Source: 2016 ATD State of the Industry Report.





## **Chapter Eight:**

# **The U.S. Workforce in the International Context**

In the 21<sup>st</sup>-century global economy where capital, ideas, production, and global supply chains quickly transfer across the globe, the strength of the U.S. economy rests on its ability to compete with other countries, and it becomes increasingly important that the U.S. measure its progress or lack of progress across the globe in several areas.

These include national income distribution, education and skill attainment of the workforce, employment and unemployment numbers, workforce participation rates, and general wealth and income of the population. All are topics discussed earlier in Chapters One through Seven. Toward this end, we have included brief descriptions of international measures to provide a basis to compare the U.S. to other countries to get a better picture of our efforts in key economic measures.

### **Gross Domestic Product**

The size of and changes in the national economy are fundamental to the well-being of its workforce. The U.S. Bureau of Economic Analysis (BEA) gathers the data from various sources on the size and dynamics of the U.S. national economy.<sup>77</sup>

From this information the agency draws the *official estimates of* Gross Domestic Product (GPD), one of the most closely-watched of all economic statistics. GDP is the world-standard measure of all economic activity of a country or other geographic area.<sup>78</sup> GDP is calculated by summing up the total value of the annual output of goods and services including:

- ❖ **Consumption: (purchases)**
  - Durable goods (items expected to last more than three years)
  - Nondurable goods (food and clothing)
  - Services
- ❖ **Government Expenditures**
  - Defense
  - Roads
  - Schools, etc.
- ❖ **Investment Spending**
  - Nonresidential (spending on plants and equipment)
  - Residential (single-family and multi-family homes)
  - Business inventories

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<sup>77</sup> Source: Investing Answer, Financial Dictionary. <http://www.investinganswers.com/financial-dictionary>

<sup>78</sup> GDP is calculated for states and localities as well. See discussion of data available from Bureau of Economic Analysis in Chapter One.

## ❖ Net Exports

- Exports added to GDP
- Imports deducted from GDP<sup>79</sup>

Beyond comparing total GDP among entities, economists use *per capita GDP* as a rough comparison of well-being among countries or other entities. Making comparisons requires caution, however. For example, China has a much larger GDP than Norway. But Norway has a much larger GDP per capita. Thus, Norwegians are, on average, wealthier than the Chinese. Another drawback with this approach is that averaging GDP per person does not address inflation or income inequality. Analysts make several adjustments to get more accurate comparisons.

## Adjusting GDP for Inflation

In comparing GDP over time for one area and among entities, economists adjust for inflation within each entity to produce “*real*” GDP — technically the “*fixed-weight price deflator*.” In the U.S., the inflation factor derives from the BLS *Consumer Price Index (CPI)*. A different measure of inflation, the so-called “GDP Deflator,” shows a narrower gap between productivity and wage increases to produce what some believe is a more accurate index. But that is hard for the non-economist (and most economists) to evaluate.

## Relative Prices

An accurate comparison of GDP between entities requires adjusting for relative prices among countries. Prices for a given product often differ considerably among countries. *The Economist* magazine famously developed the “*Big Mac Index*” measure to find out what the average cost of a McDonald’s Big Mac is in, say, China, Mexico, and the U.S., and adjust for GDP comparisons accordingly. The World Bank and others have since devised more sophisticated methods. A more formal alternative to the Big Mac Index, *Purchasing Power Parity*, works roughly the same way but is prepared with greater rigor.

## Income Distribution: The Gini Coefficient

The health of an economy involves more than the size of its GDP. The distribution of wealth matters as well. A large and prosperous middle class is generally considered essential for a stable society as well as the foundation of a smoothly functioning economy.

To address concerns that per capita GDP does not adequately reflect the distribution of income within society, economists sometimes use the *Gini Coefficient*. Developed by the World Bank,<sup>80</sup> the Gini Coefficient measures the income distribution of a nation’s residents and is the most commonly-used measure of inequality today.

A Gini index of 0 represents perfect equality, the impossible situation in which everyone has the same income, while an index of 100 implies perfect inequality, the impossible situation in

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<sup>79</sup> Another way of putting it is that GDP equals the sum of all private consumption (everything bought and sold), plus all investment, public spending, change in inventory, and the trade balance (exports minus imports). There are three ways of determining GDP, but that is a discussion best left to the economists.

<sup>80</sup> Gini is not an acronym. An Italian statistician, Corrado Gini developed this mathematical coefficient. Applied to income it shows income distribution in preference to GDP per capita.

which one person has all the income, and all others have none. In other words, a higher number equals less equality.

**Figure 27**  
**Comparative Income Distribution**

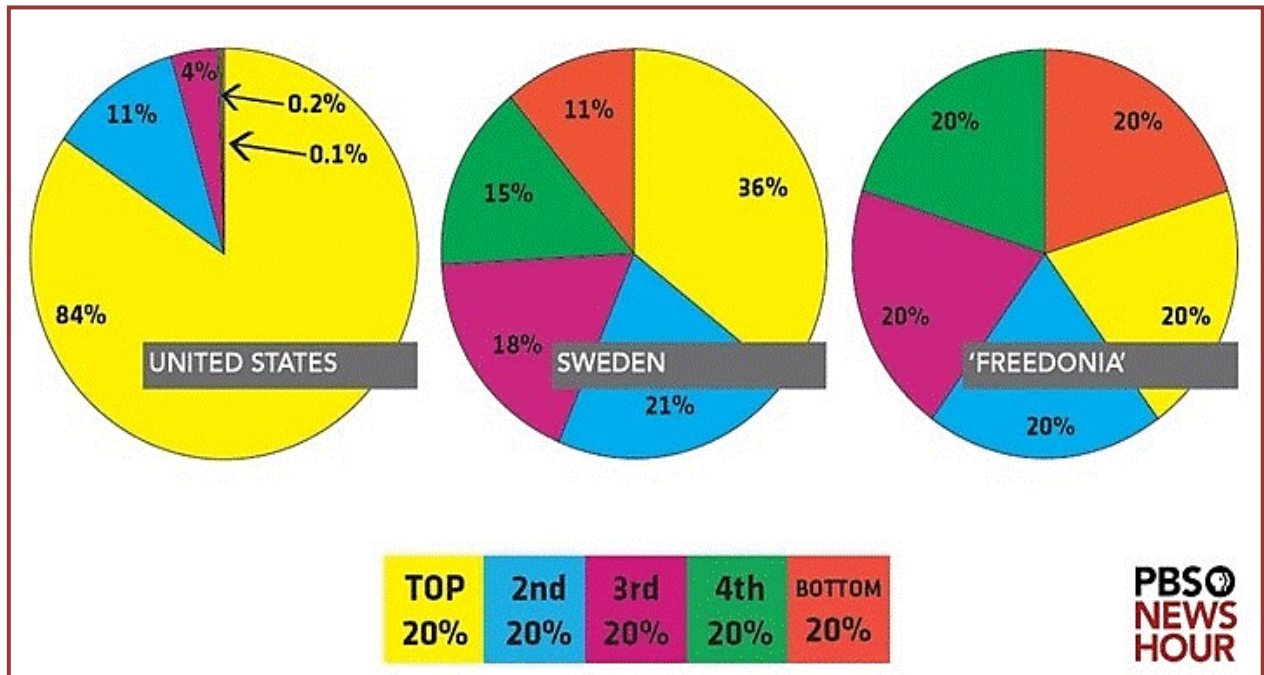
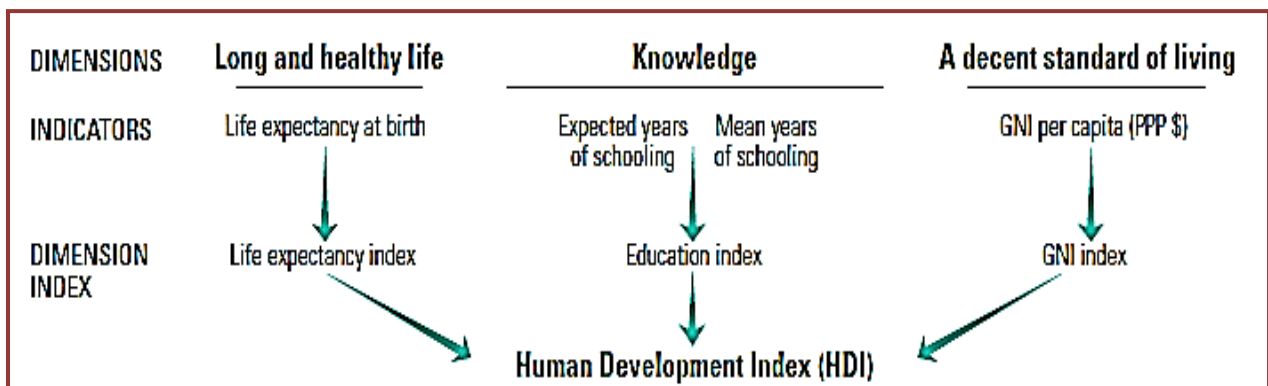


Figure 27 shows that the top fifth of U.S. households (yellow) receive 84 percent of all personal income in the U.S. compared to only 36 percent in Sweden. A hypothetical country with perfectly equal distribution among the five sections would look like Fredonia. The lowest 40 percent of U.S. households receive a tiny fraction of the total or less than one third of one percent., whereas the top 20 percent receive 8,400 times the income of the bottom 40 percent. The bottom 60 percent of all U.S. households get on with just 4.3 percent of the total. Source: Public Broadcasting System, NewsHour June 19, 2014. <https://www.pbs.org/.../u-s-compares-income-inequality-poverty>

**Figure 28**  
**The Human Development Index**



Source: United Nations Development Program, 2016 Human Development Reports.

## Human Development Index

The Human Development Index, or HDI, takes the Gini Index one step further. In addition to income distribution, the HDI is a summary measure of average national achievement in key dimensions of human development: a long and healthy life, being knowledgeable, and have a decent standard of living. Economists and policymakers define HDI as the geometric mean of normalized indices for each of the three dimensions — health, knowledge, and standard of living. (See *Figure 28*.)

As such, HDI is particularly useful in comparing the general welfare of people in different countries. Its virtue is that it measures not only just the current financial welfare of the population, but also looks at future factors — health, and workforce development — that will sustain growth. It remains a rough but useful tool.

**Figure 29**  
**Distribution of Income in Selected Countries**

<b>Table 1: Income inequality in selected countries, 2012</b>		
<b>Overall Rank</b>	<b>Country</b>	<b>Distribution of Family Income – Gini Index</b>
1	Sweden	23.0
5	Norway	25.0
6	Austria	26.0
13	Germany	27.0
24	Australia	30.5
25	Pakistan	30.6
29	South Korea	31.0
32	Italy	32.0
33	Spain	32.0
34	Canada	32.1
36	Taiwan	32.6
37	France	32.7
38	Greece	33.0
44	Ireland	33.9
46	United Kingdom	34.0
48	Egypt	34.4
58	India	36.8
62	Japan	37.6
71	Venezuela	39.0
85	Russia	42.0
92	Iran	44.5
95	United States	45.0
119	Mexico	51.7
121	Brazil	51.9
135	South Africa	65.0
136	Namibia	70.7

Source: US Central Intelligence Agency – The World Factbook, [www.cia.gov/](http://www.cia.gov/)

*Figure 29 shows family income distribution for a selection of 136 countries along with their Gini score and ranking among those nations. As shown, the U.S. ranks 95<sup>th</sup> out of the 136 when it comes to the equitable balance of income. A Gini score of 45 means that the richest U.S. households take in massively more income each year than everyone else. This chart only shows income distribution and not wealth in terms of possessions, savings, or investments. Source: U.S. Central Intelligence Agency, “The World Factbook,” [www.cia.gov](http://www.cia.gov)*

## Employment and International Trade

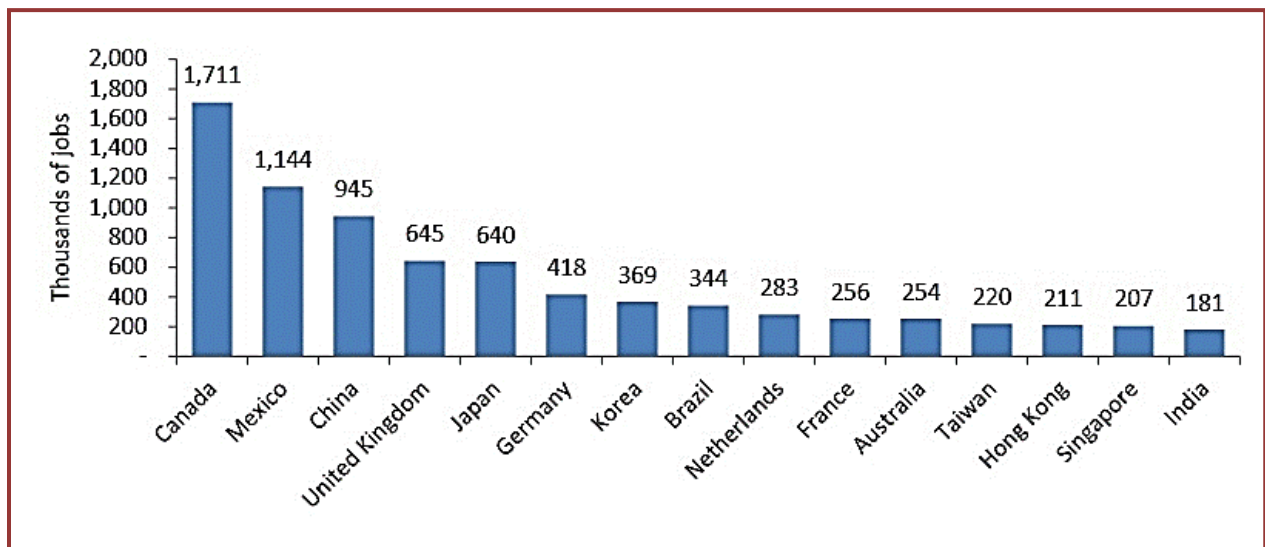
False and misleading assertions about the impact of international trade on employment confound the discussion of employment issues more than nearly any other subject. Elected officials, interest groups, and the media have too often conducted the discussion of trade and employment through the use (and more often misuse) of anecdotes to emphasize the loss of jobs. They focus almost entirely on losses and almost never on the gains.

Individuals or communities always suffer or benefit from any public policy. However, the effect of anecdotes on international trade policy have been out of proportion. There certainly are instances of job loss and plant closings happen but have little to do with whether the public policy serves the overall public good. It is rather like saying we should ban cars because some people die tragically in car accidents.

In fact, overall trade has resulted in many more well-paying jobs gained than lost. With a few notable exceptions, better-paying jobs replaced jobs lost to international competition. Certainly, overall U.S. employment has continued to rise briskly despite the trade agreements.

A recent study conducted for the Third Way organization found that: “Of the 17 U.S. trade agreements since 2000, the trade balance improved after implementation by an average of 52 percent. Exports to countries with which U.S. had entered into an agreement were found to have grown by an average of \$30.2 billion per year.”<sup>81</sup> (See *Figure 30* on jobs supported by exports to major trading partners.)

**Figure 30**  
**Jobs Supported by U.S. Exports in 2014**  
**Top 15 Countries**



Source: U.S. Department of Commerce, International Trade Administration “2016 Export Related Employment,”

<sup>81</sup> *Are Modern Trade Deals Working?* Jim Kessler and Gabe Horwitz, Third Way, February 12, 2015.



## Educational Achievement

As discussed in Chapter Seven, since its beginning, the United States has been a leader in educational attainment. It still ranks high, but increased importance attached to education achievement has caused many to doubt the adequacy of American achievement compared to other nations.

Program of International Student Assessment (PISA). In the International arena, testing of children around the world takes place through the Program of International Student Assessment (PISA), allowing comparisons of achievement levels. The Organization for Economic Cooperation and Development (OECD) administers the test to get some sense of educational achievement of children in different countries by measuring knowledge in reading, math, and science.

The exam does have some flaws. For example, students in Shanghai take the exam and not those in the rest of China, so the comparison can only be with that city. PISA also treats large and small countries equally. Nonetheless, it provides a decent general yardstick for overall educational achievement for most countries. The United State ranks just above the median scored of all countries in reading and science, and somewhat below the median in mathematics. The U.S. share of high performers and low performers on the test is 13.6 and 13.3 respectively, again near the median. (See *Figure 31*.)

## Universities

In some areas of education, the U.S. clearly excels. For instance, the U.S. has and continues to have the most top-rated universities in the world. The Wall Street Journal/Times Higher Education World University Rankings for 2018 place 148 U.S. universities in the top 980 universities across the globe, and 63 in the top 200. Seven U.S. universities are in the top 10.

## International Unemployment

Comparing the employment situation among countries is one way of tracking the health of the American economy. As of January 2018, the U.S. had a national unemployment rate of 4.1 percent. Despite much naysaying among American politicians about the U.S. employment situation, few other industrialized countries are doing as well according to a report by the Organization for Economic Cooperation and Development (OECD).<sup>82</sup> (See *Figure 32* for a look at the unemployment rates of the countries of the European Union.) The Czech Republic, Germany, Hungary, and the United Kingdom<sup>83</sup> have similar rates to that of the U.S. Greece and Spain are outliers due to the collapse of their economies during the financial crisis and slow recovery since. Many of the others have rates higher than the highest the U.S. had (10 percent, briefly) during the so-called “Great Recession.”<sup>84</sup>

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<sup>82</sup> OECD is a reliable source of information on a great many topics relating to the major industrial countries.

<sup>83</sup> Malta has low unemployment but has such a small population that comparisons with larger countries are not meaningful.

<sup>84</sup> The reader should be aware that countries use diverse ways of measuring unemployment. The data for *Figure 31* were adjusted to align with the American definition to make comparisons possible.

## Wall Street Journal/Times 2018 Rankings

### Top 10 Universities in the World

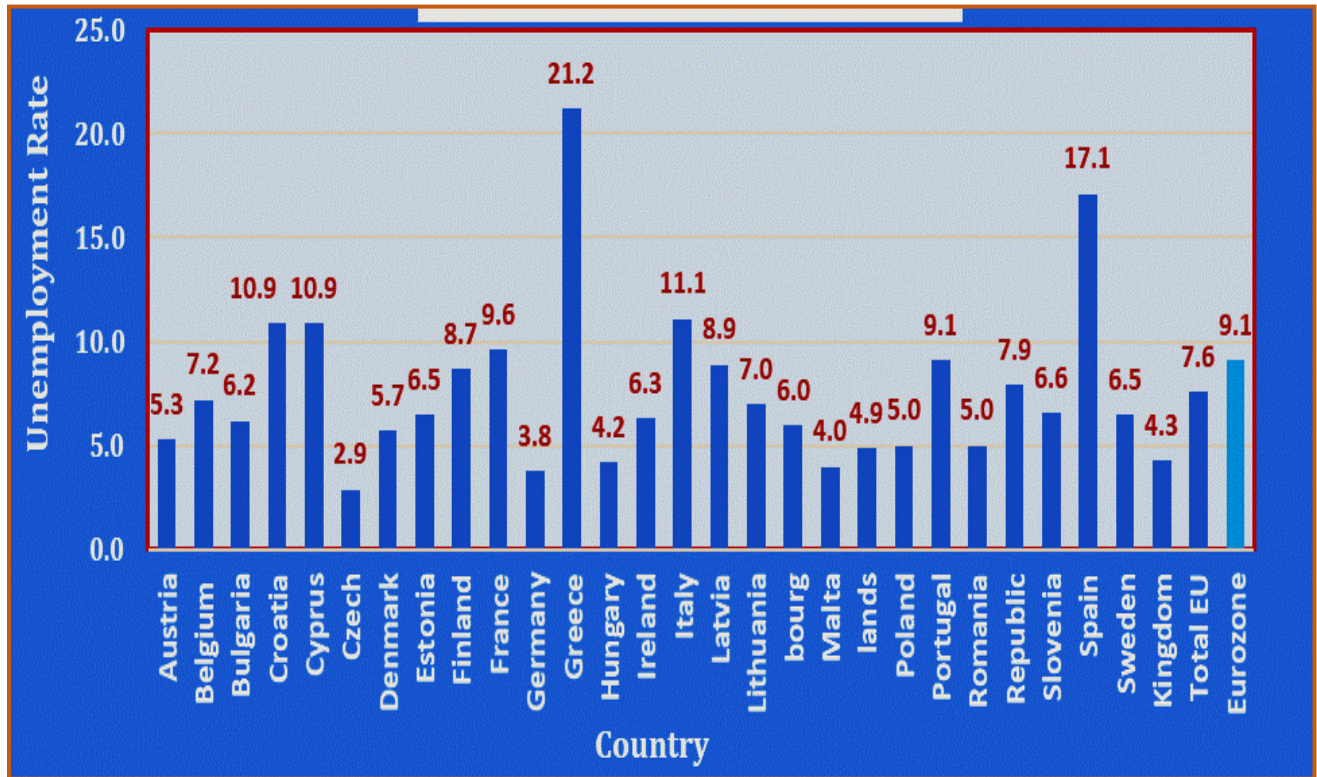
- 1 University of Oxford
- 2 University of Cambridge
- 3 & 4 **California Institute of Technology & Stanford University (tied)**
- 5 **Massachusetts Institute of Technology**
- 6 **Harvard University**
- 7 **Princeton University**
- 8 Imperial College of London
- 9 **University of Chicago**
- 10 **University of Pennsylvania** & ETH Zurich,  
Swiss Federal Institute of Tech (tied)

**Figure 31**  
**International Student Achievement Scores**

	Science		Reading		Mathematics		Science, Reading, and Mathematics	
	Mean score in PISA	Average three-year trend	Mean score in PISA	Average three-year trend	Mean score in PISA	Average three-year trend	Share of top performers in at least one subject (Level 5 or 6)	Share of top performers in all three subjects (below level 2)
	Mean	Score dif.	Mean	Score dif.	Mean	Score dif.	%	%
<b>OECD Average</b>	493	-1	493	-1	490	-1	15.3	13.0
<b>Singapore</b>	556	7	535	5	564	1	39.1	4.8
<b>Japan</b>	538	3	516	-2	532	1	25.8	5.6
<b>Estonia</b>	534	2	519	9	520	2	20.4	4.7
<b>Chinese Taipei</b>	532	0	497	1	542	0	29.9	8.3
<b>Finland</b>	531	-11	526	-5	511	-10	21.4	6.3
<b>Macao (China)</b>	529	6	509	11	544	5	23.9	3.5
<b>Canada</b>	528	-2	527	1	516	-4	22.7	5.9
<b>Vietnam</b>	525	-4	487	-21	495	-17	12.0	4.5
<b>Hong Kong</b>	523	-5	527	-3	548	1	29.3	4.5
<b>B-S-J-G (China)</b>	518	m	494	m	531	m	27.7	10.9
<b>Korea</b>	516	-2	517	-11	524	-3	25.6	7.7
<b>New Zealand</b>	513	-7	509	-6	495	-8	20.5	10.6
<b>Slovenia</b>	513	-2	505	11	510	2	18.1	8.2
<b>Australia</b>	510	-6	503	-6	494	-8	18.4	11.1
<b>UK</b>	509	-1	498	2	492	-1	16.9	10.1
<b>Germany</b>	509	-2	509	6	506	2	19.2	9.8
<b>Netherlands</b>	509	-5	503	-3	512	-6	20.0	10.9
<b>Switzerland</b>	506	-2	492	-4	521	-1	22.2	10.1
<b>Ireland</b>	503	0	521	13	504	0	15.5	6.8
<b>Belgium</b>	502	-3	499	-4	507	-5	19.7	12.7
<b>Denmark</b>	502	2	500	3	511	-2	14.9	7.5
<b>Poland</b>	501	3	506	3	504	5	15.8	8.3
<b>Portugal</b>	501	8	498	4	492	7	15.6	10.7
<b>Norway</b>	498	3	513	5	502	1	17.6	8.9
<b>United States</b>	496	2	497	-1	470	-2	13.3	13.6
<b>Austria</b>	495	-5	485	-5	497	-2	16.2	13.5
<b>France</b>	495	0	499	2	493	-4	18.4	14.8

Program of International Student Assessment (PISA) 2017.

**Figure 32**  
**Unemployment in the European Union**  
**June 2017**



Source: Organization of Economic Cooperation and Development (OECD) Paris June 2017

# Appendices





## **Appendix One:**

### **The Employment Impact of NAFTA**

The North American Free Trade Agreement (NAFTA) is deeply unpopular with certain segments of the American public and their elected officials. However, contrary to such beliefs, *the U.S. sells as much to its NAFTA partners — Mexico and Canada — as those countries sell to the U.S.*, if you set aside petroleum products where prices are set by the international markets and thus unaffected by NAFTA. (See *Figures 33 and 34.*) Both Mexico and Canada are major oil producers, though growing U.S. production and a decline in demand for petroleum are chipping away at their surpluses.

There is no question that some U.S. communities have suffered job losses as trade patterns adjusted — though hard numbers are scarce, and anecdotes usually serve as the only evidence. However, NAFTA has led to significant U.S. *job and wage gains* as well. Between 2007 and 2014,<sup>85</sup> expanded sales to NAFTA partners resulted in *one million new export jobs* — 150,000 jobs a year — right through the worst U.S. recession in 80 years. On average, new export jobs pay 15 to 20 percent more than the lost jobs.<sup>86</sup>

NAFTA'S lower tariffs, freer investment rules, and expedited shipping have resulted in significant savings for U.S. consumers, raising the American standard of living. These savings, especially for essentials such as food and clothing, benefit the poor most.

In the meantime, Mexico benefits by lower food prices because of less expensive agricultural imports from the U.S. Further, about 40 percent of the content of all goods that the U.S. imports from Mexico is in fact made in the U.S. For example, American factories produce auto parts, ship them to Mexico for assembly, then the auto companies return the completed vehicles to the U.S., sell them in Mexico, or ship them elsewhere for sale.<sup>87</sup>

Regardless of the facts, NAFTA has been a political football since its passage. President Trump and many in Congress assert it is the “worst trade deal ever.” They have vowed to withdraw the US from the agreement unless there are major changes. As of this writing the working groups representing US, Canada, and Mexico have been meeting since mid-2017 without any sign of agreement.

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<sup>85</sup> The latest year for which data was available for this report.

<sup>86</sup> Source: Jobs Supported by Export Destination 2014 Elizabeth Schaefer and Chris Rasmussen, Office of Trade and Economic Analysis, International Trade Administration, Department of Commerce, June 18, 2015.

<sup>87</sup> One of the arguments against free trade agreements is that they rob the U.S. of good-paying manufacturing jobs. However, in 2018 the average manufacturing worker made about \$42,000 a year, while the average pay for all hourly workers is around \$44,000.

Figure 33

U.S. Merchandise Trade with NAFTA Partners: 1993–2014<sup>88</sup>

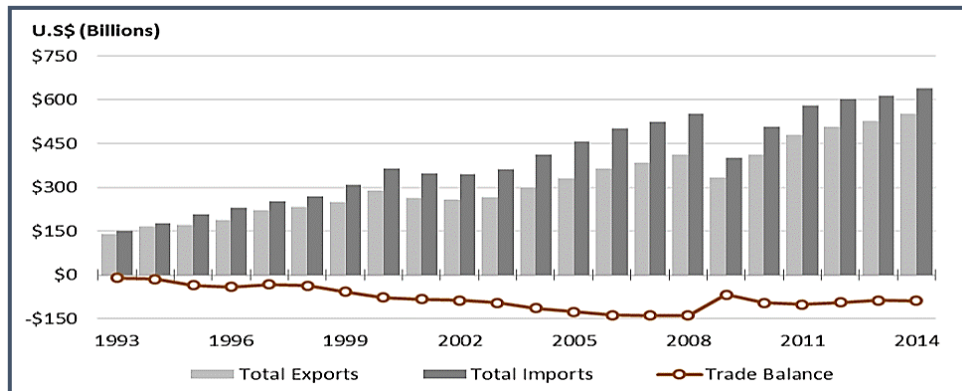


Figure 34

NAFTA Trade with U.S. Minus Petroleum Products

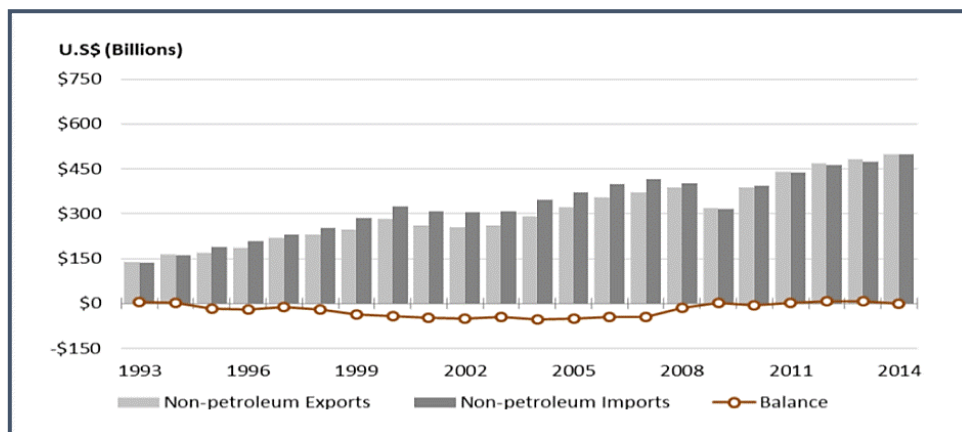


Figure 33 above shows U.S. trade balance with NAFTA partners. Figure 34 shows that if you remove trade in petroleum products from the trade statistics, U.S. trade with NAFTA is evenly balanced. The reason for removing petroleum products is that their prices are set entirely on the international market and remain the same with or without NAFTA. Both Mexico and Canada are major exporters of oil products, though the U.S. is gradually chipping away at the balance of trade in these products as U.S. shale oil production has greatly increased.

<sup>88</sup> Compiled by Congressional Research Service (CRS) using trade data from the U.S. International Trade Commission's (USITC's) Interactive Tariff and Trade Data Web, at <http://dataweb.usitc.gov>



## **Appendix Two:**

### **Chronology of Federal Education Legislation**

This selective list of major federal legislation affecting education demonstrates the complexity and scope of federal involvement, especially since 1965. The list serves as a capsule view of the history of federal education activities over 250 years.

**1789**

Northwest Ordinance authorized land grants for the establishment of educational institutions.

**1862**

First Morrill Act authorized public land grants to the states for the establishment and maintenance of agricultural and mechanical colleges.

**1867**

Department of Education Act authorized the establishment of the U.S. Department of Education.

**1890**

Second Morrill Act provided for monetary grants for support of instruction in the agricultural and mechanical colleges.

**1917**

Smith-Hughes Act provided for grants to states for support of vocational education.

**1944**

Servicemen's Readjustment Act (Public Law 78-346), known as the GI Bill, aided with the education of veterans.

**1946**

National School Lunch Act (Public Law 79-396) authorized assistance through grants-in-aid and other means to states to assist in providing adequate foods and facilities for the establishment, maintenance, operation, and expansion of nonprofit school lunch programs.

George-Barden Act (Public Law 80-402) expanded federal support of vocational education.

**1954**

Educational Research Act (Public Law 83-531) authorized cooperative arrangements with universities, colleges, and state educational agencies for educational research.

**1957**

Practical Nurse Training Act (Public Law 84-911) provided grants to states for practical nurse training.

**1958**

National Defense Education Act (Public Law 85-864) provided assistance to state and local school systems for instruction in science, mathematics, modern foreign languages, and other critical subjects; state statistical services; guidance, counseling, and testing services and training institutes; higher education student loans and fellowships as well as foreign language

study and training; experimentation and dissemination of information on more effective use of television, motion pictures, and related media for educational purposes; and vocational education for technical occupations necessary to the national defense.

### **1961**

Area Redevelopment Act (Public Law 87-27) included provisions for training or retraining of people in redevelopment areas.

### **1962**

Manpower Development and Training Act (Public Law 87-415) provided training in new and improved skills for the unemployed and underemployed.

### **1963**

Health Professions Educational Assistance Act of 1963 (Public Law 88-129) provided funds to expand teaching facilities and for loans to students in the health professions.

Vocational Education Act of 1963 (Public Law 88-210, Part A) increased federal support of vocational education schools; vocational work-study programs; and research, training, and demonstrations in vocational education.

Higher Education Facilities Act of 1963 (Public Law 88-204) authorized grants and loans for classrooms, libraries, and laboratories in public community colleges and technical institutes, as well as undergraduate and graduate facilities in other higher education institutions.

### **1964**

Civil Rights Act of 1964 (Public Law 88-352) authorized the Commissioner of Education to arrange for support for higher education institutions and school districts to provide in-service programs for assisting instructional staff in dealing with problems caused by desegregation.

Economic Opportunity Act of 1964 (Public Law 88-452) authorized grants for college work-study programs for students from low-income families; established a Job Corps program and authorized support for work-training programs to provide education and vocational training and work experience opportunities in welfare programs; authorized support of education and training activities and of community action programs, including Head Start, Follow Through, and Upward Bound; and authorized the establishment of Volunteers in Service to America (VISTA).

### **1965**

Elementary and Secondary Education Act of 1965 (Public Law 89-10) authorized grants for elementary and secondary school programs for children of low-income families; school library resources, textbooks, and other instructional materials for school children; supplementary educational centers and services; strengthening state education agencies; and educational research and research training.

Health Professions Educational Assistance Amendments of 1965 (Public Law 89-290) authorized scholarships to aid needy students in the health professions.

Higher Education Act of 1965 (Public Law 89-329) provided grants for university community service programs, college library assistance, library training and research, strengthening



developing institutions, teacher training programs, and undergraduate instructional equipment. Authorized insured student loans, established a National Teacher Corps, and provided for graduate teacher training fellowships.

### **1966**

Adult Education Act (Public Law 89-750) authorized grants to states for the encouragement and expansion of educational programs for adults, including training of teachers of adults and demonstrations in adult education (previously part of Economic Opportunity Act of 1964).

### **1968**

Elementary and Secondary Education Amendments of 1968 (Public Law 90-247) modified existing programs and authorized support of regional centers for education of children with disabilities, model centers and services for deaf-blind children, recruitment of personnel and dissemination of information on education of children with disabilities; technical assistance in education to rural areas; support of dropout prevention projects; and support of bilingual education programs.

### **1971**

Comprehensive Health Manpower Training Act of 1971 (Public Law 92-257) amended Title VII of the Public Health Service Act, increasing, and expanding provisions for health manpower training and training facilities.

### **1972**

Education Amendments of 1972 (Public Law 92-318) established the Education Division in the US Department of Health, Education, and Welfare and the National Institute of Education; general aid for higher education institutions; federal matching grants for state Student Incentive Grants; a National Commission on Financing Postsecondary Education; State Advisory Councils on Community Colleges; a Bureau of Occupational and Adult Education and State Grants for the design, establishment, and conduct of postsecondary occupational education; and a bureau-level Office of Indian Education. Amended current US Department of Education programs to increase their effectiveness and better meet special needs. Prohibited sex bias in admission to vocational, professional, and graduate schools, and public institutions of undergraduate higher education.

### **1973**

Comprehensive Employment and Training Act of 1973 (Public Law 93-203) provided for employment and training opportunities for unemployed and underemployed people. Extended and expanded provisions in the Manpower Development and Training Act of 1962, Title I of the Economic Opportunity Act of 1962, Title I of the Economic Opportunity Act of 1964, and the Emergency Employment Act of 1971 as in effect prior to June 30, 1973.

### **1974**

Education Amendments of 1974 (Public Law 93-380) provided for the consolidation of certain programs and established a National Center for Education Statistics.

### **1977**

Youth Employment and Demonstration Projects Act of 1977 (Public Law 95-93) established a

youth employment training program including, among other activities, promotion of education-to-work transition, literacy training and bilingual training, and attainment of certificates of high school equivalency.

Career Education Incentive Act (Public Law 95-207) authorized the establishment of a career education program for elementary and secondary schools.

#### **1978**

Middle Income Student Assistance Act (Public Law 95-566) modified the provisions for student financial assistance programs to allow middle-income as well as low-income students attending college or other postsecondary institutions to qualify for federal education assistance.

#### **1979**

Department of Education Organization Act (Public Law 96-88) established a U.S. Department of Education containing functions from the Education Division of the U.S. Department of Health, Education, and Welfare (HEW) along with other selected education programs from HEW, the US Department of Justice, U.S. Department of Labor, and the National Science Foundation.

#### **1981**

Education Consolidation and Improvement Act of 1981 (Part of Public Law 97-35) consolidated 42 programs into 7 programs to be funded under the elementary and secondary block grant authority.

#### **1982**

The Job Training Partnership Act of 1982 Replaced the Comprehensive Employment and Training Act of 1971. It eliminated all public service employment programs and established federal assistance programs to prepare youth and unskilled adults for entry into the labor force and to provide job training to economically disadvantaged and other individuals facing serious barriers to employment.

#### **1984**

Education for Economic Security Act (Public Law 98-377) added new science and mathematics programs for elementary, secondary, and postsecondary education. The programs included magnet schools, higher standards, and equal access for all.

Carl D. Perkins Vocational Education Act (Public Law 98-524) continued federal assistance for vocational education through FY 1989. The act replaced the Vocational Education Act of 1963. It provided aid to the states to make vocational education programs accessible to all people, including disabled and disadvantaged, single parents, and homemakers, and the incarcerated.

#### **1985**

Montgomery GI Bill — (Public Law 98-525), established a new GI Bill for active duty individuals who initially entered active military duty on or after July 1, 1985. and established an education program for members of the Selected Reserve (which includes the National Guard) who enlist, reenlist, or extend an enlistment after June 30, 1985, for a 6-year period.

#### **1994**

Goals 2000: Educate America Act (Public Law 103-227) established a new federal partnership

through a system of grants to states and local communities to reform the nation's education system. The Act formalized the national education goals and established the National Education Goals Panel.

School-to-Work Opportunities Act of 1994 (Public Law 103-239) established a national framework within which states and communities can develop School-to-Work Opportunities systems to prepare young people for first jobs and continuing education. The Act also provided money to states and communities to develop a system of programs that include work-based learning, school-based learning, and connecting activities components.

### **1997**

The Taxpayer Relief Act of 1997 (Public Law 105-34) enacted the Hope Scholarship and Life-Long Learning Tax Credit provisions into law.

### **1998**

Workforce Investment Act of 1998 (Public Law 105-220) enacted the Adult Education and Family Literacy Act, and substantially revised and extended, through FY 2003, the Rehabilitation Act of 1973.

Carl D. Perkins Vocational and Applied Technology Education Amendments of 1998 (Public Law 105-332) revised, in its entirety, the Carl D. Perkins Vocational and Applied Technology Education Act and reauthorized the Act through FY 2003.

### **2002**

No Child Left Behind Act of 2001 (Public Law 107-110) provided for the comprehensive reauthorization of the Elementary and Secondary Education Act of 1965, incorporating specific proposals in such areas as testing, accountability, parental choice, and early reading.

Education Sciences Reform Act (Public Law 107-279) established the Institute of Education Sciences within the U.S. Department of Education to carry out a coordinated, focused agenda of high-quality research, statistics, and evaluation that is relevant to the educational challenges of the nation.

### **2006**

Carl D. Perkins Career and Technical Education Improvement Act of 2006 (Public Law 109-270) reauthorized the vocational and technical education programs under the Perkins Act through 2012.

### **2007**

America COMPETES Act (or “America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act”) (Public Law 110-69) created new STEM (science, technology, engineering, and mathematics) education programs in various agencies, including the Department of Education.

Higher Education Opportunity Act (Public Law 110-315) provided a comprehensive reauthorization of the Higher Education Act of 1965.

### **2009**

American Recovery and Reinvestment Act of 2009 (Public Law 111-5) provided about \$100

billion to state education systems and supplemental appropriations for several Department of Education programs.

#### **2014**

Workforce Innovation and Opportunity Act (Public Law 113-128) amended the Workforce Investment Act of 1998 to strengthen the US workforce development system through innovation in, and alignment and improvement of, employment, training, and education programs in the United States, and to promote individual and national economic growth, and for other purposes.

#### **2015**

STEM Education Act of 2015 (Public Law 114-59) defined STEM education to include computer science and provided for continued support for existing STEM education programs at the National Science Foundation.

Every Student Succeeds Act (Public Law 114-95) reauthorized and amended the Elementary and Secondary Education Act of 1965, incorporating provisions to expand state responsibility over schools, provide grants to charter schools, and reduce the federal test-based accountability system of the No Child Left Behind Act.





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