

Macroeconomics in One Equation

Lecture 3: Labor Market Conditions

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For His Glory and Mission

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Basic Concepts: Labor Market Indicators

Unemployment Rate

The percent of unemployed people in the labor force. $UR=U/LF=U/(E+U)$

Underemployment Rate

The percent of employed people who are working part-time but prefer to be working full-time. It moves closely with the unemployment rate.

Labor Force Participation Rate

The percentage of the adult population that is in the labor force, which consists of the employed and the unemployed. $LFPR=LF/TP$

Employment to Population Ratio

The percentage of employed people in the adult population, which can be in the labor force or not in the labor force. $EPR=E/TP=E/(LF+NLF)$

Basic Concepts: Unemployment

Full Employment

A situation in which everyone who is willing and able to work can find a job. At full employment, the measured unemployment rate is still positive.

Cyclical Unemployment

The unemployment that is attributable to a decline in the overall economy's activity. It rises during recessions and falls in recovery and expansion.

Frictional Unemployment

The unemployment due to normal turnover in the labor market, including people who are temporarily between jobs because they are moving or changing occupations, or are unemployed for similar reasons. It is unavoidable and short-lived in nature.

Structural Unemployment

When workers' skills are no longer in demand and their jobs are eliminated by structural and permanent changes in the economy, such as new production technology and vanishing demand for particular products.

Outline

① Introduction

② Data and Statistics

③ Measurement Methods

④ Causes of Unemployment

Overview

- In $MV=PY$, total output Y can be measured by the national income or GDP.
- In the production possibility frontier model and production theory, the labor is considered as the key production input contributing to the output.
- In the circular flow diagram of the economy, linking households to firms is the production factor markets for labor and capital.
- The labor market is where workers search for jobs and companies hire. A robust economy hinges on the overall health of its labor markets.
- This lecture studies macroeconomic indicators gauging labor market condition along with their measurement methods.
- After examining the patterns behind historical data, labor economists aim to answer a fundamental question: what are the driving forces behind unemployment, especially the long-spell of unemployment?
- The evaluation and design of government unemployment relief programs and other labor policies depends crucially on how well we understand the functioning of labor markets.

BLS: U.S. Economy at a Glance

United States - Monthly Data

Data Series	Back Data	Aug 2021	Sept 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022
Unemployment Rate ⁽¹⁾	↗	5.2	4.7	4.6	4.2	3.9	4.0
Change in Payroll Employment ⁽²⁾	↗	517	424	677	647	510	467
Average Hourly Earnings ⁽³⁾	↗	30.76	30.92	31.11	31.23	31.40	31.63
Consumer Price Index ⁽⁴⁾	↗	0.3	0.4	0.9	0.8	0.5	
Producer Price Index ⁽⁵⁾	↗	0.9	0.4	0.6	1.0	0.2	
U.S. Import Price Index ⁽⁶⁾	↗	-0.2	0.4	1.5	0.7	-0.2	

Footnotes

(1) In percent, seasonally adjusted. Annual averages are available for Not Seasonally Adjusted data.

(2) Number of jobs, in thousands, seasonally adjusted.

(3) Average Hourly Earnings for all employees on private nonfarm payrolls.

(4) All items, U.S. city average, all urban consumers, 1982-84=100, 1-month percent change, seasonally adjusted.

(5) Final Demand, 1-month percent change, seasonally adjusted.

(6) All imports, 1-month percent change, not seasonally adjusted.

(P) Preliminary

United States - Quarterly Data

Data Series	Back Data	4th Qtr 2020	1st Qtr 2021	2nd Qtr 2021	3rd Qtr 2021	4th Qtr 2021
Employment Cost Index ⁽¹⁾	[✓]	0.7	0.9	0.7	1.3	1.0
Productivity ⁽²⁾	[✓]	-3.1	-4.2	-2.1	(B) -5.0	-5.5

Extracts

(1) Compensation, all civilian workers, quarterly data, 3-month percent change, seasonally adjusted.

(2) Output per hour, nonfarm business, quarterly data, percent change from previous quarter at annual rate, seasonally adjusted.

(e) Output

Data extracted on: February 04, 2022

Source: U.S. Bureau of Labor Statistics

Note: More data series, including additional geographic areas, are available through the "[Databases & Tables](#)" tab at the top of this page.

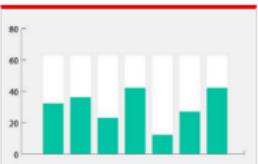
<https://www.bls.gov/eag/eag.us.htm>

BLS: Graphics for Economic News Releases



EMPLOYMENT & UNEMPLOYMENT

- Business Employment Dynamics
- County Employment and Wages
- Employment Situation
- Job Openings and Labor Turnover Survey
- Metro Area Employment and Unemployment
- State Employment and Unemployment
- State Job Openings and Labor Turnover



INFLATION & PRICES

- Consumer Price Index
- Producer Price Index
- Import/Export Price Index



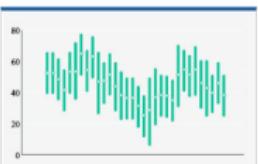
PAY & BENEFITS

- Employee Benefits
- Employment Cost Index
- Employer Costs for Employee Compensation
- Union Membership



PRODUCTIVITY

- Productivity and Costs
- Productivity, Wholesale and Retail
- Productivity, Mining and Manufacturing
- Productivity, Selected Service-Providing Industries
- Productivity by State



SPENDING & TIME USE

American Time Use Survey



WORKPLACE INJURIES

Employer-reported Workplace Injuries and Illnesses

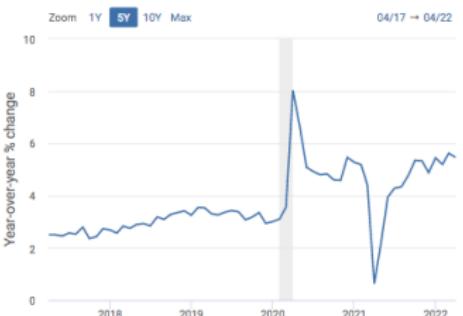
Charts Related to the latest BLS news releases: This section features charts to complement the written analysis and data tables in the news releases.

BLS hopes these data visualizations will help you see important trends in the labor market and economy more clearly. BLS will continue to add data visualizations like these for more BLS news releases.

Unemployment Rate



Average Hourly Earnings Growth of Private Employees



Seasonally adjusted. Recessions are shaded. Source: Bureau of Labor Statistics. See and learn more on [FRED](#).

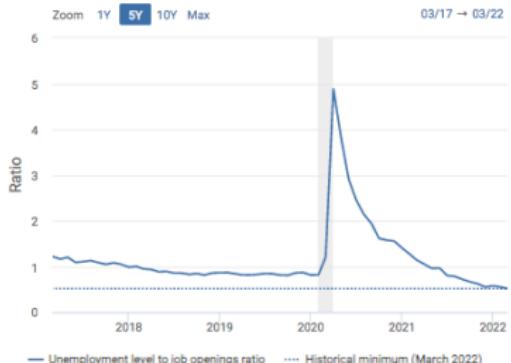
Kansas City Fed Labor Market Conditions Indicator



Seasonally adjusted. Recessions are shaded. Source: Federal Reserve Bank of Kansas City. See data on [FRED](#); learn more here.

<https://stlouisfed.shinyapps.io/macro-snapshot>

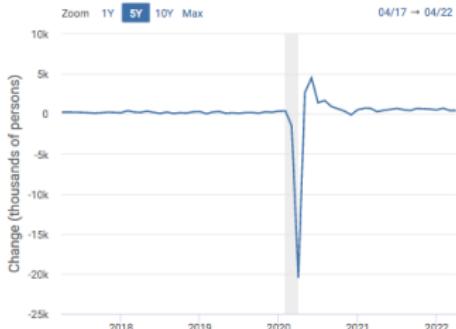
Unemployment Level to Job Openings Ratio



Unemployment Claims

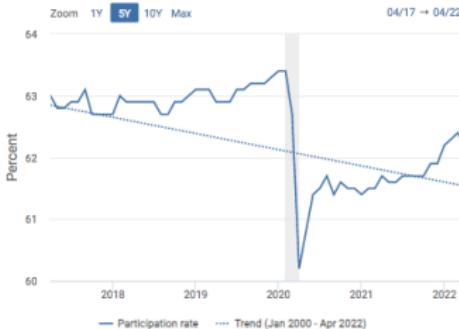


Nonfarm Payroll Employment Growth



Seasonally adjusted. Recessions are shaded. Source: Bureau of Labor Statistics. See and learn more at [FRED](#).

Labor Force Participation Rate

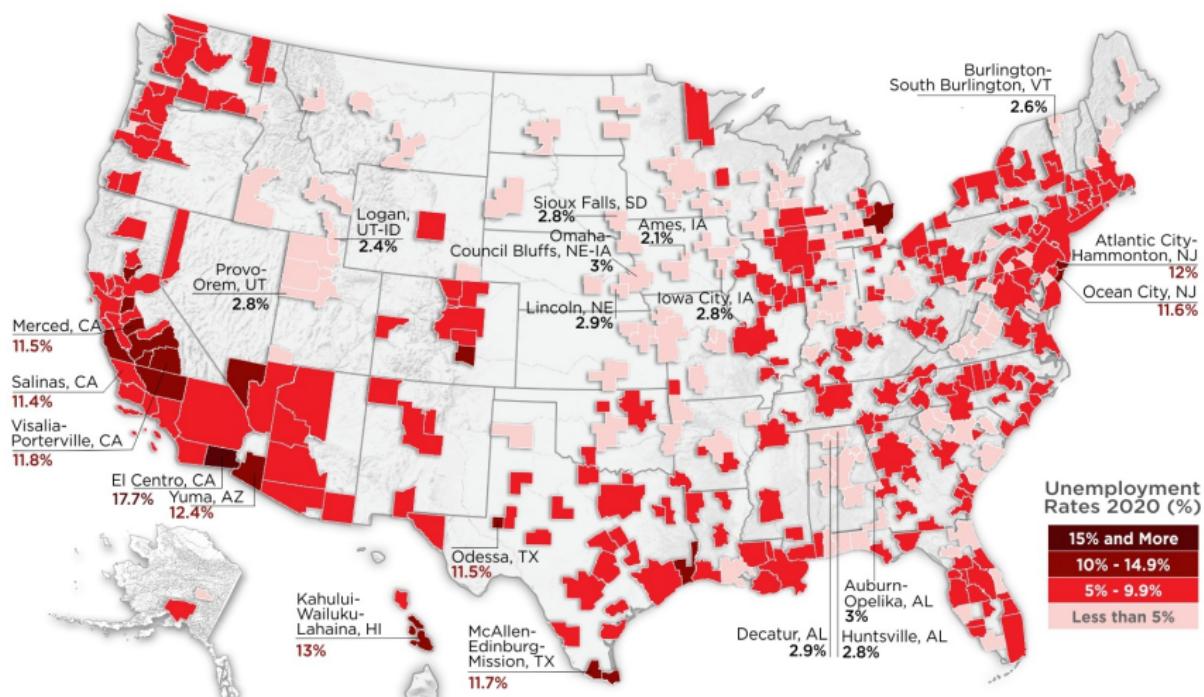


Seasonally adjusted. Recessions are shaded. Source: Bureau of Labor Statistics. See data on [FRED](#).

<https://stlouisfed.shinyapps.io/macro-snapshot>

U.S. Unemployment Rates by Metropolitan Area

Top 10 Highest & Lowest Rates in 2020



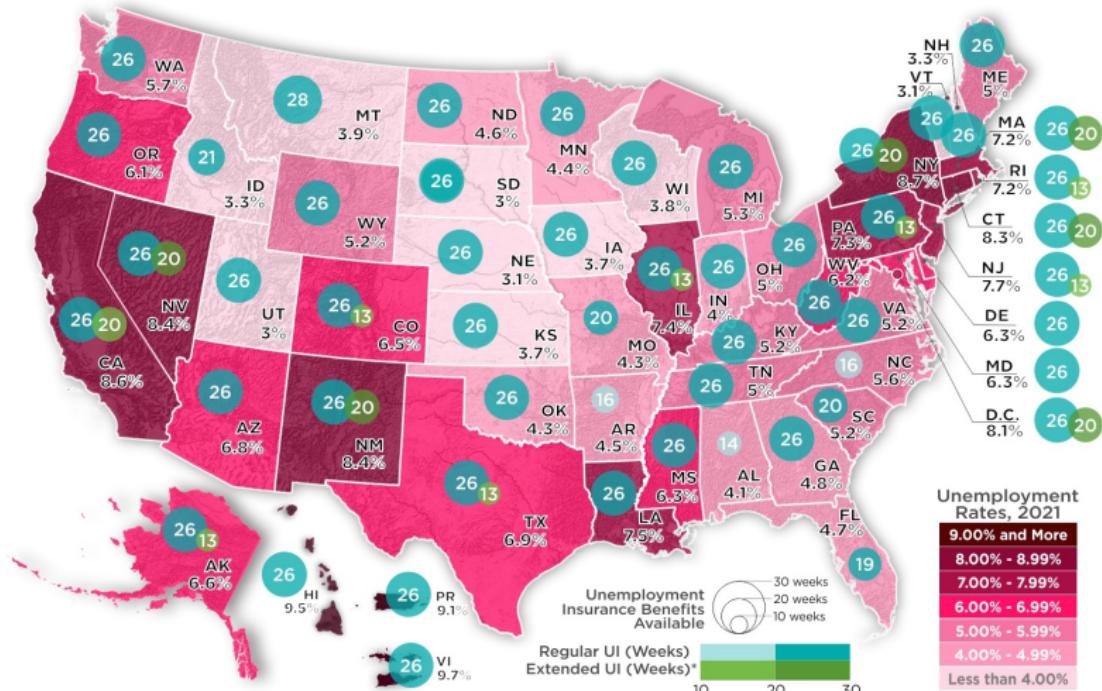
Note: Rates shown are a percentage of the labor force.

Article & Sources:

<https://howmuch.net/articles/us-unemployment-rates-metropolitan-area>
U.S. Bureau of Labor Statistics - <https://www.bls.gov/>

Pandemic Emergency Unemployment Assistance Benefits

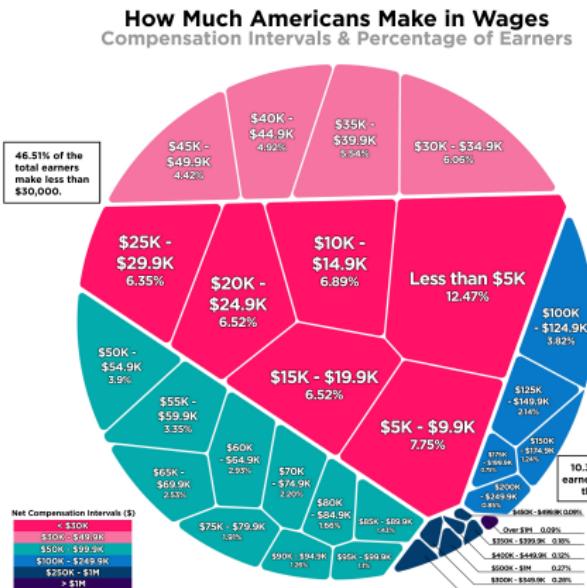
Unemployment Rates & Weeks of Unemployment Insurance Available by State



*Pandemic Emergency Unemployment Assistance (PEUC) benefits are available in all states through the week ending September 6, 2021 for individuals who exhaust their regular state benefits, followed thereafter by extended benefits if they are available in the recipient's state.

Article & Sources:

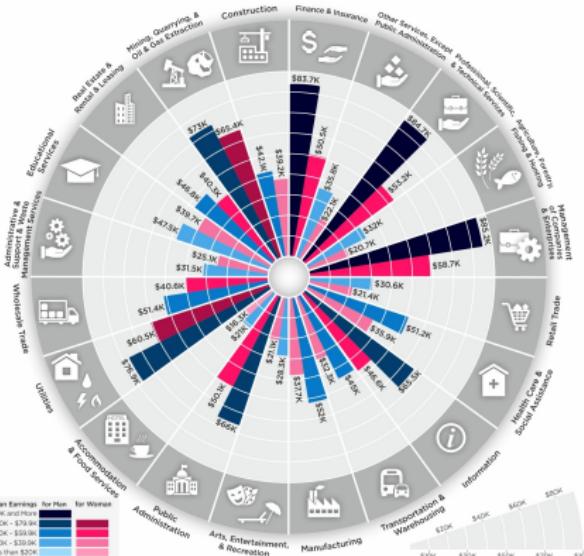
<https://howmuch.net/articles/pandemic-emergency-unemployment-assistance-benefits-by-state>
Center on Budget and Policy Priorities (CBPP) - <https://www.cbpp.org/>



howmuch.net

Men vs. Women: Comparing Income by Industry

Median Annual Earnings For the Civilian Employed Population (16+ years old) in the U.S.



howmuch.net

<https://howmuch.net/articles/how-much-americans-make-wages-2020>

<https://howmuch.net/articles/men-vs-women-comparing-income-by-industry>

U.S. Gender Wage Gap by Industry

Rank	Industry	Median earnings	Median earnings	Women's earnings
		(Men)	(Women)	(as a % of men's earning)
1	Finance and insurance	\$83,660	\$50,456	60.30%
2	Other services, except public administration	\$35,778	\$22,083	61.70%
3	Professional, scientific, and technical services	\$84,749	\$53,152	62.70%
4	Agriculture, forestry, fishing and hunting	\$32,021	\$20,689	64.60%
5	Management of companies and enterprises	\$85,219	\$58,718	68.90%
6	Retail trade	\$30,592	\$21,415	70.00%
7	Health care and social assistance	\$51,233	\$35,916	70.10%
8	Information	\$65,475	\$46,552	71.10%
9	Transportation and warehousing	\$44,984	\$32,345	71.90%
10	Manufacturing	\$52,026	\$37,694	72.50%
11	Arts, entertainment, and recreation	\$28,313	\$21,066	74.40%
12	Public administration	\$66,032	\$50,132	75.90%
13	Accommodation and food services	\$20,953	\$16,256	77.60%
14	Utilities	\$76,884	\$60,481	78.70%
15	Wholesale trade	\$51,407	\$40,630	79.00%
16	Administrative and support and waste management services	\$31,531	\$25,056	79.50%
17	Educational services	\$47,489	\$39,704	83.60%
18	Real estate and rental and leasing	\$46,799	\$40,293	86.10%
19	Mining, quarrying, and oil and gas extraction	\$73,037	\$65,364	89.50%
20	Construction	\$42,098	\$39,222	93.2%

<https://howmuch.net/articles/men-vs-women-comparing-income-by-industry>

The Best-Paying Occupation in Each State

Median Annual Wages in 2020



Anesthesiologist

Obstetrician & Gynecologist
Family Medicine Physicians

Psychiatrists

Chief Executives

General & Operations Managers

Management Occupations



Human Resources Managers

Marketing Manager

Project Management Specialists & Business Operations Specialists



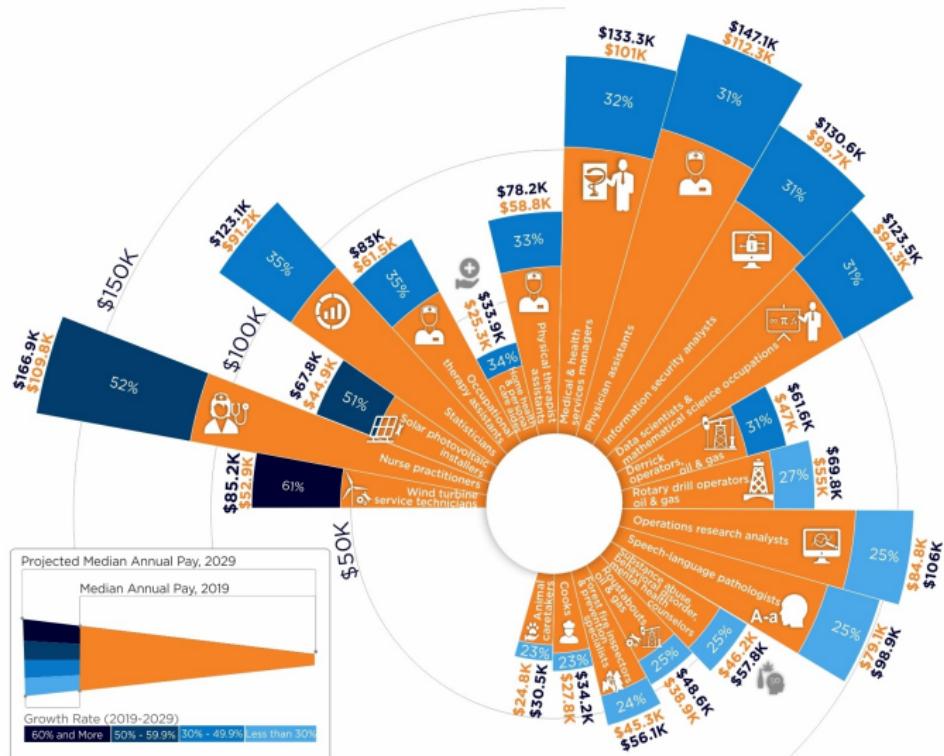
Natural Sciences Managers

Lawyers

Article & Sources:
<https://howmuch.net/articles/best-paying-occupation-in-each-state>
 U.S. Bureau of Labor Statistics - <https://www.bls.gov/>

Fastest Growing Occupations in the U.S.

Median Annual Pay & Its Growth Projection (2019-2029)



Article & Sources:

<https://howmuch.net/articles/fastest-growing-occupations-in-the-US>
U.S. Bureau of Labor Statistics - <https://www.bls.gov/>

Top Growing Careers in the U.S., 2019-2029

Occupation	2019 Median Pay (Yearly)	Growth Rate (2019-2029)
1. Wind turbine service technicians	\$52,910	61%
2. Nurse practitioners	\$109,820	52%
3. Solar photovoltaic installers	\$44,890	51%
4. Statisticians	\$91,160	35%
5. Occupational therapy assistants	\$61,510	35%
6. Home health & personal care aides	\$25,280	34%
7. Physical therapist assistants	\$58,790	33%
8. Medical & health services managers	\$100,980	32%
9. Physician assistants	\$112,260	31%
10. Information security analysts	\$99,730	31%
11. Data scientists & mathematical science occupations	\$94,280	31%
12. Derrick operators, oil & gas	\$46,990	31%
13. Rotary drill operators, oil & gas	\$54,980	27%
14. Operations research analysts	\$84,810	25%
15. Speech-language pathologists	\$79,120	25%
16. Substance abuse, behavioral disorder, mental health counselors	\$46,240	25%
17. Roustabouts, oil & gas	\$38,910	25%
18. Forest fire inspectors & prevention specialists	\$45,270	24%
19. Cooks	\$27,790	23%
20. Animal caretakers	\$24,780	23%

<https://howmuch.net/articles/fastest-growing-occupations-in-the-US>

<https://howmuch.net/articles/best-paying-occupation-in-each-state>

Outline

① Introduction

② Data and Statistics

③ Measurement Methods

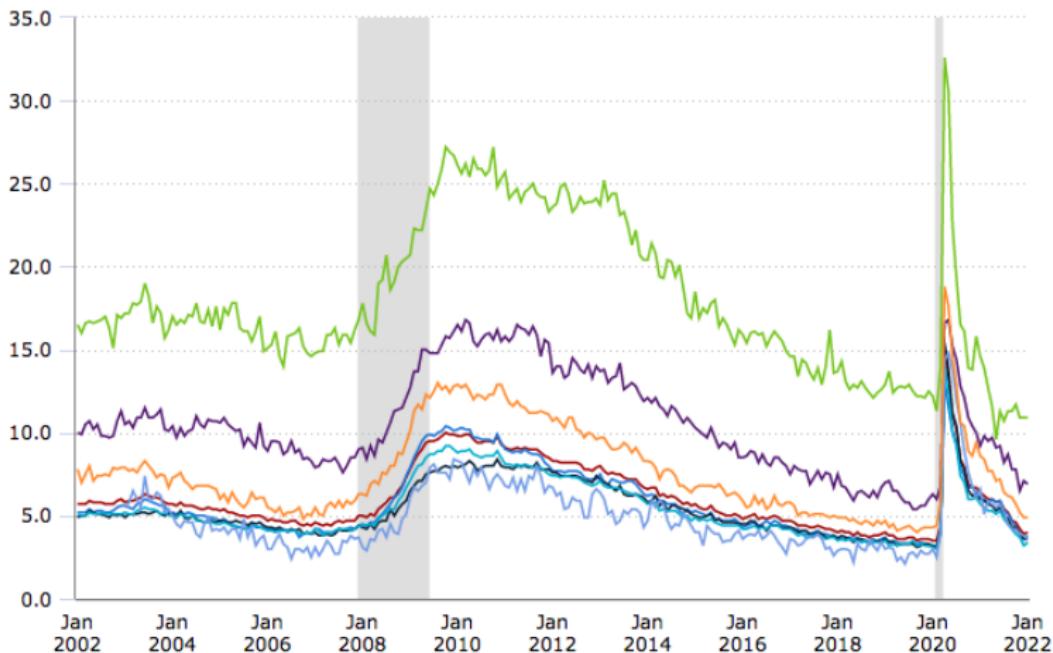
④ Causes of Unemployment

Civilian unemployment rate, seasonally adjusted

Click and drag within the chart to zoom in on time periods

— Total — Men, 20 years and over — Women, 20 years and over
— 16 to 19 years old — White — Black or African American — Asian
— Hispanic or Latino

Percent

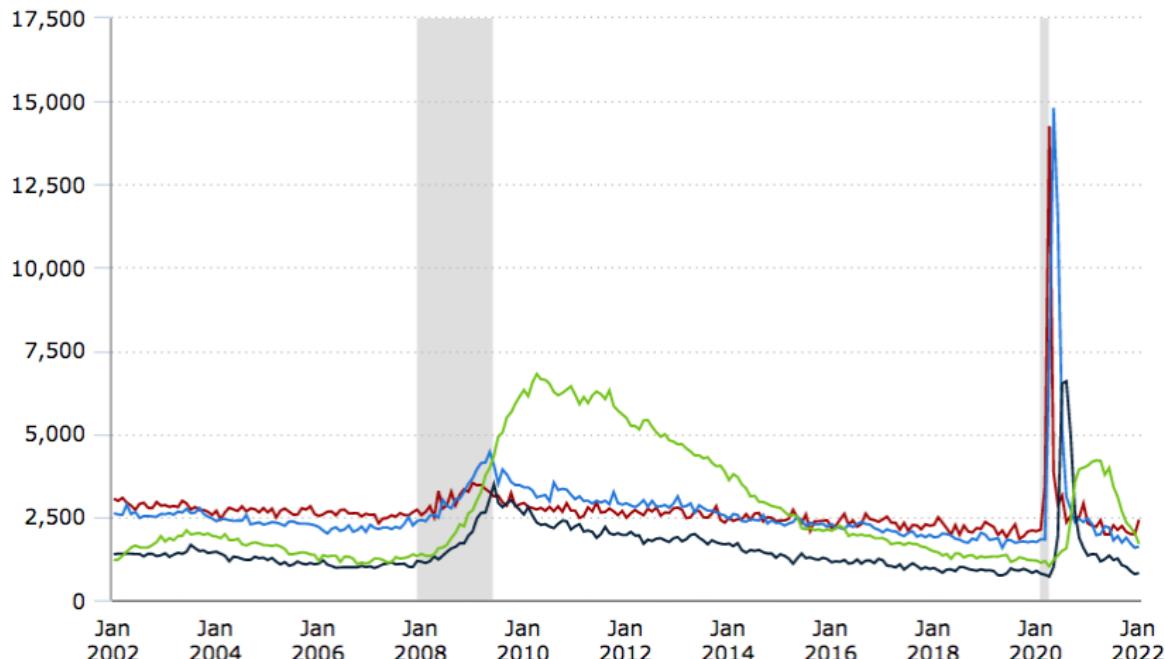
<https://www.bls.gov/charts/employment-situation/civilian-unemployment-rate.htm>

Duration of unemployment, seasonally adjusted

Click and drag within the chart to zoom in on time periods

— Less than 5 weeks — 5-14 weeks — 15-26 weeks — 27 weeks and over

Thousands

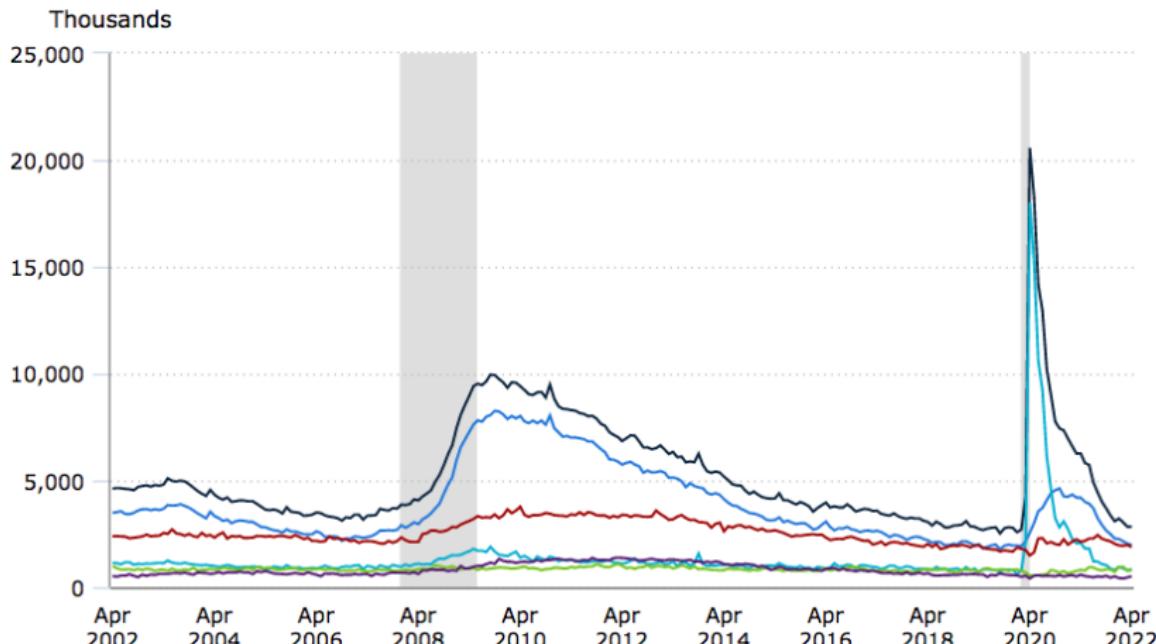


<https://www.bls.gov/charts/employment-situation/duration-of-unemployment.htm>

Reasons for unemployment, seasonally adjusted

Click and drag within the chart to zoom in on time periods

- Job losers and persons who completed temporary jobs — Job losers not on temporary layoff
- Job losers on temporary layoff — Job leavers — Reentrants — New entrants

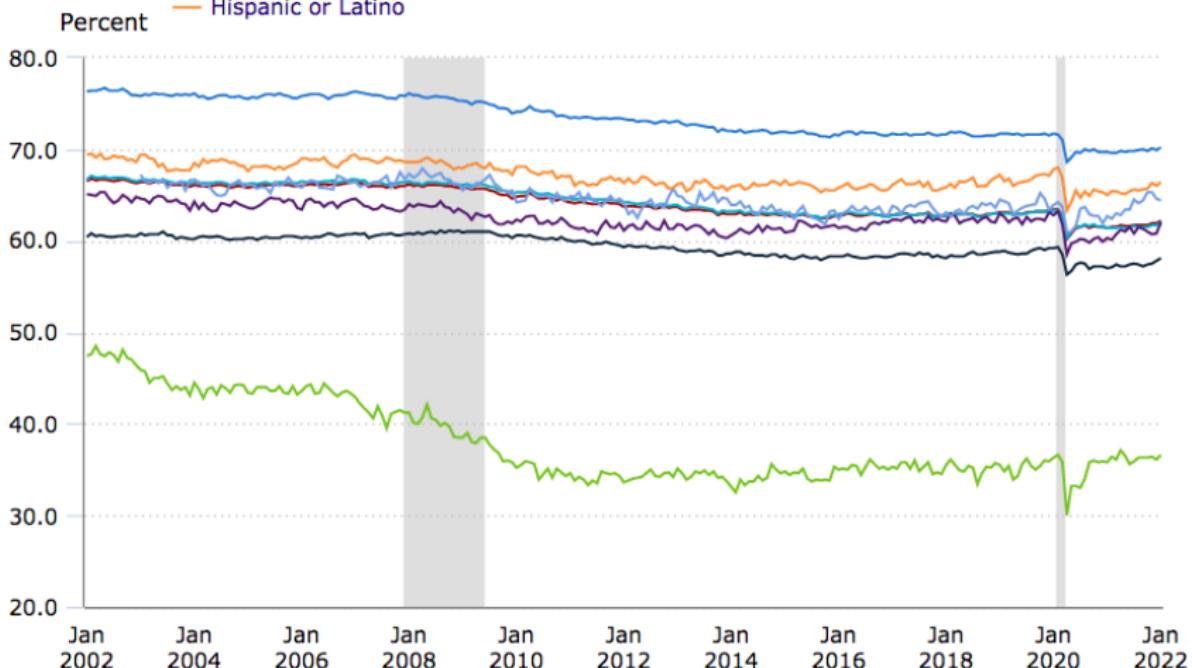


<https://www.bls.gov/charts/employment-situation/reasons-for-unemployment.htm>

Civilian labor force participation rate, seasonally adjusted

Click and drag within the chart to zoom in on time periods

- Total — Men, 20 years and older — Women, 20 years and older
- 16 to 19 years old — White — Black or African American — Asian
- Hispanic or Latino

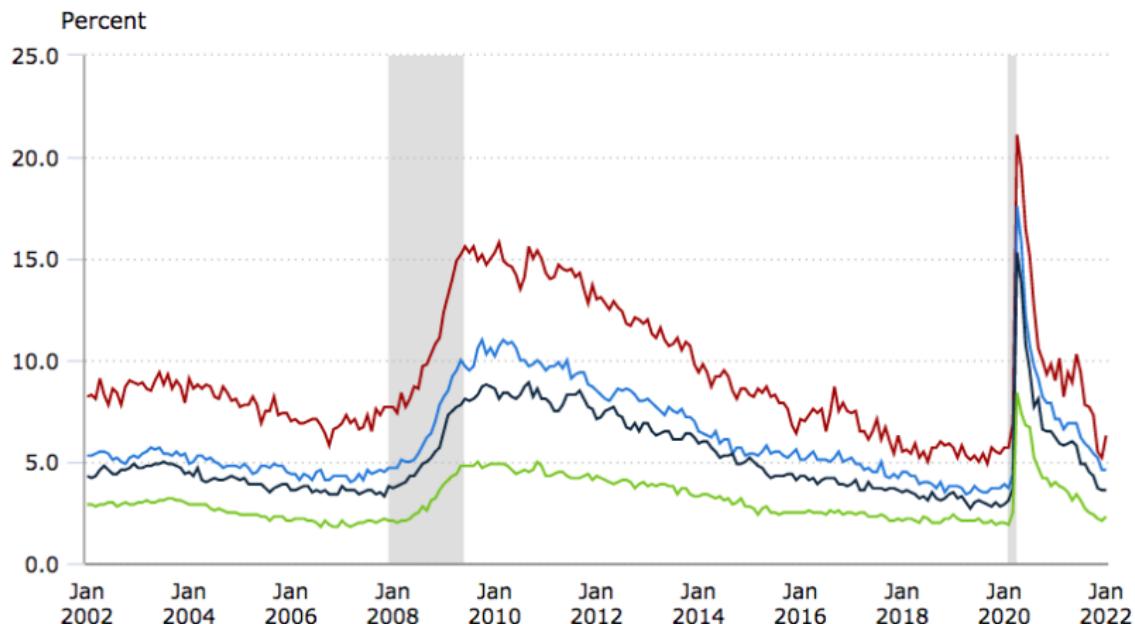


<https://www.bls.gov/charts/employment-situation/civilian-labor-force-participation-rate.htm>

Unemployment rates for persons 25 years and older by educational attainment, seasonally adjusted

Click and drag within the chart to zoom in on time periods

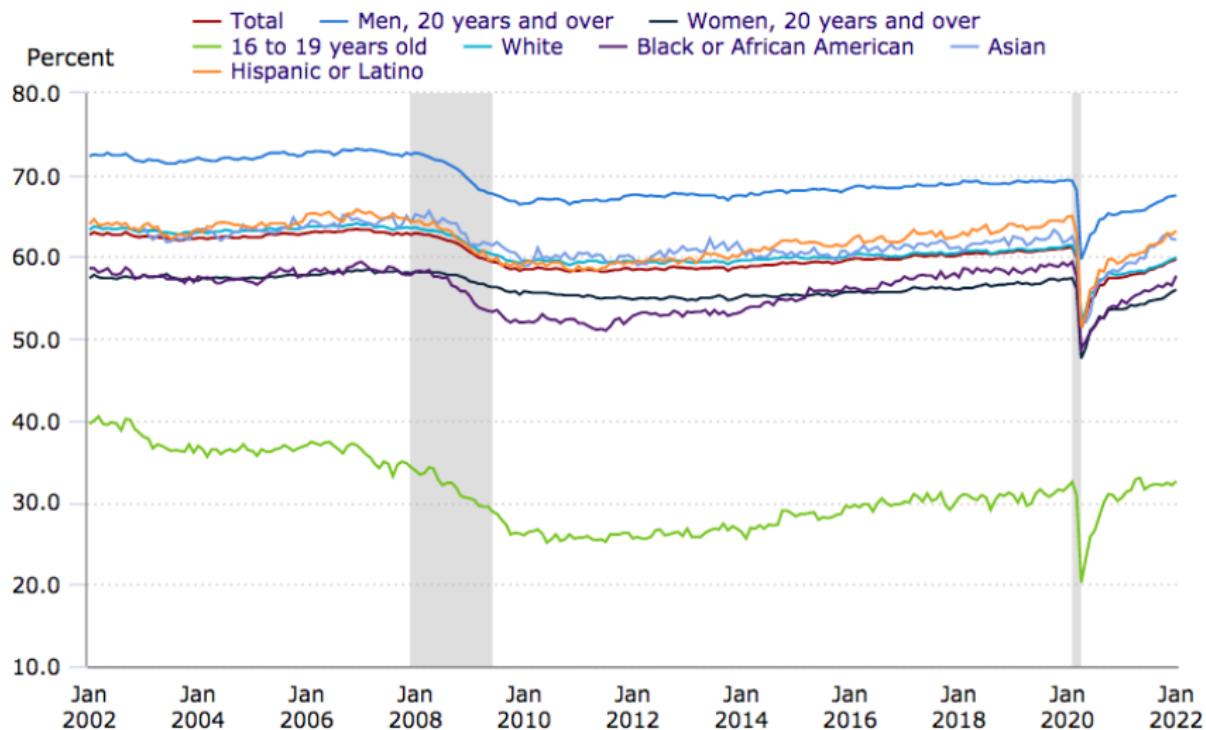
- Less than a high school diploma
- Some college or associate degree
- High school graduates, no college
- Bachelor's degree and higher



<https://www.bls.gov/charts/employment-situation/civilian-unemployment-rate.htm>

Employment–population ratio, seasonally adjusted

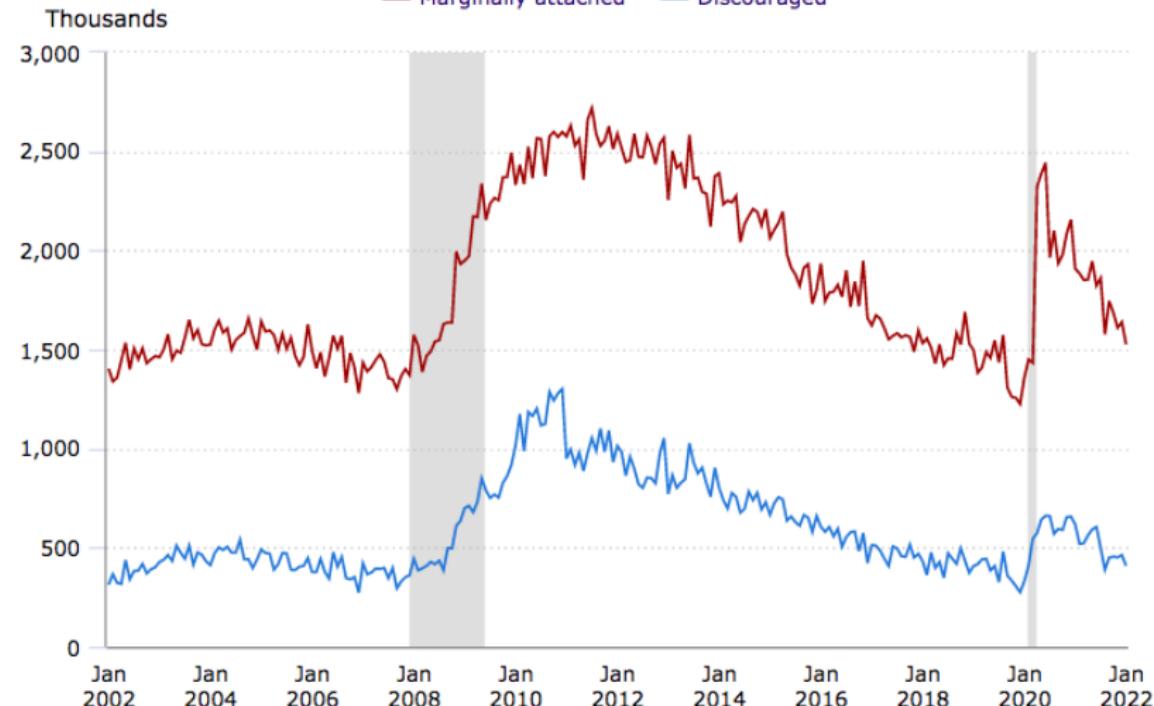
Click and drag within the chart to zoom in on time periods



<https://www.bls.gov/charts/employment-situation/employment-population-ratio.htm>

Persons not in the labor force, selected indicators, seasonally adjusted

Click and drag within the chart to zoom in on time periods

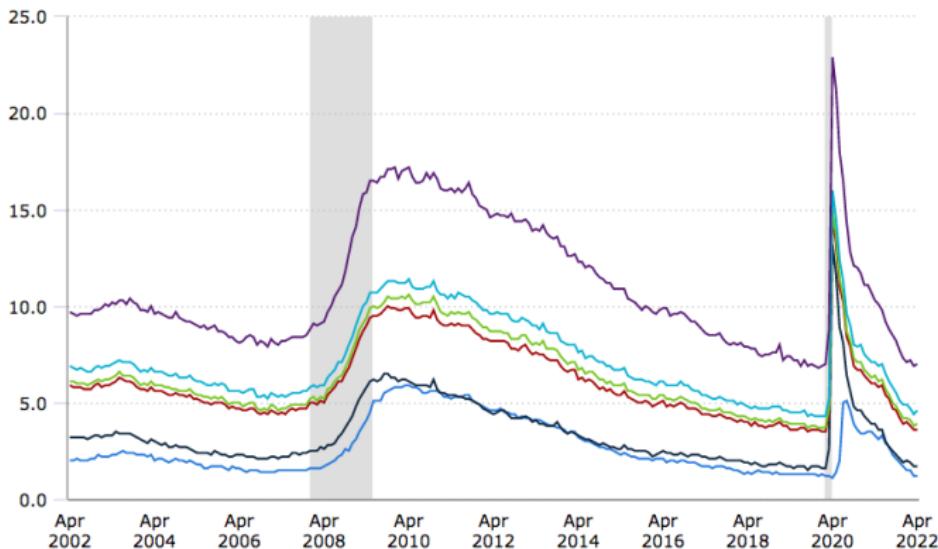
— Marginally attached — Discouraged<https://www.bls.gov/charts/employment-situation/persons-not-in-the-labor-force-selected-indicators.htm>

Alternative measures of labor underutilization, seasonally adjusted

Click and drag within the chart to zoom in on time periods

- 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 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

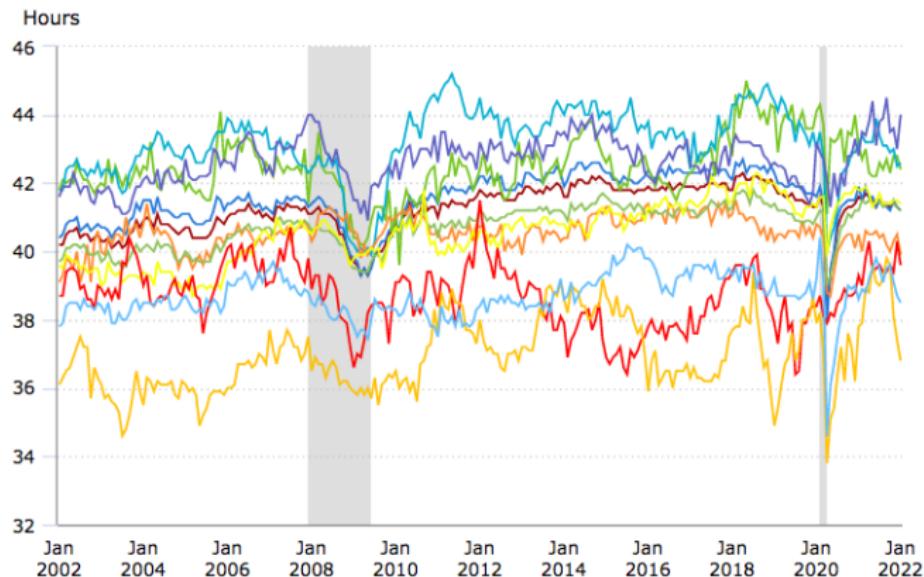
Percent

<https://www.bls.gov/charts/employment-situation/alternative-measures-of-labor-underutilization.htm>

Average weekly hours of production employees in manufacturing, seasonally adjusted

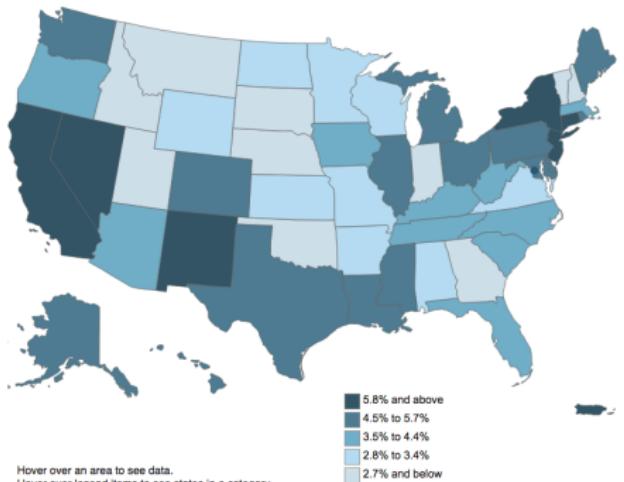
Click and drag inside chart to change dates displayed

- Manufacturing — Durable goods — Wood products — Nonmetallic mineral products
- Primary metals — Fabricated metal products — Machinery
- Computer and electronic products — Electrical equipment and appliances
- Transportation equipment — Furniture and related products
- Miscellaneous durable goods manufacturing — Nondurable goods — Food manufacturing
- Textile mills — Textile product mills — Apparel — Paper and paper products
- Printing and related support activities — Chemicals — Plastics and rubber products

<https://www.bls.gov/charts/employment-situation/average-weekly-hours-of-production-employees.htm>

Unemployment Rate and Employment Change by State

State unemployment rates, December 2021, seasonally adjusted

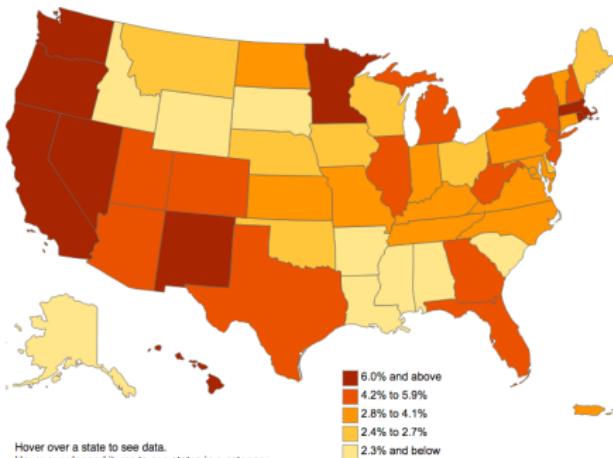


Hover over an area to see data.

Hover over legend items to see states in a category.

Source: U.S. Bureau of Labor Statistics.

Change in nonfarm employment by state, December 2020 to December 2021, seasonally adjusted



Hover over a state to see data.

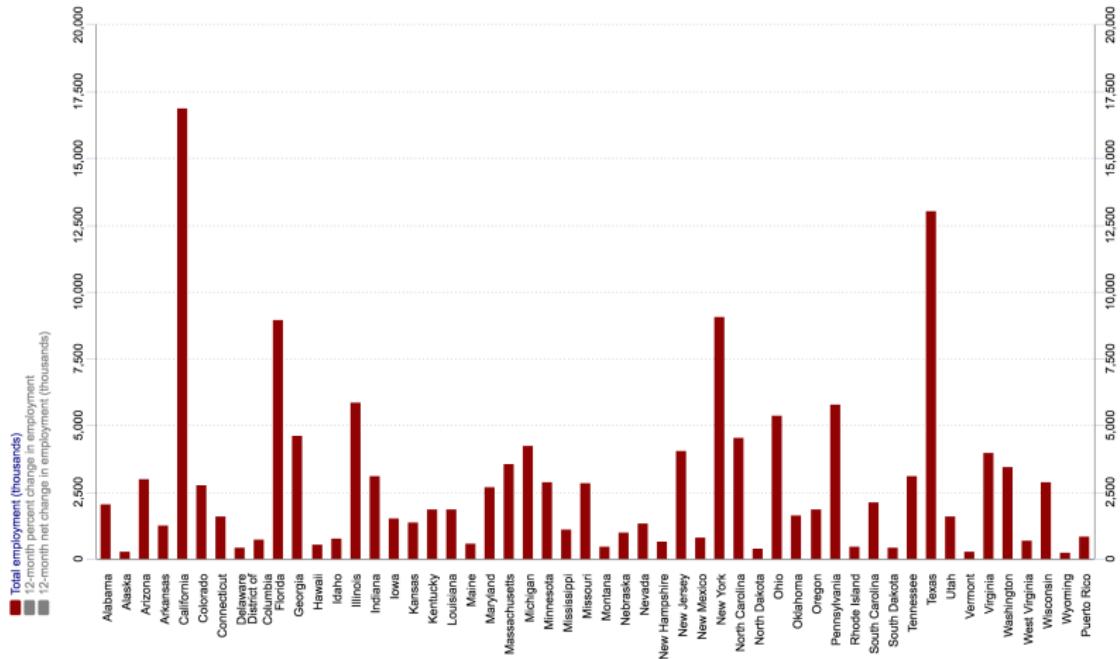
Hover over legend items to see states in a category.

Source: U.S. Bureau of Labor Statistics.

<https://www.bls.gov/charts/state-employment-and-unemployment/state-unemployment-rates-map.htm>

Employment by State, 2021 December

Employment by state, December 2021, seasonally adjusted



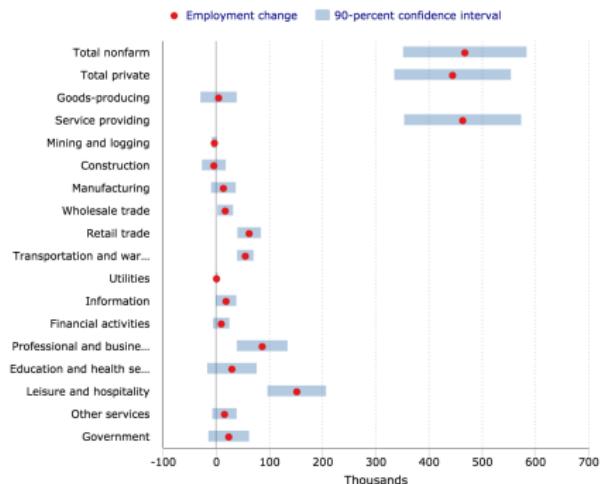
Hover over Chart to view data.

Source: U.S. Bureau of Labor Statistics.

<https://www.bls.gov/charts/state-employment-and-unemployment/employment-by-state-bar.htm>

Employment by Industry, Monthly and Annual changes

Employment change by industry with confidence intervals, January 2022, seasonally adjusted,
in thousands, 1-month net change

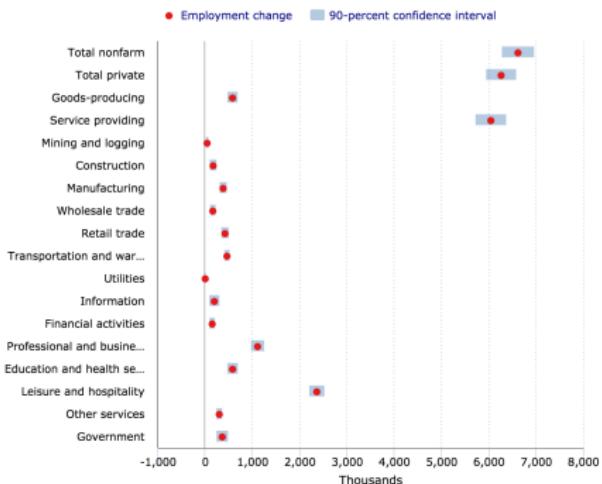


Hover over chart to view data.

The 90-percent confidence interval represents the symmetric range of values around the estimate for which there is a 90-percent probability that the actual change is contained within that range of values. If the change is statistically significant, the blue bar does not cross the zero line.

Source: U.S. Bureau of Labor Statistics.

Employment change by industry with confidence intervals, January 2022, seasonally adjusted,
in thousands, 12-month net change



Hover over chart to view data.

The 90-percent confidence interval represents the symmetric range of values around the estimate for which there is a 90-percent probability that the actual change is contained within that range of values. If the change is statistically significant, the blue bar does not cross the zero line.

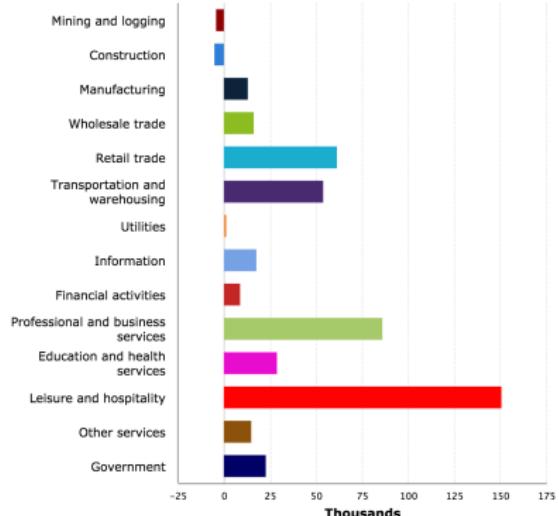
Source: U.S. Bureau of Labor Statistics.

Source: BLS - The Employment Situation Charts (w)

Employment by Industry, Monthly and Annual Changes

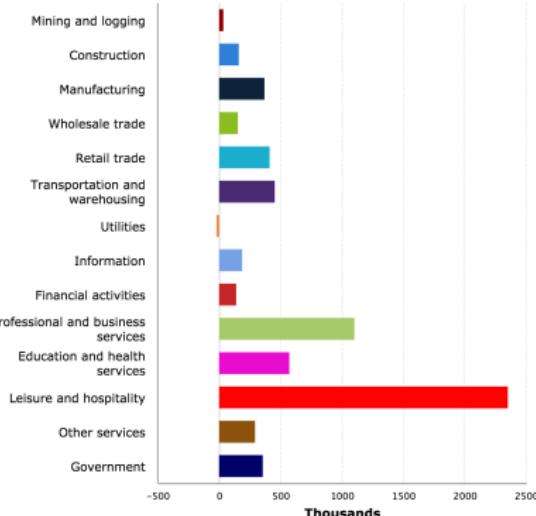
Employment change by industry, January 2022, seasonally adjusted, 1-month net change

Click on bars to drill down

Sector

Employment change by industry, January 2022, seasonally adjusted, 12-month net change

Click on bars to drill down

Sector

Source: U.S. Bureau of Labor Statistics.



Source: U.S. Bureau of Labor Statistics.



<https://www.bls.gov/charts/employment-situation/employment-by-industry-monthly-changes.htm>

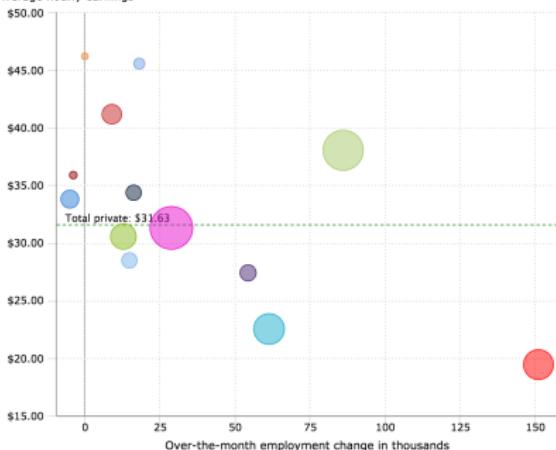
Employment Change and Average Earnings by Industry

Employment and average **hourly** earnings by industry for all employees, January 2022,
seasonally adjusted

Bubble size represents employment level in thousands

- Mining and logging
- Construction
- Manufacturing
- Wholesale trade
- Retail trade
- Transportation and warehousing
- Utilities
- Information
- Financial activities
- Professional and business services
- Education and health services
- Leisure and hospitality
- Other services

Average hourly earnings



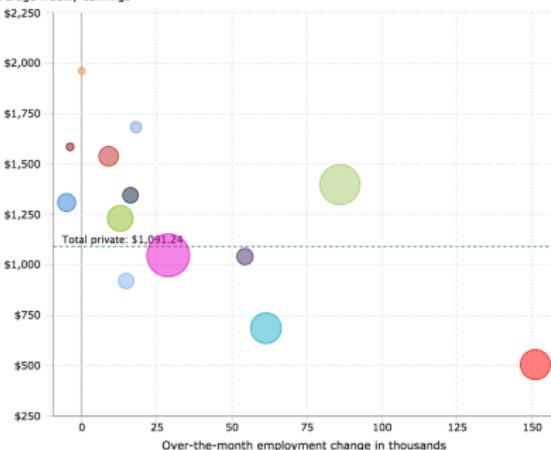
Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics.

Employment and average **weekly** earnings by industry for all employees, January 2022,
seasonally adjusted

Bubble size represents employment level in thousands

- Mining and logging
- Construction
- Manufacturing
- Wholesale trade
- Retail trade
- Transportation and warehousing
- Utilities
- Information
- Financial activities
- Professional and business services
- Education and health services
- Leisure and hospitality
- Other services

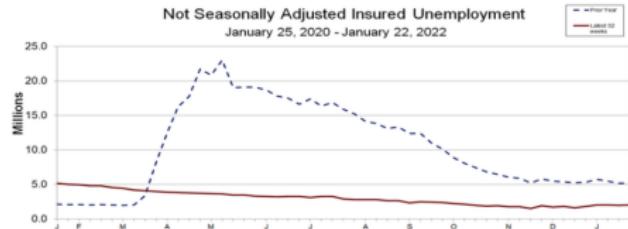
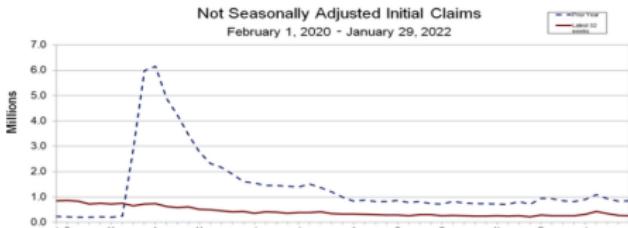
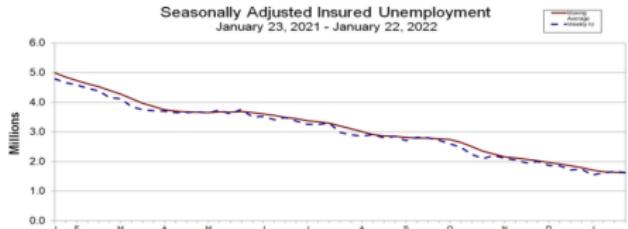
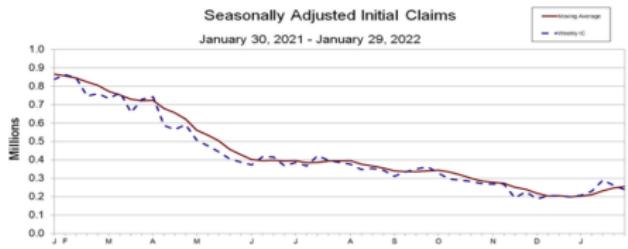
Average weekly earnings



Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics.

Source: BLS - The Employment Situation Charts (w)

Unemployment Insurance Initial Claims



An initial claim is a claim filed by an unemployed individual after a separation from an employer. The claimant requests a determination of basic eligibility for the UI program. Source: U.S. Department of Labor. <https://www.dol.gov/ui/data.pdf>

FRBNY: Different Faces of the Labor Market

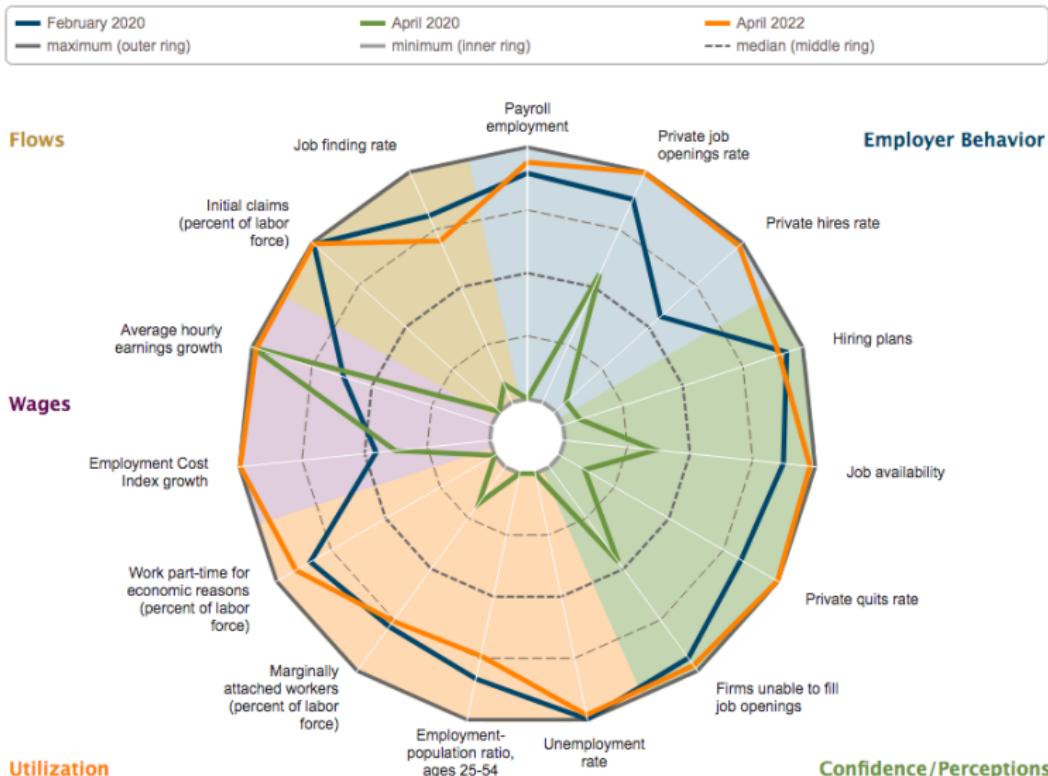
The labor market is far more complex than a few indicators, like the unemployment rate or payroll growth, can capture. Understanding the workings of the labor market requires closely following the evolution of different aspects of the labor market.

- ① Unemployment and employment
- ② The labor force participation rate in the aggregate and by gender
- ③ Job loss rate and the employment-to-unemployment flow rate
- ④ Average weekly hours and the index of aggregate weekly hours
- ⑤ Average hourly and weekly earnings (wages)
- ⑥ The mismatch index for industries and occupations
- ⑦ Labor demand: vacancy, hire rates, and the diffusion index

The New York Fed makes available a set of charts measuring various dimensions of the labor market. These charts are mostly generated from data available through the Current Population Survey (CPS), the Current Employment Statistics (CES) program, and the Job Openings and Labor Turnover Survey (JOLTS).

Source: FRBNY (2014) Beyond the Unemployment Rate: Eight Different Faces of the Labor Market
(w)

<https://www.newyorkfed.org/labor-conditions/index.html>



Sources: U.S. Bureau of Labor Statistics, U.S. Department of Labor, National Federation of Independent Business, The Conference Board, and Haver Analytics
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<https://www.atlantafed.org/chcs/labor-market-distributions>

Outline

- ① Introduction
- ② Data and Statistics
- ③ Measurement Methods
- ④ Causes of Unemployment

BLS: The Current Population Survey

- The Current Population Survey (CPS) is a monthly survey of U.S. households that is conducted by the U.S. Census Bureau for the U.S. Bureau of Labor Statistics.
- The CPS is the source of the national unemployment rate, along with a wide range of information about employment, unemployment, and people not in the labor force.

<https://www.bls.gov/opub/hom/cps/home.htm>

https://www.bls.gov/cps/cps_over.htm

<https://www.bls.gov/cps/cpsaz.htm>

Quick Facts: Current Population Survey	
Subject areas	Hours, Unemployment, Employment
Key measures	Labor force Unemployment Employment Unemployment rate Usual weekly earnings
How the data are obtained	Survey of households
Classification system	Demographic
Periodicity of data availability	Monthly, Quarterly, Annual
Geographic detail	National
Scope	Civilian noninstitutional population
Key products	<p>See the complete list of CPS news releases and reports online.</p> <ul style="list-style-type: none"> The Employment Situation Usual Weekly Earnings of Wage and Salary Workers Employment Situation of Veterans Labor Force Characteristics of People With a Disability Labor Force Characteristics of Foreign-Born Workers Union Members Employment Characteristics of Families College Enrollment and Work Activity of High School Graduates Summer Employment and Unemployment Among Youth Employee Tenure Worker Displacement Monthly, quarterly, and annual tables
Program webpage	www.bls.gov/cps

BLS: The Current Population Survey (CPS)

- Data source: Approximately 60,000 scientifically selected households make up the CPS sample. Each month, U.S. Census Bureau interviewers attempt to contact a responsible person in each of these eligible households to complete a CPS interview. The Census Bureau will contact each household for 8 monthly interviews over a 16-month period.
- At each monthly interview, a series of standard questions on work and job search activities during the reference week is asked about each household member 15 years of age or older. The reference week is generally the week that includes the 12th of the month, and Census Bureau interviewers usually begin collecting data during the week that includes the 19th of the month.
- After the basic labor force questions are asked, most monthly interviews include an additional set of questions on supplemental topics, such as school enrollment, income and health insurance, and characteristics of military veterans.

Source: BLS Handbook of Methods - Current Population Survey.

BLS: The Breakdown of the Population

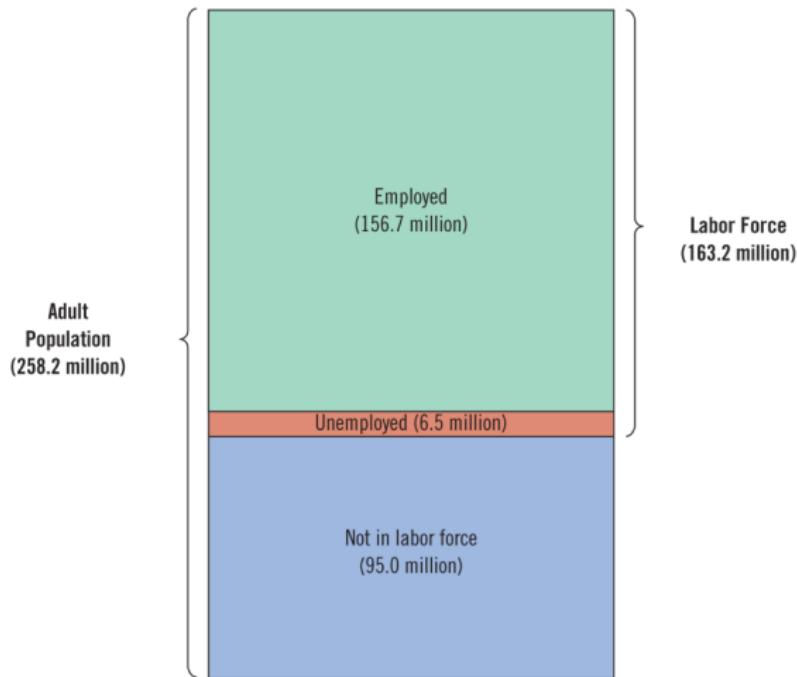


FIGURE 1

The Breakdown of the Population in January 2019

The Bureau of Labor Statistics divides the adult population into three categories: employed, unemployed, and not in the labor force.

Source: Bureau of Labor Statistics.

Source: N. G. Mankiw (2021) CH28, Principles of Economics, 9e, Cengage.

BLS: Employment Situation Summary (in thousands)

Category	Jan. 2021	Nov. 2021	Dec. 2021	Jan. 2022	Change from: Dec. 2021- Jan. 2022
Employment status					
Civilian noninstitutional population	260,851	262,029	262,136	263,202	-
Civilian labor force	160,184	162,126	162,294	163,687	-
Participation rate	61.4	61.9	61.9	62.2	-
Employed	150,004	155,324	155,975	157,174	-
Employment-population ratio	57.5	59.3	59.5	59.7	-
Unemployed	10,180	6,802	6,319	6,513	-
Unemployment rate	6.4	4.2	3.9	4.0	-
Not in labor force	100,667	99,902	99,842	99,516	-
Unemployment rates					
Total, 16 years and over	6.4	4.2	3.9	4.0	-
Adult men (20 years and over)	6.1	3.9	3.6	3.8	-
Adult women (20 years and over)	6.0	3.9	3.6	3.6	-
Teenagers (16 to 19 years)	14.6	10.9	10.9	10.9	-
White	5.7	3.7	3.2	3.4	-
Black or African American	9.2	6.5	7.1	6.9	-
Asian	6.6	3.9	3.8	3.6	-
Hispanic or Latino ethnicity	8.6	5.2	4.9	4.9	-
Total, 25 years and over	5.7	3.6	3.3	3.4	-
Less than a high school diploma	9.0	5.5	5.2	6.3	-
High school graduates, no college	7.1	5.2	4.6	4.6	-
Some college or associate degree	6.2	3.7	3.6	3.6	-
Bachelor's degree and higher	4.0	2.2	2.1	2.3	-

Source: BLS. Household data, seasonally adjusted. <https://www.bls.gov/news.release/empsit.a.htm>

BLS: Employment Situation Summary (in thousands)

Category	Jan. 2021	Nov. 2021	Dec. 2021	Jan. 2022	Change from: Dec. 2021- Jan. 2022
Employment status					
Civilian noninstitutional population	260,851	262,029	262,136	263,202	-
Civilian labor force	160,184	162,126	162,294	163,687	-
Reason for unemployment					
Job losers and persons who completed temporary jobs	6,963	3,369	3,095	3,220	-
Job leavers	653	837	724	952	-
Reentrants	1,998	2,154	2,038	1,959	-
New entrants	545	452	513	433	-
Duration of unemployment					
Less than 5 weeks	2,307	1,985	1,977	2,417	-
5 to 14 weeks	2,454	1,703	1,571	1,607	-
15 to 26 weeks	1,336	870	780	816	-
27 weeks and over	4,046	2,193	2,008	1,691	-
Employed persons at work part time					
Part time for economic reasons	5,940	4,266	3,929	3,717	-
Slack work or business conditions	4,757	2,903	2,594	2,430	-
Could only find part-time work	996	1,059	1,082	969	-
Part time for noneconomic reasons	18,424	20,440	20,315	20,198	-
Persons not in the labor force					
Marginally attached to the labor force					
Discouraged workers	1,908	1,610	1,639	1,526	-
617	451	463	408	-	-

- December - January changes in household data are not shown due to the introduction of updated population controls.
 NOTE: Persons whose ethnicity is identified as Hispanic or Latino may be of any race. Detail for the seasonally adjusted data shown in this table will not necessarily add to totals because of the independent seasonal adjustment of the various series. Updated population controls are introduced annually with the release of January data.

Source: BLS. Household data, seasonally adjusted. <https://www.bls.gov/news.release/empsit.a.htm>

CPS: Civilian Population and Labor Force

- Civilian noninstitutional population. All people residing in the 50 states and the District of Columbia who are not confined to institutions such as nursing homes and prisons, and who are not on active duty in the U.S. Armed Forces. Included are citizens of foreign countries who reside in the United States but do not live on the premises of an embassy.
- The civilian noninstitutional population ages 16 and older is the base population group used for CPS statistics.
- Civilian labor force, or labor force. All people ages 16 and older who are classified as either employed or unemployed.
- Not in the labor force. People ages 16 and older in the civilian noninstitutional population who are neither employed nor unemployed. Information is collected on their desire for work and availability to take a job at the time of the CPS interview, their job search activity in the previous year, and their reason for not looking for work in the 4-week period ending with the survey reference week.

Source: BLS Handbook of Methods - Current Population Survey.

CPS: The Employed and Unemployed

Employed people. All those who, during the survey reference week (generally, the week that includes the 12th day of the month), met any of the criteria:

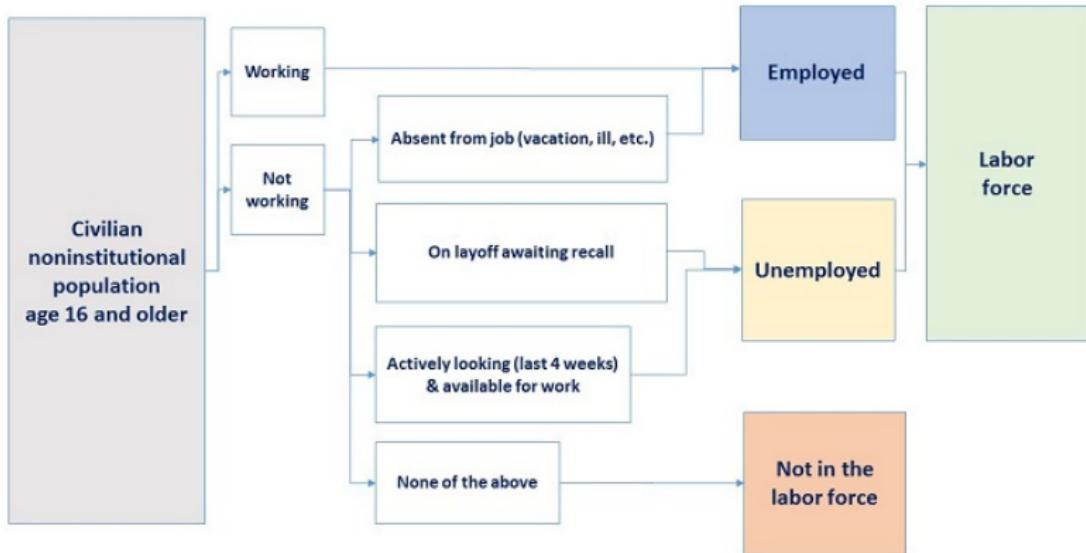
- did any work at all as paid employees (a minimum of 1 hour)
- worked in their own business or profession, or on their own farm
- worked 15 or more hours as unpaid workers in a family member's business
- were temporarily absent from their jobs or businesses because of illness, vacation, bad weather, a labor dispute, or another reason (whether or not they were paid for the time off or were seeking other jobs)

Unemployed people. All people who meet all of the following criteria:

- were not employed during the survey reference week
- were available for work (except for temporary illness)
- had made a specific, active effort to find employment sometime during the 4-week period ending with the survey reference week

Source: BLS Handbook of Methods - Current Population Survey.

Labor Force, Employment and Unemployment



<https://www.bls.gov/cps/definitions.htm>

CPS: Not in the Labor Force

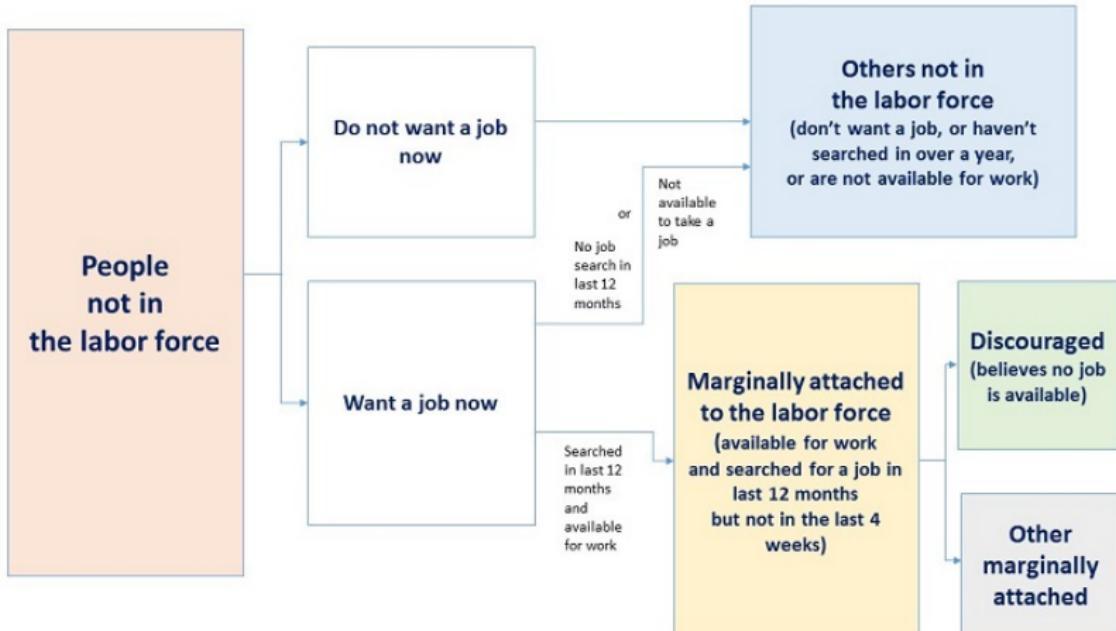
On the basis of the information on those not in the labor force, a subgroup known as those marginally attached to the labor force is identified: People who want and are available for a job, and who have looked for work sometime in the previous 12 months (or since the end of their last job if they held one within the previous 12 months). They are not counted as unemployed because they had not actively searched for work in the previous 4 weeks.

The marginally attached are further divided into two subgroups:

- ① Discouraged workers. The discouraged are not currently looking for work for reasons such as the following. They believe that there are no jobs available to them, or none for which they would qualify. They could not find work in the past.
- ② Other people marginally attached to the labor force. This group includes all marginally attached people who are not classified as discouraged. They are people who want a job but had not looked for work in the past 4 weeks for reasons such as family responsibilities, unavailability of childcare, transportation problems, or illness.

Source: BLS Handbook of Methods - Current Population Survey.

Not in the Labor Force and the Marginally Attached



<https://www.bls.gov/cps/definitions.htm>

Alternative Measures of Labor Underutilization

- In addition to the official unemployment rate, the Bureau of Labor Statistics publishes a range of alternative measures of labor underutilization. Together, these are known as the U-1 through U-6 rates.
- The U-1 and U-2 rates are defined more narrowly than the official unemployment rate. They include only selected subsets of those officially classified as unemployed.
- U-3 is the official unemployment rate (total unemployed over labor force).
- The U-4, U-5, and U-6 rates are more expansive than the official unemployment rate, incorporating additional groups of people not included in the official rate. Each rate—U-4, U-5, and U-6—is successively broader in scope, with U-6 being the broadest measure of labor underutilization.
- All six rates, U-1 through U-6, are produced solely from data collected in the Current Population Survey.

<https://www.bls.gov/cps/definitions.htm>

Measures of Labor Underutilization

Measure and Description	Rate
U-1 Persons unemployed 15 weeks or longer, as a percent of the civilian labor force (includes only very long-term unemployed)	1.3%
U-2 Job losers and persons who have completed temporary jobs, as a percent of the civilian labor force (excludes job leavers)	1.9
U-3 Total unemployed, as a percent of the civilian labor force (official unemployment rate)	4.0
U-4 Total unemployed, plus discouraged workers, as a percent of the civilian labor force plus discouraged workers	4.3
U-5 Total unemployed plus all marginally attached workers, as a percent of the civilian labor force plus all marginally attached workers	4.9
U-6 Total unemployed, 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	8.1

Note: The Bureau of Labor Statistics defines terms as follows.

- *Marginally attached workers* are persons who currently are neither working nor looking for work but indicate that they want and are available for a job and have looked for work sometime in the recent past.
- *Discouraged workers* are marginally attached workers who have given a job-market-related reason for not currently looking for a job.
- *Persons employed part-time for economic reasons* are those who want and are available for full-time work but have had to settle for a part-time schedule.

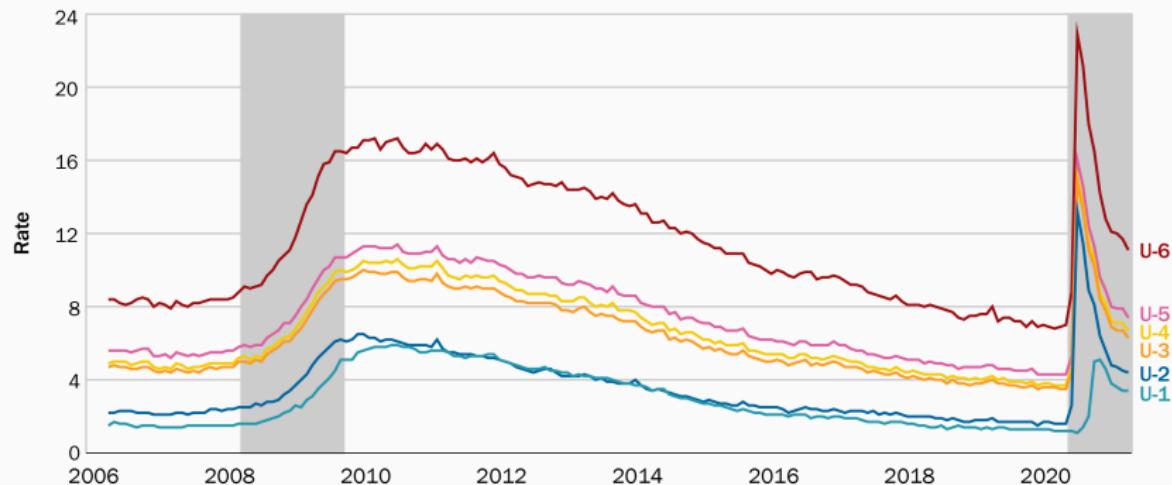
TABLE 2

Measures of Labor Underutilization

The table shows various measures of joblessness for the U.S. economy. The data are for January 2019.

Source: U.S. Department of Labor.

Alternative Measures of Labor Market Slack, U-1-U-6



Source: Bureau of Labor Statistics Table A-15, accessed via Haver Analytics.

Note: Data are monthly.



U-1: $(\text{Unemployed } 15 \text{ or more weeks} \div \text{Labor Force}) \times 100$

U-2: $(\text{Unemployed job losers and people who completed temporary jobs} \div \text{Labor Force}) \times 100$

U-4: $((\text{Total Unemployed} + \text{Discouraged Workers}) \div (\text{Labor Force} + \text{Discouraged Workers})) \times 100$

U-5: $((\text{Total Unemployed} + \text{Marginally Attached}) \div (\text{Labor Force} + \text{Marginally Attached})) \times 100$

U-6: $((\text{Total Unemployed} + \text{Marginally Attached to the Labor Force} + \text{People at Work Part Time for Economic Reasons}) \div (\text{Labor Force} + \text{Marginally Attached to the Labor Force})) \times 100$

<https://www.brookings.edu/blog/up-front/2021/02/18/what-does-the-unemployment-rate-measure/>

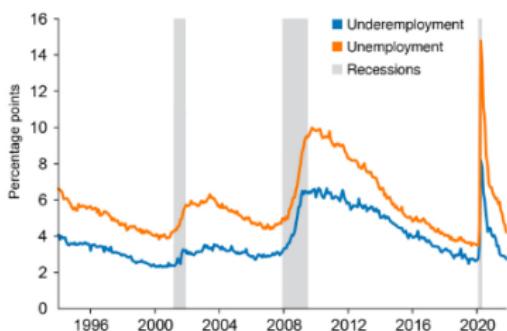
The Underemployed in the U.S.

- Every month, the Bureau of Labor Statistics surveys about 60,000 households in the United States, asking many questions about employment and labor force status. Using responses to this survey, the BLS estimates both the number of people who are employed and who are underemployed.
- People working part-time who would prefer to be working full-time comprise a large group in the United States. These people may be referred to as working "part time for economic reasons," "involuntarily part-time," or "underemployed."
- Since 1994, there has been an average of 5.4 million underemployed workers in the United States, rising to more than 9 million during the 2008-2009 Great Recession and to more than 10 million in the 2020 recession caused by the COVID-19 pandemic.
- The persistent increase in underemployment following the Great Recession indicates that the unemployment rate alone may have understated the amount of labor market slack in the economy (Janet Yellen, 2014). However, the large drop in underemployment following the COVID-19 recession suggests that the labor market may be tighter than indicated by the unemployment rate alone.

Source: Avila and Lunsford (2022) Underemployment Following the Great Recession and the COVID-19 Recession. Economic Commentary, Federal Reserve Bank of Cleveland. (w)

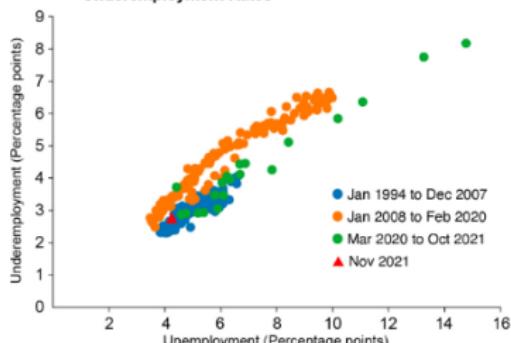
Underemployment Rate and Unemployment Rate

Figure 1: Monthly Underemployment and Unemployment Rates



Source: US Bureau of Labor Statistics, Employment Level: Part-Time for Economic Reasons [LNS12032194], Employment Level [CE16OV], Unemployment Level [UNEMPLOY], and Civilian Labor Force Level [CLF16OV], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org> and authors' calculations

Figure 2: Scatter Plot of Monthly Unemployment and Underemployment Rates



Source: US Bureau of Labor Statistics, Employment Level: Part-Time for Economic Reasons [LNS12032194], Employment Level [CE16OV], Unemployment Level [UNEMPLOY], and Civilian Labor Force Level [CLF16OV], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org> and authors' calculations

The underemployment rate, the percent of employed people who are working part-time but prefer to be working full-time, moves closely with the unemployment rate, rising during recessions and falling during expansions. Following the Great Recession, the underemployment rate had stayed persistently elevated when compared to the unemployment rate, that is, until the COVID-19 recession. Since then, it has been consistent with its pre-2008 levels. Source: Avila and Lunsford (2022) (w)

Unemployment Rate Measurement Bias

- The measured rate of unemployment can be an underestimate or an overestimate of this "true" unemployment rate. Underestimation occurs because part-time workers are counted as employed, even if they really want full-time work. Overestimation occurs when people not wanting work pretend to want work in order to collect unemployment benefits, when the unemployed are not willing to take a job unless it pays an unrealistically high wage rate, or when those measured as unemployed are actually "employed" in the underground economy.
- The biggest problem with measuring unemployment is the discouraged (encouraged) worker phenomenon.
- People without work who have looked long and hard for a job and have become convinced that there is no job out there for them. They become discouraged in their search for a job and stop looking. Suddenly these discouraged workers are no longer counted as being in the labor force, and the measured unemployment rate falls. Many would claim that this results in an underestimate of the "true" rate of unemployment.
- Whenever the economy recovers from a recession, these discouraged workers notice that times are better and that acquaintances have obtained jobs, which encourages them once again to look for work. These encouraged workers suddenly become counted as unemployed, causing a paradoxical rise in unemployment just when income and employment are increasing.

Source: Kennedy and Pray (2017) CH4, pp. 55-56, Macroeconomic Essentials, 4e, MIT

Labor Market Measurements in Pandemics

- While the BLS survey questions are the same as always, the nature of the COVID-19 economy means that people's behavior, and hence the data, may not follow the same pattern that we usually see when the economy is turning down. Misclassification ("employed but not at work for other reasons") depressed the unemployment rate relative to a case where the workers are categorized as unemployed.
- Early in the pandemic, with stay-at-home orders in place and nonessential businesses closed in many communities, people who left employment were much less likely to seek work than would typically be the case.
- In addition, schools closed in many places, which meant that many people who lost their jobs had child-care responsibilities that prevented them from seeking or accepting a new job.
- As a result, relative to a typical downturn, we expect the headline unemployment rate to be relatively lower than in a typical recession and the percent of those out of the labor force to be relatively higher.

Source: Stephanie Aaronson (2021), What does the unemployment rate measure? (w)

Measuring the Tightness of the Late-COVID Labor Market

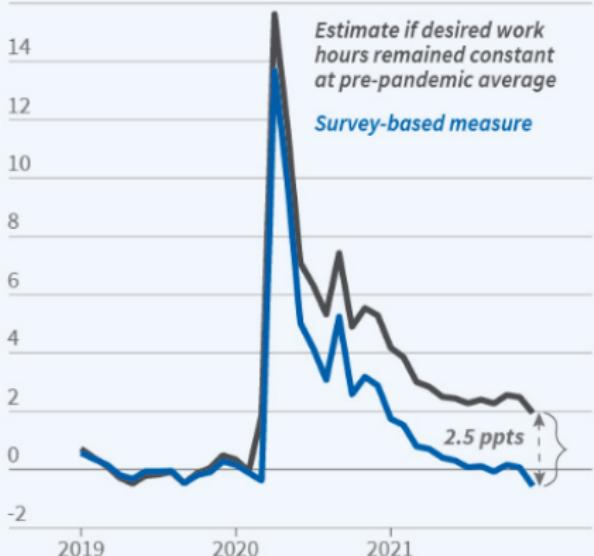
- Since the outset of the Covid-19 pandemic, labor market indicators that traditionally move together have been sending different signals about the degree of slack in the U.S. labor market.
- While some indicators on the supply-side, such as the prime-age employment-to-population ratio, suggest that there is still some slack in the labor market, other indicators on the demand-side, such as the job vacancy rate and the quits rate, imply that the labor market is already very tight.
- In light of these divergent signals, Domash and Summers (2022) compares alternative labor market indicators as predictors of wage inflation.
- The authors highlight the fact that vacancy and quit rates currently experienced in the United States correspond to a degree of labor market tightness previously associated with sub-2 percent unemployment rates.
- Finally, the predicted firm-side unemployment has dominant explanatory power with respect to subsequent inflation. The results, along with a cursory analysis of labor force participation information, suggest that labor market tightness is likely to contribute significantly to inflationary pressure for some time to come.

Source: Alex Domash and Lawrence H. Summers (2022) How Tight Are US Labor Markets? NBER Working Paper 29739 (w) <https://www.nber.org/papers/w29739>

Labor Market Tightness during COVID-19

Aggregate hours gap (AHG)

Percentage point difference from 2019 average
+16



Firm-side unemployment rate

Rate
6%

5

4.6%

3

2

1

0

4.2%

3.9%

1.6%

1.6%

1.5%

Oct 2021

Nov 2021

Dec 2021

- Reported
- Predicted, based on
vacancy and quit rates

Aggregate hours gap is the difference between individuals' desired and actual working hours, regardless of labor force status.
Source: Researchers' calculations from NBER Working Paper 29784 (left panel) and NBER Working Paper 29739 (right panel)

<https://www.nber.org/digest-202204/measuring-tightness-late-covid-labor-market>

Has the Willingness to Work Fallen during the Pandemic?

- Special survey questions in the Job Search Supplement of the Survey of Consumer Expectations allow us to elicit information about individuals' desired work hours for the 2013-2021 period. Using these questions, along with workers' actual labor market participation, we construct a labor market underutilization measure, the Aggregate Hours Gap (AHG), following Faberman et al. (2020).
- The Aggregate Hours Gap (AHG) captures changes in labor market underutilization for the full population along both the extensive and intensive margins using data on desired work hours as a measure of their potential labor supply.
- The authors find that the sharp increase in the AHG during the Covid pandemic essentially disappeared by the end of 2021. A sharp decline in desired work hours is also documented during the pandemic that persists through the end of 2021 and is roughly double the drop in the labor force participation rate. Ignoring the decline in desired hours overstates the degree of underutilization by 2.5 percentage points (12.5%).
- The findings suggest that, as of 2021Q4, the labor market is tighter than suggested by the unemployment rate and the adverse labor supply effect of the pandemic is more pronounced than implied by the labor force participation rate. These discrepancies underscore the importance of taking into account the intensive margin for both labor market underutilization and potential labor supply.

Source: Faberman et. al. (2022) Has the Willingness to Work Fallen during the Covid Pandemic? NBER Working Paper 29784
<https://www.nber.org/papers/w29784>

Labor Market Variables

Unemployment rate (U3) – ⓘ

Broad unemployment rate (U6) – ⓘ

Unemployment forecast (Blue Chip) – ⓘ

Job flows from U to E – ⓘ

Quits Rate – ⓘ

Employment-population ratio – ⓘ

Working part time for economic reasons – ⓘ

Job leavers – ⓘ

Job availability index (Conference Board) – ⓘ

Unemployed 27 or more weeks – ⓘ

Percent of firms with positions not able to fill right now (NFIB) – ⓘ

Job losers – ⓘ

Hires rate – ⓘ

Percent of firms planning to increase employment (NFIB) – ⓘ

Average hourly earnings – ⓘ

Initial claims – ⓘ

Private nonfarm payroll employment – ⓘ

Aggregate weekly hours – ⓘ

Temporary help employment – ⓘ

Expected job availability (U of Michigan) – ⓘ

Labor force participation rate – ⓘ

Manufacturing employment index (ISM) – ⓘ

Announced job cuts (Challenger-Gray-Christmas) – ⓘ

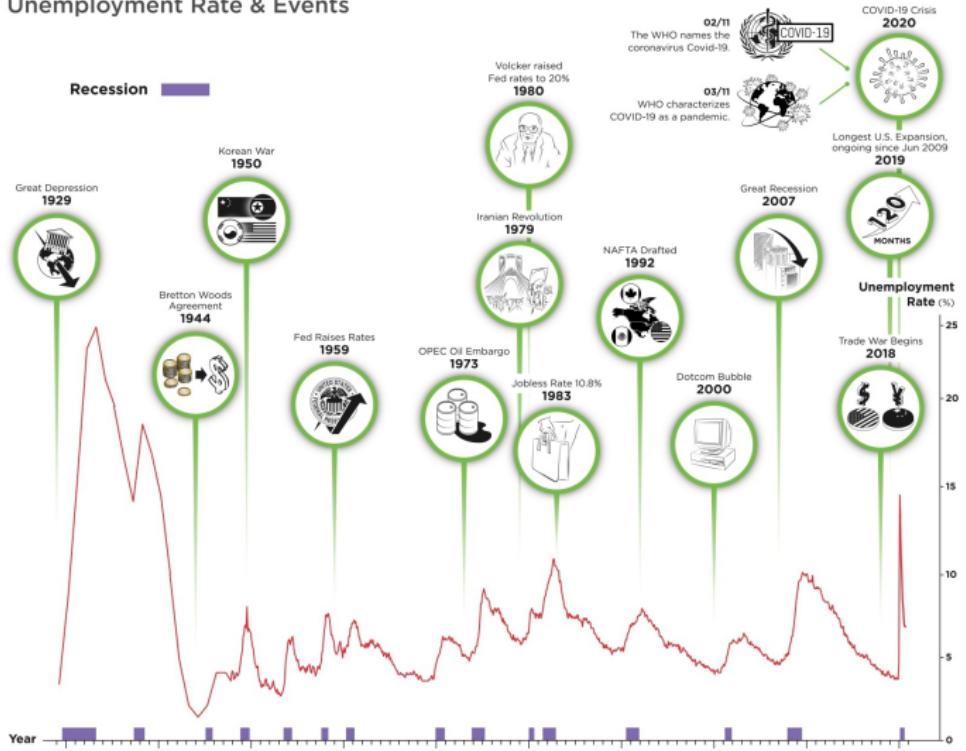
Expected job availability (Conference Board) – ⓘ

Outline

- ① Introduction
- ② Data and Statistics
- ③ Measurement Methods
- ④ Causes of Unemployment

Timeline of the U.S. Unemployment History

Unemployment Rate & Events



Articles & Sources:
<https://howmuch.net/articles/timeline-united-states-unemployment-history>
U.S. Bureau of Labor Statistics - <https://www.bls.gov/>

History of U.S. Unemployment

- The U.S. government began tracking unemployment officially in the 1950s, but estimates of previous unemployment rates are not difficult to ascertain.
- The Great Depression of the early 1930s had an unemployment rate of 23.6 percent—the highest in modern times. The country's lowest rate—1.2 percent—came in 1944 when millions of men were in uniform and the wartime (World War II) economy was in overdrive. The lowest post-war rate was 2.9 percent in 1953.
- Since 1948, the end of the postwar period, the United States has experienced 11 recessions. Over that span, the federal government has employed various methods to push back unemployment caused by these cyclical contractions of the economy.
- The unemployment rate reached a peak of 10.8 percent in the early 1980s, falling to 5.3 percent by the end of President Ronald Reagan's second term. It rose to 7.5 percent in 1992, under George H.W. Bush, and hovered between 4 and 6 percent during the Bill Clinton and George W. Bush presidencies. The Great Recession pushed it above 10 percent for the second time in decades. It stayed above 8 percent until September 2012.

<https://www.debt.org/jobs/unemployment/united-states/>

What Causes Long-Term Unemployment? Part I

To fully understand unemployment, we must consider the causes of recorded long-term unemployment. Empirical evidence shows that two causes are welfare payments and unemployment insurance. These government assistance programs contribute to long-term unemployment in two ways.

- ① Government assistance increases the measure of unemployment by prompting people who are not working to claim that they are looking for work even when they are not. The work-registration requirement for welfare recipients, for example, compels people who otherwise would not be considered part of the labor force to register as if they were a part of it. This requirement effectively increases the measure of unemployed in the labor force even though these people are better described as nonemployed (not actively looking for work).
- ② Government assistance programs contribute to long-term unemployment by providing an incentive, and the means, not to work. Each unemployed person has a "reservation wage"—the minimum wage he or she insists on getting before accepting a job. Unemployment insurance and other social assistance programs increase that reservation wage, causing an unemployed person to remain unemployed longer. Unemployment insurance also extends the time a person stays off the job.

Another cause of long-term unemployment is unionization. High union wages that exceed the competitive market rate are likely to cause job losses in the unionized sector of the economy. Also, those who lose high-wage union jobs are often reluctant to accept alternative low-wage employment.

<https://www.econlib.org/library/Enc/Unemployment.html>

What Causes Long-Term Unemployment? Part II

- There is no question that some long-term unemployment is caused by government intervention and unions that interfere with the supply of labor. It is, however, a great mistake to attribute most unemployment to government interventions or to any lack of desire to work on the part of the unemployed.
- Unemployment was a serious economic problem in the late nineteenth and early twentieth centuries prior to the welfare state and widespread unionization. Unemployment then, as now, was closely linked to general macroeconomic conditions.
- Since the Great Depression, most economists have agreed that cyclical fluctuations in unemployment are caused by changes in the demand for labor, not by changes in workers' desires to work, and that unemployment in recessions is involuntary.
- Even leaving aside cyclical fluctuations, a large part of unemployment is due to demand factors rather than supply. The process of adjustment following adverse shocks is long and painful, and recent research suggests that even temporary declines in demand can have permanent effects on unemployment, as workers who lose jobs are unable to sell their labor due to a loss of skills or for other reasons.
- Therefore, most economists who study unemployment support an active government role in training and retraining workers and in maintaining stable demand for labor.

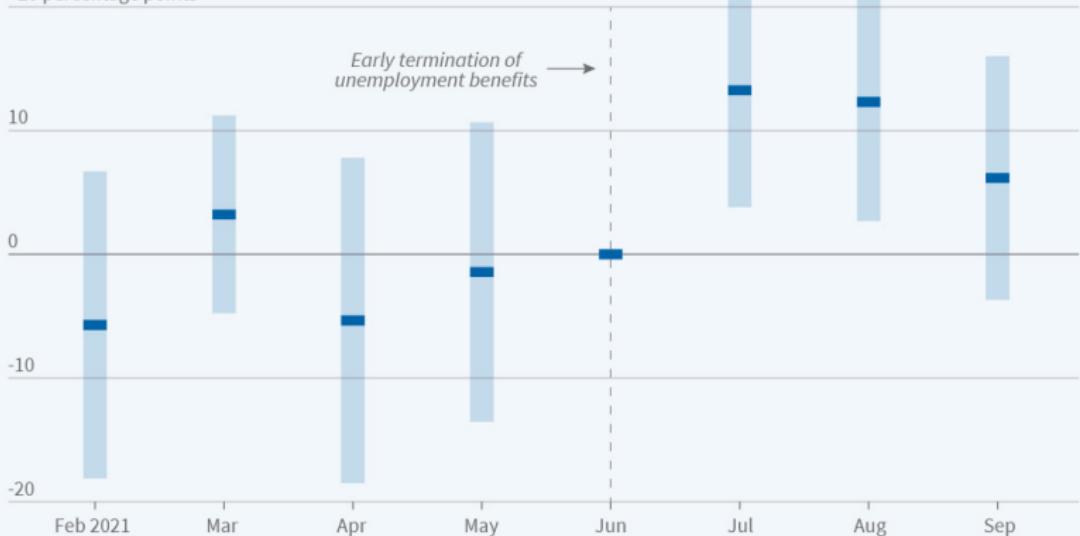
Did Pandemic Unemployment Benefits Reduce Employment?

- The generosity of Unemployment Insurance (UI) benefits was expanded during the pandemic (FPUC), along with the groups of workers eligible for benefits (PUA). These two programs were set to expire in September 2021, but 18 states opted out of both in June 2021. Using Current Population Survey data, the authors present difference-in-difference and event study estimates that the flow of unemployed workers into employment increased by around two-thirds following early termination.
- The authors construct a counterfactual scenario that implies the national unemployment rate in each of July and August would have been around 0.3% lower than they were, and the employment-population ratio would have been around 0.1-0.2% higher than it was, had all states ended FPUC and PUA in June. Expanded eligibility and generosity of UI may have both slowed transitions from unemployment to employment.
- The authors also present some suggestive evidence that households with relatively high confidence in their ability to meet expenses may have been less sensitive to the termination of expanded benefits. Finally, we present evidence that early termination reduced the share of households that had no difficulty meeting expenses by five percent. The welfare implications of the early termination of FPUC and PUA are therefore ambiguous.

Source: Harry J. Holzer, R. Glenn Hubbard and Michael R. Strain (2022) Did Pandemic Unemployment Benefits Reduce Employment? Evidence from Early State-Level Expirations in June 2021, NBER Working Paper 29575
<https://www.nber.org/papers/w29575>

Termination of COVID-19 UI Benefits and Return to Work

Difference in the transition rate from unemployment to employment, states that ended federally expanded UI benefits in June 2021 vs those that did not +20 percentage points



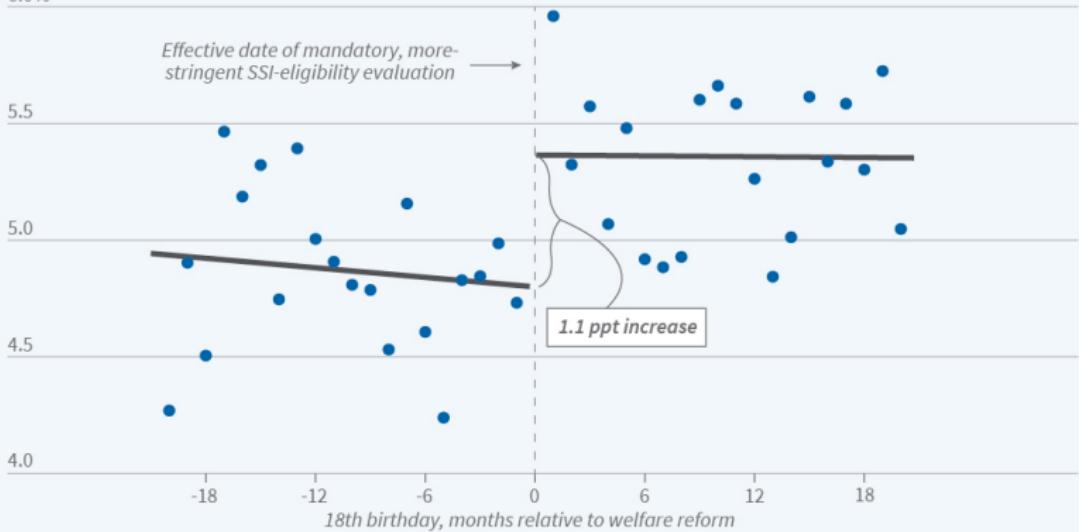
Shaded bars represent 95% confidence intervals. The data plotted above cover people ages 25-54.
Source: Researchers' calculations using data from the Current Population Survey

<https://www.nber.org/digest-202202/covid-19-unemployment-benefits-slowed-return-work>

Loss of Cash Benefits at 18 and Later Incarceration

Annual likelihood of being incarcerated between ages 18 to 38

6.0%



Source: Researchers' calculations using data from the Social Security Administration and Criminal Justice Administrative Records System

<https://www.nber.org/digest-202204/impacts-disability-benefits-employment-and-crime>

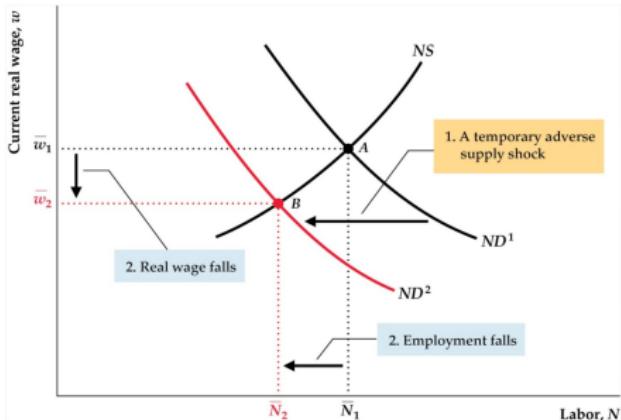
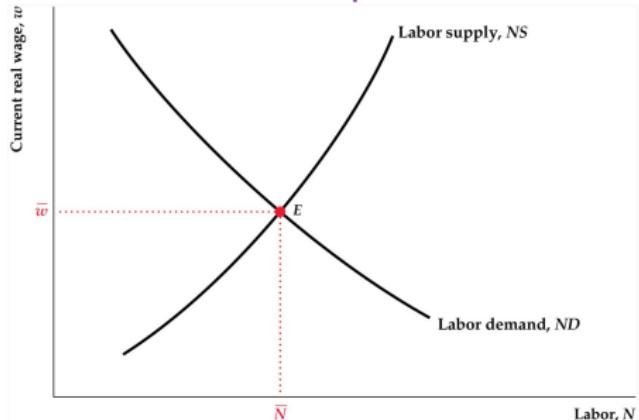
Labor Demand and Supply Model

The demand and supply model can be applied to labor market analysis.

- The labor market is where the equilibrium real wage and quantity of labor are simultaneously determined.
- The demand for labor is determined by firms that want to maximize profits, subject to the constraint of production cost. Labor demand curve: A curve that depicts the relationship between the quantity of labor demanded and the wage. Factors increase marginal product of labor (supply shock and capital stock) will shift the demand curve outward.
- The supply of labor is determined by workers who want to maximize utility, subject to the budget constraint of income (income-leisure trade-off). Labor supply curve: A curve that depicts the relationship between the quantity of labor supplied and the wage.
- Equilibrium in a competitive labor market occurs at the intersection of the labor demand and labor supply curves. At the equilibrium wage, the quantity of labor demanded is equal to the quantity of labor supplied.

Source: Acemoglu, Laibson, and List (2022) CH9, Macroeconomics, 3e, Pearson

Labor Market Equilibrium



Labor demand curve shows relationship between the real wage rate and the quantity of labor demanded. It's the same as the marginal product of labor in a competitive market. So the labor demand curve is downward sloping; the higher the real wage, the less labor firms want to hire. Labor supply of individuals depends on labor-leisure choice. Increase in the current real wage should raise quantity of labor supplied. Labor supply curve slopes upward because higher wage encourages people to work more. An adverse productivity shock lowers marginal product of labor and shift the labor supply curve to the left.

Source: Abel, Bernanke, and Croushore (2020), CH3, Macroeconomics, 10e, Pearson

Labor Demand and Supply Factors

The labor demand curve shifts when a change in any of the following occurs:

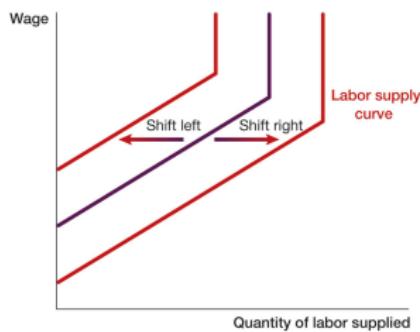
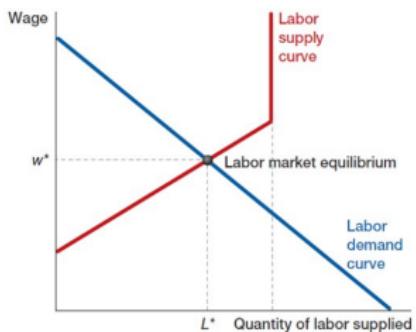
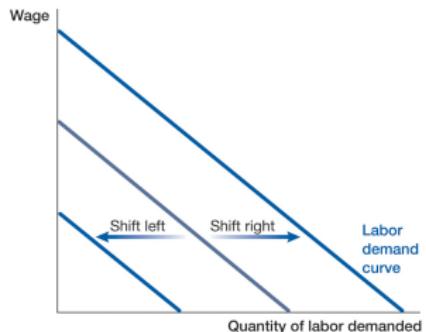
- ① Demand for the good or service (+)
- ② Output price of the good or service (+)
- ③ Input prices of labor, capital, and land
- ④ Technological progress and productivity (+)

The labor supply curve shifts when a change in any of the following occurs:

- ① Income and wealth (-)
- ② Social norms/tastes (+)
- ③ Expected future real wage (-)
- ④ Population and demographics (+)
- ⑤ Opportunity cost of working outside the home (-)

Source: Acemoglu, Laibson, and List (2022) CH9, Macroeconomics, 3e, Pearson.

Labor Demand, Supply, and Equilibrium



Source: Acemoglu, Laibson, and List (2022) CH9, Macroeconomics, 3e, Pearson.

Theoretical Decomposition of Unemployment

- In a competitive labor market (frictionless market), wages will always adjust quickly to clear the market. Shortages and surpluses don't persist for a long period of time. As a result, anyone who wants to work is working, i.e., there is no unemployment in the frictionless labor market.
- The frictionless market fails to explain why there are several million people who are considered unemployed.
- Classical and Keynesian economists look beyond the frictionless market to explain unemployment patterns over time and its long spell during and after economic downturns. In the textbooks, several categories of unemployment are classified as explanations for unemployment.
 - ① Cyclical unemployment
 - ② Voluntary unemployment
 - ③ Frictional unemployment
 - ④ Structural unemployment
- The natural rate of unemployment is the sum of frictional and structural.

Source: Acemoglu, Laibson, and List (2022) CH9, Macroeconomics, 3e, Pearson.

Unemployment in the Classical Model

- In the classical model there is no unemployment; people who are not working are voluntarily not in the labor force. In reality measured unemployment is never zero, and it is the problem of unemployment in recessions that concerns policymakers the most.
- Some classical economists suggest that differences among workers and among jobs explain not only why the unemployment rate is always greater than zero, but also why unemployment rises so sharply in recessions.
- Classical economists have a more sophisticated version of the model to account for unemployment: 1) Workers and jobs have different requirements, so there is a matching problem; 2) It takes time to match workers to jobs, so there is always some unemployment; 3) Unemployment rises in recessions because productivity shocks cause increased mismatches between workers and jobs; 4) A shock that increases mismatching raises frictional unemployment and may also cause structural unemployment if the types of skills needed by employers change; 5) The shock causes the natural rate of unemployment to rise; there's still no cyclical unemployment in the classical model.

Source: Abel, Bernanke, and Croushore (2020), CH10, Macroeconomics, 10e, Pearson

Job Search and Frictional Unemployment

- Frictional unemployment refers to unemployment that arises as workers search for suitable jobs and firms search for suitable workers.
- Workers have imperfect information about available jobs and need to engage in a time-consuming process of job search.
- Firms do not have complete information on the skills, experiences, and preferences of job seekers.
- Job seekers do not have complete information on the specifics of each job opening. Job seekers can be looking for a first job, changing jobs, or transitioning to the new job.
- As a result, workers must undertake a time-consuming search (i.e., sending resumes, interviewing, negotiating) to find the best possible job.
- Frictional unemployment occurs even when wages are flexible and there are enough jobs in the economy. Empirical evidence shows that two causes are welfare payments and unemployment insurance.

Source: Acemoglu, Laibson, and List (2022) CH9, Macroeconomics, 3e, Pearson

Job Mismatch and Frictional Unemployment: Evidence

- Productivity shocks and other macroeconomic disturbances that cause recessions often increase the degree of mismatch between workers and firms.
- Following an adverse shock, workers in industries and regions where labor demand has fallen will be induced to search elsewhere, which raise the frictional component of unemployment. Other workers will find that their skills don't match the requirement of industries with growing labor demand; these workers become chronically unemployed, raising structural unemployment.
- Davis and Haltiwanger (1992) studied the process of job creation and destruction of 160,000 U.S. manufacturing plants and showed that, during the 1973-1986 period, about 11% of all existing jobs disappeared, on average, each year, reflecting plant closings and cutbacks. During a typical year, about 81% of these lost jobs were replaced by newly created jobs elsewhere in the manufacturing sector. Overall, employment in manufacturing shrank over time.
- The authors also showed that much of this change occurred within the same industries, rather than a general decline in some industries and growth in others. Reallocation of workers within industries seems to be as important as movement between industries as a source of unemployment.

Source: Abel, Bernanke, and Croushore (2020), CH10, Macroeconomics, 10e, Pearson

Unemployment in the Keynesian Model

- In the classical model, unemployment is due to mismatches between workers and firms. Keynesians are skeptical, believing that recessions lead to substantial cyclical employment. Keynesians view equilibrium as a situation in which there is no upward or downward pressure on wages.
- Keynesians argue, if higher unemployment during downturns reflected increased mismatch, recessions should be periods of more active search by workers for jobs and by firms for new employees. However, surveys suggest that unemployed workers spend relatively little time searching (many are simply waiting, hoping to be recalled to their old jobs), and help-wanted advertising and vacancy postings by firms fall rather than rise during recessions.
- Rather than times of increased worker-job mismatch, Keynesians believe that recessions are periods of generally low demand for both output and workers throughout the economy. Without relying solely on job mismatch, Keynesians argue for rejecting the classical assumption of market-clearing wage adjustment.
- To derive a model in which unemployment persists, Keynesian theory posits that the real wage is slow to adjust to equilibrate the labor market.

Source: Abel, Bernanke, and Croushore (2020), CH11, Macroeconomics, 10e, Pearson
<https://www.aeaweb.org/research/recall-unemployment-us-labor-market-recession>

Wage Rigidity and Structural Unemployment

- In a competitive equilibrium in the labor market, any worker who wants to work will (eventually) find work. If it happens that the wage is above the market-clearing wage, the quantity of labor supplied will exceed the quantity demanded, and the wage will drop almost immediately. A frictionless labor market always clears and clears very quickly.
- Several factors may prevent the wage from falling to its market-clearing level. A situation in which some force or forces prevent the wage from adjusting to clear the labor market, so that it remains stuck at a level above or below its equilibrium level, is referred to as a situation of wage rigidity. If the wage is above its equilibrium level, the quantity of labor supplied exceeds the quantity of labor demanded, and the wage rigidity may ensure the persistence of this gap.
- Structural unemployment is the type of unemployment that arises when there is a persistent gap between the quantity of labor supplied and the quantity of labor demanded.

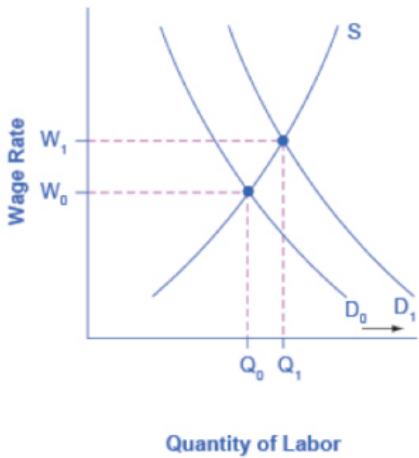
Source: Acemoglu, Laibson, and List (2022) CH9, Macroeconomics, 3e, Pearson.

Structural Unemployment

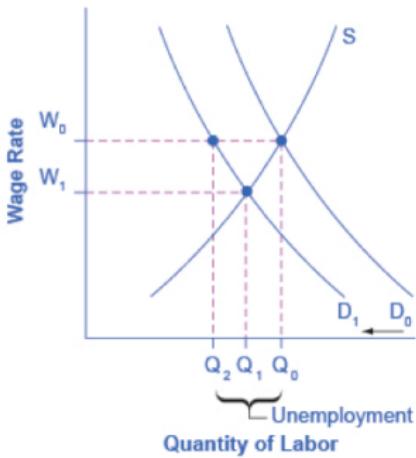
- Long spells of unemployment and chronic unemployment cannot be attributed primarily to the searching and matching process due to frictional unemployment.
- Even when the economy is not in a recession, the long-term and chronic unemployment exists. Structural unemployment occurs for two primary reasons.
- First, unskilled or low-skilled workers often are unable to obtain desirable, long-term jobs. Most directly related to the issue of structural unemployment is the fact that jobs held by low-skilled workers often don't last long. Because of inadequate education, training, discrimination, and language barriers, some unskilled workers never make the transition to long-term employment and remain chronically unemployed.
- The second source of structural unemployment is the reallocation of labor from industries that are shrinking, or regions that are depressed, to areas that are growing. When industries find that their products are no longer in demand or that they are no longer competitive, workers in these industries lose their jobs.
- Factors like unemployment benefits, anti-union legislation, technology evolution, and declining demand, reflect various characteristics of the structure of the economy. Hence, the structural unemployment.

Source: Abel, Bernanke, and Croushore (2020) CH3, Page 97, Macroeconomics, 10e, Pearson

Downward Wage Rigidity Model



(a) Rising demand for labor, wages rise



(b) Falling demand for labor, sticky wages, and unemployment

In graph (a) below, when demand for workers rises in economic expansion, wage will rise. This is what we observe in the labor market. In graph (b) below, when demand for workers declines during the recessions, since wages are sticky, there will be more quantity demanded than supplied, causing a rapid rise in unemployment.
 What causes the slow decline in unemployment during the economic expansion and recovery? Is it because demand for workers rise very slowly? Why?

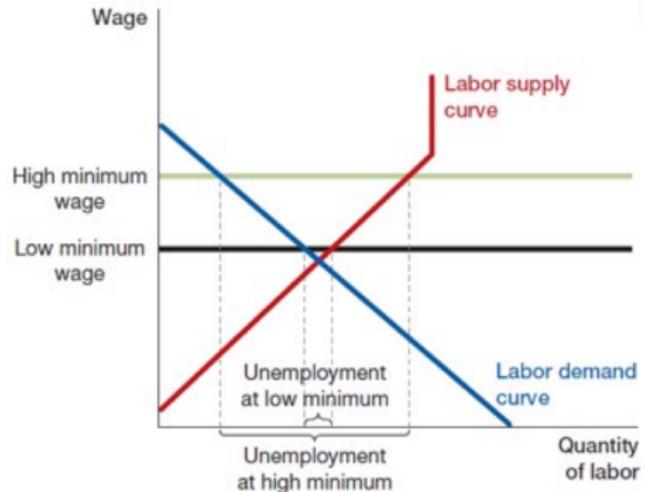
What Causes Wage Rigidity and Unemployment?

Structural unemployment arises when there is a persistent gap between the quantity of labor supplied and the quantity of labor demanded.

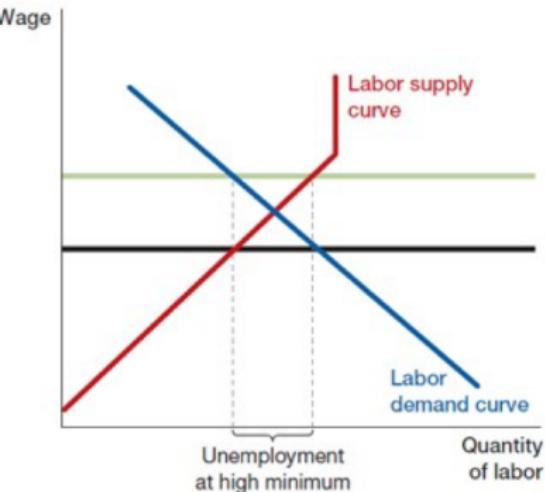
- ① Minimum Wage Laws. Federal legislation specifies a wage floor (known as a minimum wage law), below which the market wage cannot fall. States can impose different minimum wages, but they have to be at or above the federal minimum level.
- ② Labor Unions and Collective Bargaining. Labor unions are organizations that advocate better working conditions for their members, including higher wages. Typically, labor unions threaten to strike if their demands are unanswered, which can be very costly for firms.
- ③ Efficiency Wages and Unemployment. Efficiency wages are wages paid by firms that are above the wage their workers would accept.
- ④ Downward Wage Rigidity. Lowering wages may reduce workers' morale and adversely affect their productivity. Firms may not resort first to lowering wages as a solution to the problem of cutting costs.

Source: Acemoglu, Laibson, and List (2022) CH9, Macroeconomics, 3e, Pearson.

Effects of a Minimum Wage for Low-Skill Workers



(a) Labor Market for Low-Skill Workers



(b) Labor Market for the Rest of the Labor Force

In the right panel, a low minimum wage policy is not applicable to most workers whose market wage is greater than the minimum wage, whereas it causes unemployment in the labor market for low-skill workers. In the left panel, a high minimum wage policy cause more severe unemployment for the low-skill workers than before as well as for the rest of the labor market. Source: Acemoglu, Laibson, and List (2022) CH9, Macroeconomics, 3e, Pearson.

Efficiency Wages and Unemployment

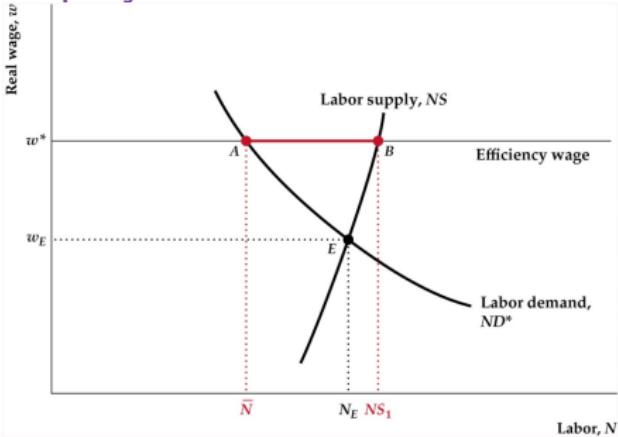
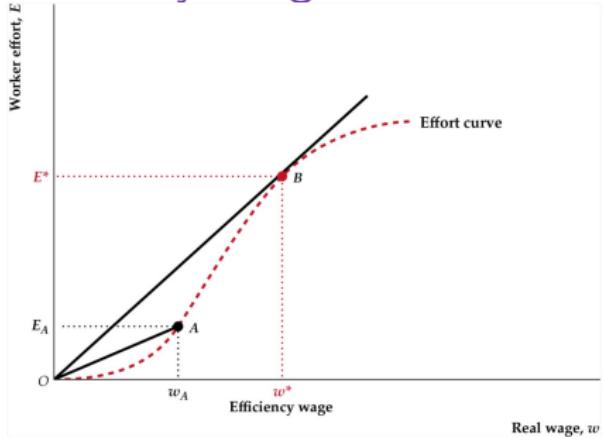
Why would a profit-maximizing firm incur the additional cost of paying a wage higher than its workers are willing to accept? The quick answer is to increase the workers' productivity, which benefits the firm by making it more profitable.

- ① Paying higher wages reduces worker turnover, which lowers firms' costs of recruiting and training new workers.
- ② Relatively highly paid workers are more concerned about losing their jobs from being unproductive. Stated differently, paying higher wages increases the opportunity cost of not working hard (known as the shirking model).
- ③ Workers may feel the need to "pay back" employers pay them high wages by working harder for them (known as the gift exchange model).
- ④ Paying higher wages improves the quality of the pool of applicants for a job, increasing the likelihood that the employer will end up with highly productive workers.

In a nutshell, the efficiency wage tells a story of both "carrots" and "sticks."

Source: Acemoglu, Laibson, and List (2022) CH9, Macroeconomics, 3e, Pearson.

Efficiency Wage Model and Unemployment



The effort curve, plotting effort against the real wage, is S-shaped: At low levels of the real wage, workers make hardly any effort; effort rises as the real wage increases; as the real wage becomes very high, effort flattens out as it reaches the maximum possible level. Given the effort curve, what determines the real wage firms will pay? To maximize profit, firms choose the real wage that gets the most effort from workers for each dollar of real wages paid. This occurs at point B , where a line from the origin is just tangent to the effort curve. The wage rate at point B is called the efficiency wage. The real wage is rigid, as long as the effort curve does not change. The labor market now determines employment and unemployment, depending on how far above the market-clearing wage is the efficiency wage.

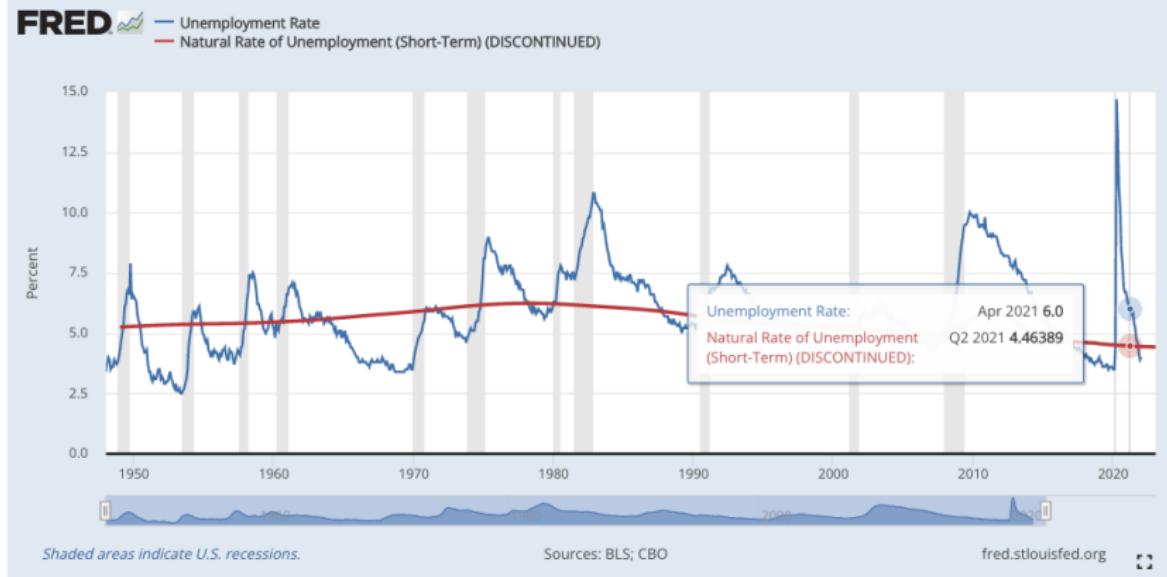
Source: Abel, Bernanke, and Croushore (2020), CH11, Macroeconomics, 10e, Pearson

The Natural Rate and Cyclical Unemployment

- The natural rate of unemployment is the rate of unemployment that prevails when output and employment are at their full-employment levels. As output fluctuates around its full-employment level, the unemployment rate fluctuates around the natural rate.
- The natural rate of unemployment is equal to the amount of frictional unemployment plus structural unemployment. It is unobservable and must be derived from a well-specified macroeconomic equilibrium model.
- Cyclical unemployment is the difference between the actual rate of unemployment and the natural rate of unemployment. When cyclical unemployment is negative, output and employment exceed their full-employment levels.
- The word "natural" suggests a constant of nature, one that is unaffected by institutions and policy. The terminology has become standard, but this is a really bad choice of words. The equilibrium wage and unemployment derived from the model based on wage-setting and price-setting behaviors are anything but natural (Blanchard, 2021).

Source: Abel, Bernanke, and Croushore (2020) CH3, Page 97, Macroeconomics, 10e, Pearson

The Natural Rate of Unemployment



The natural rate of unemployment (NAIRU) is the rate of unemployment arising from all sources except fluctuations in aggregate demand. Estimates of potential GDP are based on the long-term natural rate. CBO did not make explicit adjustments to the short-term natural rate for structural factors before the recent downturn. The short-term natural rate incorporates structural factors that are temporarily boosting the natural rate beginning in 2008. The short-term natural rate is used to gauge the amount of current and projected slack in labor markets, which is a key input into CBO's projections of inflation.

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