LEGISLATIVE REPORT

2023 Labor Market and Economic Report

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2023 LABOR MARKET AND ECONOMIC REPORT

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Executive summary

The Employment Security Department (Employment Security) is required to submit an annual labor market and economic report to the legislature and the governor under RCW 50.38.040. This report begins with a summary of the U.S. economy and labor market, then focuses on key measures of Washington's economy and labor market, including:

- Seasonal, structural and cyclical industry employment.
- Unemployment.
- Employment projections.
- Income and wages.

Key insights

- In 2023, Washington's labor market continued its recovery from the COVID-19 recession. The labor market remained strong with continued employment growth and historically low unemployment.
- 2023 began in a period of high inflation that cooled by the end of the year. As inflation slowed in 2023, wages caught up.
- Most major sectors surpassed pre-pandemic employment levels by the end of 2022 and continued to expand in 2023. The rate of expansion has been diminishing as the recovery matures, and momentum of employment growth slowed for most sectors. The state Economic and Revenue Forecast Council is projecting a general slowdown in economic and employment growth in 2024 and 2025.
- Employment upswings are not always a sign of increased demand. They may be due to seasonal or cyclical fluctuations. In Washington, 16 industries had high seasonality – a characteristic of a time in which data regularly and predictably changes; seven industries had a high structural or trend component; and 30 industries had a high cyclical component.
- In September 2023, 54,073 people received unemployment benefits in Washington. From October 2022 through September 2023, Employment Security paid more than $1.48 billion in unemployment benefits compared to $1.19 billion in the prior 12-month period.

- There were 3,930 unemployment benefit exhaustions in September 2023. Exhaustions peaked at 60,158 in September 2020.
- In August 2023, the state unemployment rate was 3.6% and the national rate was 3.8%. In September 2023, the Seattle-Bellevue-Everett Metropolitan Division unemployment rate was 3.2%. Washington's unemployment rate reached a high of 16.6% in 2020.
- The 10-year average annual growth rate for total nonfarm employment for 2021 to 2031 is projected to be 1.72%. This is an increase from the 1.70% rate predicted last year for 2020 to 2030.
- For industry projections, the largest increases by share of employment are projected for the leisure and hospitality sector, and professional business services. The largest decreases are projected for the retail trade sector and manufacturing sector.
- For occupational projections, the largest employment increases are projected for food preparation and serving-related occupations, and computer and mathematical occupations. The largest decreases are projected for production occupations, and office and administrative support occupations.
- Both the average and median hourly wage decreased in 2022, reflecting inflation. Over the past several years (excluding 2022), the average hourly wage has consistently risen faster than the median, indicating that wage inequality increased.
- Wage inequities continued in 2022. The average monthly wage for African American workers was 77.3% of the average for all workers, lower than in 1992 (83.6%). Earnings for Indigenous workers were 69.7%, Pacific Islanders earned 72.7%, and Latino/Hispanic workers earned 72.4%. Women earned 79.7% of the all-job average, and 66.9% of the average for men.
- The number of jobs paying below $20 per hour plummeted in 2020 due primarily to the loss of lower-wage jobs during the pandemic. In 2021 and 2022, the number of jobs below $20 per hour continued to decrease. Jobs paying more than $56 per hour increased from 2019 to 2020 as high wage jobs — many in the tech sector — expanded. The number of high wage jobs continued to grow in 2021 and 2022.

Chapter 1: U.S. labor market

Summary

- Most industries continued to add jobs in a tight labor market.
- High demand for workers paired with a constrained available workforce translated into low unemployment rates, rising wages and elevated quit rates.
- By the end of 2023, job openings and labor turnover measures showed signs of cooling.

Labor market in 2023 was robust

Nonfarm employment is the other major factor in assessing the business cycle. Employment growth has been strong following the swift and deep drop observed in early 2020. Continuing the trend of the past couple of years, 2023 was characterized by strong employment growth. On a seasonally adjusted basis, every month in 2023 included the addition of at least 150,000 jobs at a national scale. As shown in *Figure 1-4*, the recovery and subsequent growth of jobs coming out of the COVID recession has been strong and swift relative to the past couple of recessions.

Figure 1-4. Nonfarm employment, percentage change during recessions, seasonally adjusted

United States, 2001 recession through COVID recession, February 2020 to February 2023. Source: U.S. Bureau of Labor Statistics, Current Employment Statistics

The impacts of and recovery from the COVID-19 recession have varied substantially by industry. *Figure 1-5* illustrates the percent change in employment by major industry sector from February 2020 to October 2023. Some key observations include:

Transportation and warehousing industries expanded employment by the greatest extent from the start of the pandemic to the most recent reference period. Employers in this sector added an estimated 901,000 jobs (15.6%) since February 2020. Within the sector, truck transportation dipped by less than 6% in the pandemic and bounced back relatively quickly, reaching pre-pandemic employment levels by mid-2021. Employment in trucking peaked in early 2023 and has been dropping throughout the year. Despite recent employment declines, employment in trucking remains 4% above pre-pandemic levels. Air transportation dropped by nearly 15% during the pandemic but has experienced strong job growth in the post-pandemic recovery. Employment in air transportation is 7% above pre-pandemic levels. Water transportation took longer to recover, reaching pre-pandemic employment levels in mid-2023.

Professional, scientific and technical services industries expanded employment by 1.25 million (12.9%). Professional, scientific and technical services is a diverse sector of industries that provides specialized services to businesses in other industries. Most industries included in this category recovered relatively quickly, reinforcing broad and widespread strength in the

economy. Notably, computer system design and related services increased by 285,000 or 12.7% compared to February 2020.

Employment in the construction sector increased by 425,000 or 5.6% from February 2020 to October 2023. The total number of jobs lost in the pandemic recovered within two years of the drop — a relatively quick recovery. Residential construction is 98,000 jobs or 11.7% above pre-pandemic employment and nonresidential employment expanded by 31,000 or 3.7%. A strong housing market buoyed construction employment, although employment growth slowed substantially in the past year and a half.

Healthcare and social assistance jobs recovered to pre-pandemic levels by October 2022. As of October 2023, employment expanded by 951,000 or 4.6%. Within the sector, outpatient services including doctor's offices expanded employment by 674,000 or 8.6% and hospitals expanded employment by 160,000 or 3.1%, with a somewhat delayed recovery. Nursing and residential care facilities have yet to recover nationally. Employment is down 177,000 or 5.2% compared to February 2020.

Information includes a number of industries related to providing and publishing information, communication services and media. At a sector level, employment losses were recovered by September 2021. Employment in October 2023 was up 119,000 or 4.1% relative to February 2020. Many high-tech jobs can be found in the information sector, in the software publishing industry. Software publishers collectively lost only 3,000 jobs in the pandemic and fully recovered by summer 2020. As of October 2023, this small but mighty industry added 134,000 compared to February 2020 — an increase of nearly 27%.

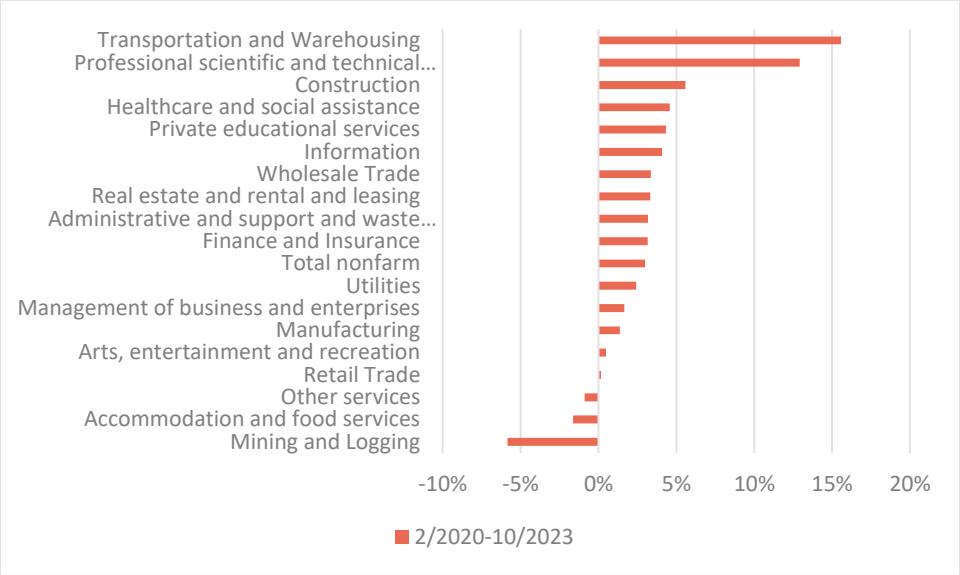
Mining and logging — a small sector — has been decreasing in size over the years. The pandemic continued the long-term trend. Employment recovered somewhat but remains 40,000 or 5.8% below pre-pandemic levels.

Accommodation and food services was hardest hit early in the pandemic. Employment dropped by nearly 7 million jobs at a national scale — more than 52%. Despite an impressive recovery, the sector remains 235,000 or 1.6% below pre-pandemic levels as of October 2023. Within this estimate, the collection of industries that make up arts, entertainment and recreation is up 0.5% compared to February 2020. Food services and drinking places is up 0.1%, and accommodation is still 10.4% below pre-pandemic levels.

Other services — a collection of industries that includes hairdressers and barbers, dry cleaners, auto mechanics, membership clubs and more — has struggled to recover, and remains 53,000 jobs (0.9%) below the pre-pandemic level observed in February 2020.

Figure 1-5. Nonfarm employment, percent change by industry, seasonally adjusted

United States, February 2020 to October 2023. Source: U.S. Bureau of Labor Statistics, Current Employment Statistics



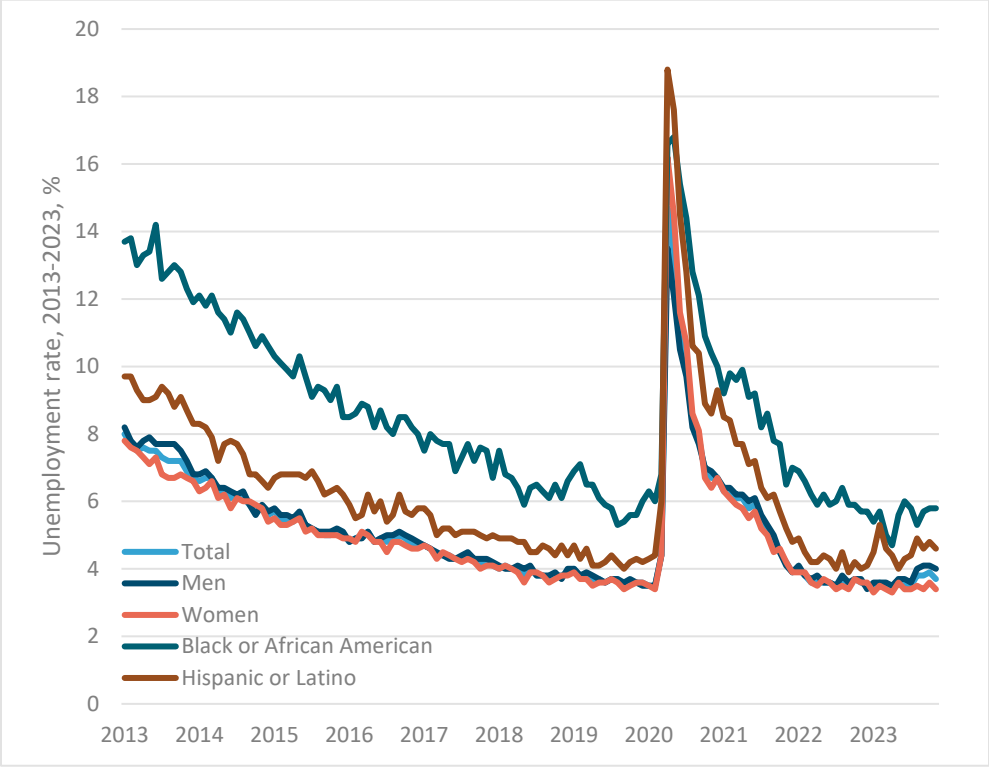
Labor force and unemployment rate

The unemployment rate is the portion of the civilian labor force that does not have a job and is actively seeking employment. A low unemployment rate suggests that job seekers are successfully connecting with employers relative to other points in time. The unemployment rate in 2023 was low, indicating a tight labor market.

In 2023, the total unemployment rate dipped to 3.4% — the lowest rate observed since 1969, when the unemployment rate hit 3.4% for a 9-month stretch. The unemployment rate has been under 4.0% since early 2022, after reaching record high rates during the pandemic in early 2020. The total national unemployment rate spiked to 14.7% in April 2020. As of November 2023, the unemployment rate was 3.9%.

Figure 1-6. Unemployment rate, seasonally adjusted

United States, January 2013 to November 2023. Total, African American or Black, Hispanic or Latino (ages 16 and older), Men, and Women (ages 20 and older). Source: U.S. Bureau of Labor Statistics/Current Population Survey



During the pandemic, the unemployment rate for women (16.2%) exceeded that for men (13.5%). As the unemployment rate plummeted in 2023, women were slightly better off by this metric. The unemployment rate for women was below that of men every month in 2023. In November 2023, the unemployment rate for women was 3.4% and 4.0% for men.

The tight post-pandemic labor market was favorable for communities that have not traditionally experienced low unemployment rates. Although the unemployment rate for Black or African American workers remained above the total unemployment rate, it dropped to the lowest rate on record in April 2023 (4.7%), and the gap has been closing over time. Similarly, Hispanic or Latino workers' unemployment rates dropped to the lowest rates on record in the post-pandemic period.

The labor force participation rate is important for explaining the low unemployment rate. It describes the portion of the adult civilian noninstitutionalized population that either has a job

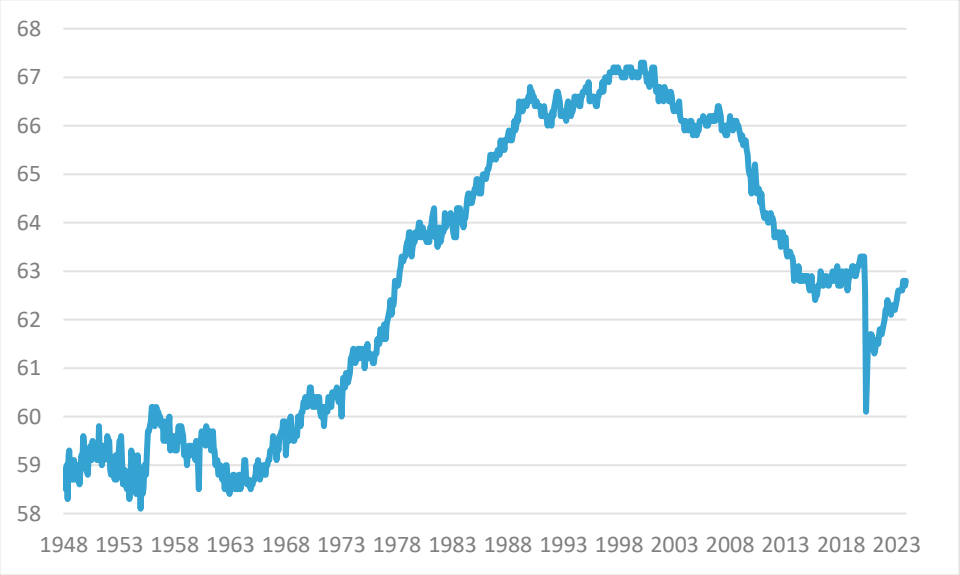
or is actively looking for work. It also forms the denominator of the unemployment rate. Changes in the labor force participation rate have an influence on the unemployment rate.

The total labor force participation rate has shifted for different populations over time. Men's labor force participation rate has declined gradually over time from a peak participation rate in the 1940s and 1950s in the mid to high 80% range to the high 60% range in the post-pandemic period. Meanwhile, women's labor force participation expanded from the low 30% range in the late 1940s and early 1950s to the high 50% range in 2023. Total labor force participation expanded from the 1960s to the 1990s as a result of higher labor force participation by women and following the career trajectory of the large baby-boom generation. Labor force participation has been declining over the past 20 years as baby boomers retire in large numbers, reducing the portion of active workers in the adult population. The Great Recession (2007-2009) and COVID-19 pandemic also left their mark.

In the aftermath of the acute COVID-19 recession the labor force participation rate largely bounced back as job opportunities recovered, but it has not recovered completely. In addition to a large number of retirements, constraints such as availability of childcare and eldercare, health concerns, health setbacks related to COVID-19 and COVID-19 deaths are all contributing factors in this population-driven metric.

Figure 1-7. Labor force participation rate, seasonally adjusted

United States, January 1948 to November 2023. Source: U.S. Bureau of Labor Statistics/Current Population Survey



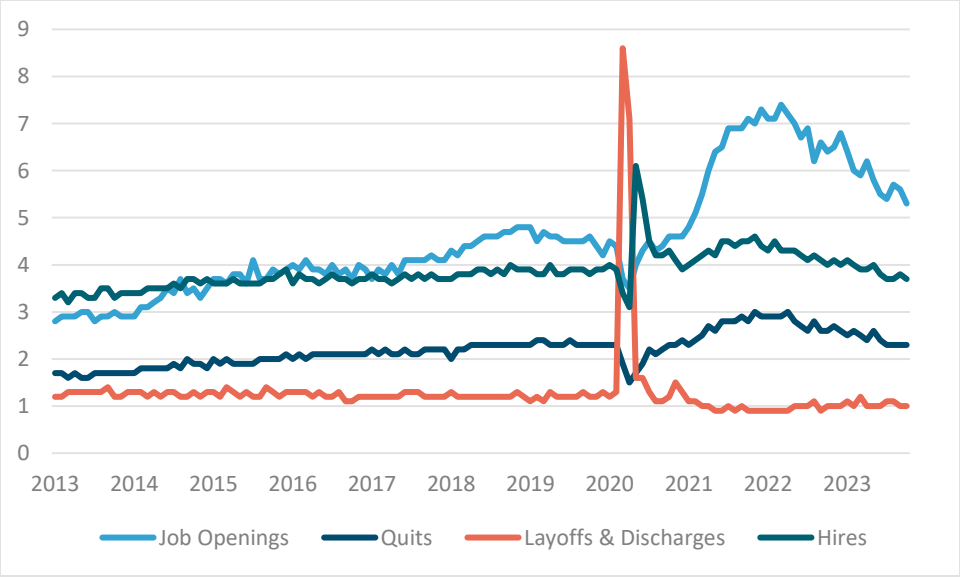
Jobs turn over in tight labor markets

Job turnover is another indicator of a tight labor market. Early in the pandemic and coinciding with record high unemployment rates, layoff activity spiked. Many layoffs were short-term or temporary and were immediately followed by a spike in hiring activity. As the economy opened up throughout 2021 and 2022, demand for workers surged and the number of job openings rapidly increased. Hires and voluntary quits also increased as workers took advantage of the volume of job openings. During this time, layoff activity remained low. Then in 2023, these metrics shifted. Job openings shifted down (but remain historically high), and the number of hires and quits went down as workers settled into their new jobs. Meanwhile, layoff activity began to increase, but remained below any rate that could be considered elevated.

Job turnover data suggests we are moving toward more familiar rates of change, even if we are not there yet. For employers, this suggests greater stability, and for workers it suggests a gradually diminishing environment of opportunity.

Figure 1-8. Job opening, hire, quit and layoff rates, adjusted for seasonal patterns

United States, January 2013 to October 2023. Source: U.S. Bureau of Labor Statistics/Job Openings and Labor Turnover Survey (JOLTS)



Wages caught up with inflation in 2023

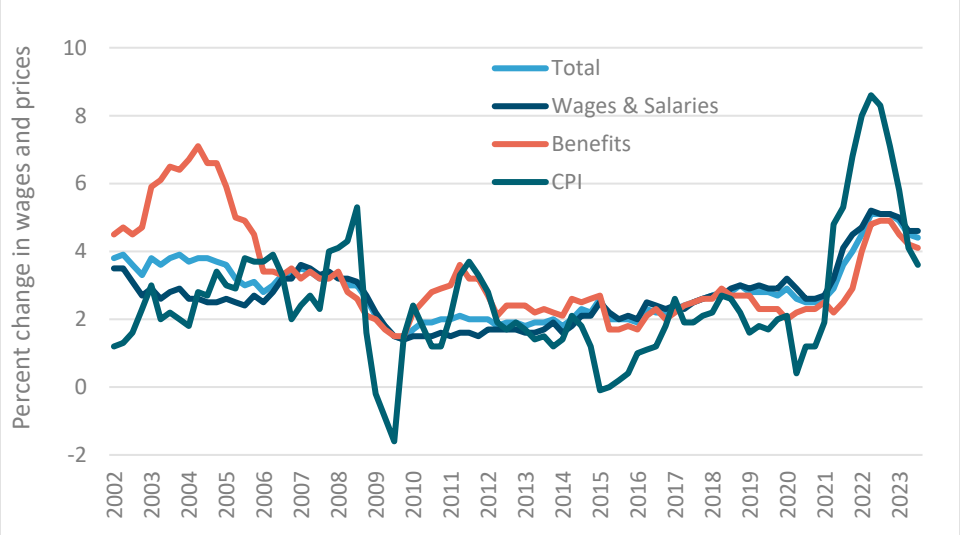
Nominal wage increases in 2021 and 2022 did not keep up with inflation, however as inflation slowed in 2023, real wages and benefits caught up.

Inflation rapidly increased in 2021 and 2022 as a result of many factors including but not limited to increasing consumer demand amplified by supply chain challenges, increasing prices in the housing market, rising energy prices, monetary policy and increasing corporate profits. By 2023, several of the factors contributing to rapid inflation settled.

While inflation was taking hold, nominal wages increased with a slight lag. Year-over-year, inflation increased before and to a greater extent than nominal wages and benefits. As inflationary pressures cooled in 2023, the nominal wage and benefit increases put into motion in 2022 translated into real wage growth when compared to slowing consumer price increases.

Figure 1-9. Over the year increase in total compensation, wage and salaries, and benefits for all civilian workers, not adjusted for inflation, and the rate of inflation, as measured by the Consumer Price Index.

United States, 2001 Q1 though 2023 Q3. Source: U.S. Bureau of Labor Statistics/Employment Compensation Index and Consumer Price Index



Income and poverty

U.S. Census Bureau reports on income and poverty are available for 2022. After increasing during the pandemic, median household income in 2022 decreased from $75,358 in 2021 to $74,755 when adjusted for inflation. The change was statistically significant. Over the year, median earnings for workers decreased from $43,517 to $42,542.

The portion of people with incomes below the official poverty threshold in 2022 was 12.6% — a slight, yet statistically significant drop from 12.8% in 2021. The portion of children under age 18 living in poverty dropped from 16.9% to 16.3% over the year. The percentage of the population living beneath the poverty level continues to reflect and reinforce existing disparities. The poverty rate for women was 13.8% compared to 11.4% for men. Nearly 10% of white people reported living below the poverty threshold compared to:

- 21.3% of Black or African American residents.
- 21.7% of American Indian and Alaska Natives.
- 10.1% of Asians.
- 17.6% of Native Hawaiian and Pacific Islanders.
- 17.9% of people reporting some other race.
- 14.8% multi-racial people.
- 16.8% of people identifying as having Hispanic or Latino origin.

Employment plays a role but does not guarantee adequate income. About 6.7% of people in poverty were active participants in the labor force. Within that estimate, 5.7% of employed people were below the official poverty threshold and 30.4% of unemployed people who were actively seeking employment reported incomes below the official poverty level.

Short-term economic outlook

The Washington Economic and Revenue Forecast Council (Council) publishes quarterly forecasts for the U.S. and Washington. Here are some highlights from the November 2023 forecast:

- The forecast calls for three quarters of growth below 1.0% (seasonally adjusted annual rate) starting in the fourth quarter of 2023. For 2025 through 2027, the Council predicts growth rates of 1.7%, 2.1% and 1.9%.
- Consumer spending and growth is expected to slow as a result of real income declines, monetary policy intended to combat further inflation, and the loss of pandemic-related fiscal stimulus measures that temporarily boosted household income.
- Employment growth is expected to slow over the next couple of years as the economy cools. The forecast calls for 0.6% growth in 2024 and no net change in employment in 2025 before resuming modest growth in 2026 and 2027.
- The national unemployment rate for 2023 is expected to be set at 3.55% and increase slightly to 3.99% in 2024 and 4.36% in 2025.

Chapter 2: Washington's economy and labor market

Summary

In 2023, Washington's labor market continued to recover from the COVID-19 recession. The statewide unemployment rate reached the lowest rates on record going back to 1990. Hiring was strong, layoff rates were low, and quit rates remained elevated as workers took advantage of abundant job opportunities.

The labor force participation rate in Washington is higher than the nation. The rate is below pre-pandemic levels but increased in 2023. Below the surface, labor force participation rates vary by demographic characteristics.

Most major sectors surpassed their pre-pandemic employment levels by the end of 2022 and continued to expand in 2023. The rate of expansion has been diminishing as the recovery matures, and momentum of employment growth slowed for most sectors. As of November 2023, only two sectors (manufacturing and other services) remained below pre-pandemic employment levels, however a handful of sectors (information, construction, professional and business services financial activities and transportation, warehousing and utilities) saw declining employment levels over the year.

Unemployment hits historic lows

Washington's unemployment rate reached a record high of 16.6% in April 2020, then dropped throughout 2021 and 2022, reaching 3.9% in summer 2022. In the latter half of 2022 the unemployment rate rose slightly to 4.6% in October. The unemployment rate then dropped again in 2023. In 2023, Washington's unemployment rate reached a historic low of 3.6% in July and remained there for three months before ticking up to 3.8% in October and 4.0% (preliminary) in November. Despite these increases, the 3-4% unemployment rate throughout 2022 and 2023 indicates a sustained tight labor market.

Washington's labor force is still recovering

The unemployment rate is the portion of workers in the labor force who are not employed and are actively seeking employment. To understand the unemployment rate, it is important to understand the labor force. The civilian labor force or labor force, "includes all people age 16 and older who are classified as either employed or unemployed. Conceptually, the labor force level is the number of people who are either working or actively looking for work," according to the U.S. Bureau of Labor Statistics (BLS).

In November 2023, the preliminary estimated size of the civilian labor force was 4,057,865; just over 1% above the size of the labor force in November 2022. Washington's labor force contracted during the pandemic, dipping below 3,880,000 in early 2021. Compared to January 2021 (the lowest labor force estimate during this economic cycle), the labor force expanded by 4.7%. Meanwhile, according to the Washington State Office of Financial Management, Washington's total population (2020 to 2023) grew by about 3.2%[1].

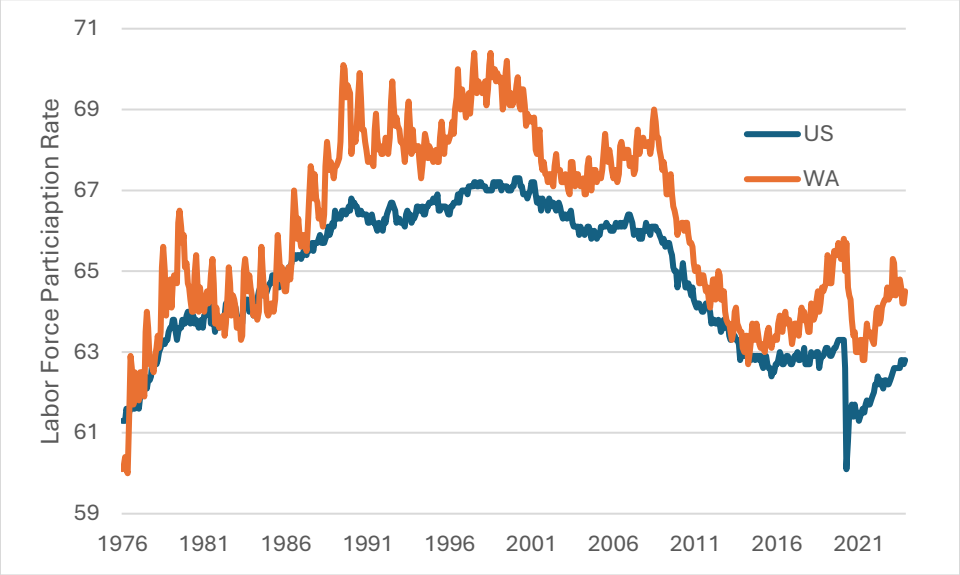
Another way to look at the dynamics between population and labor force is through a proportional lens. The labor force participation rate refers to the portion of adults 16 and older who are actively participating in the labor force — either employed or seeking employment. Labor force participation rates in Washington have typically been higher than in the United States and usually mirror the national trend.

In Washington and the United States, labor force participation rates climbed throughout the 1970s and 1980s, reaching their peak in the late 1990s/early 2000s. Changing demographics explain the story at a macro level. Two major population-level dynamics were at play in the buildup from the 1970s to the early 2000s: Women's labor force participation increased substantially over this time and the baby-boom generation entered prime working age. A rapidly growing post-WW2 economy and the large generation with purchasing power also generated demand that fueled the need for a large labor pool.

[1] Estimates of April 1 population by age, sex, race and Hispanic origin, ofm.gov

Figure 2-1. Labor force participation rate

United States and Washington, 1976-2023. Source: U.S. Bureau of Labor Statistics



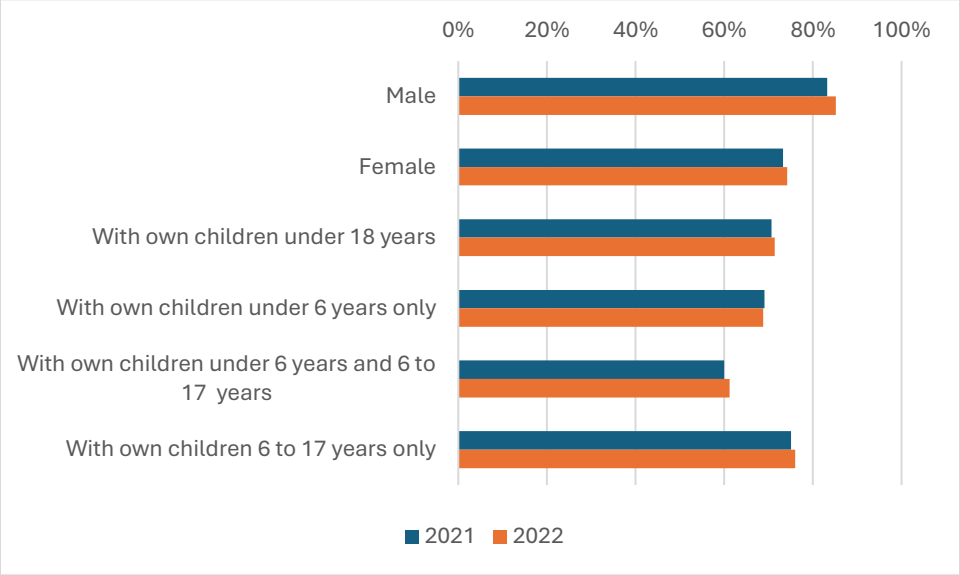
Labor force participation rates can vary substantially by community and demographic characteristics. The U.S. Census Bureau estimates labor force participation rates with a demographic component through the American Community Survey. Unlike national level statistics that can track demographic labor force participation rates with a monthly cadence, data at the state and local levels are only available in one-year average snapshots, generated by the U.S. Census Bureau. The following graphs detail Washington labor force participation rates by sex, race and ethnicity and age in 2021 and 2022. This section provides a summary of the employed and the unemployed within the adult non-institutionalized population. Chapter 4 discusses the portion of each demographic group detailed in this section that is unemployed.

Labor force participation by sex

- Labor force participation tends to be higher among men than among women. According to the U.S. Census Bureau, male labor force participation in 2022 (85.2%) was higher than female labor force participation (74.2%).
- Labor force participation increased for men and women from 2021 to 2022, with the one-year change for men statistically significant when accounting for margins of error.
- Female labor force participation is influenced by the presence of children in the home.

Figure 2-2. Labor force participation rate by sex and presence of children at home

Washington, 2021, 2022. Source: U.S. Census Bureau, American Community Survey



Labor force participation by race and ethnicity

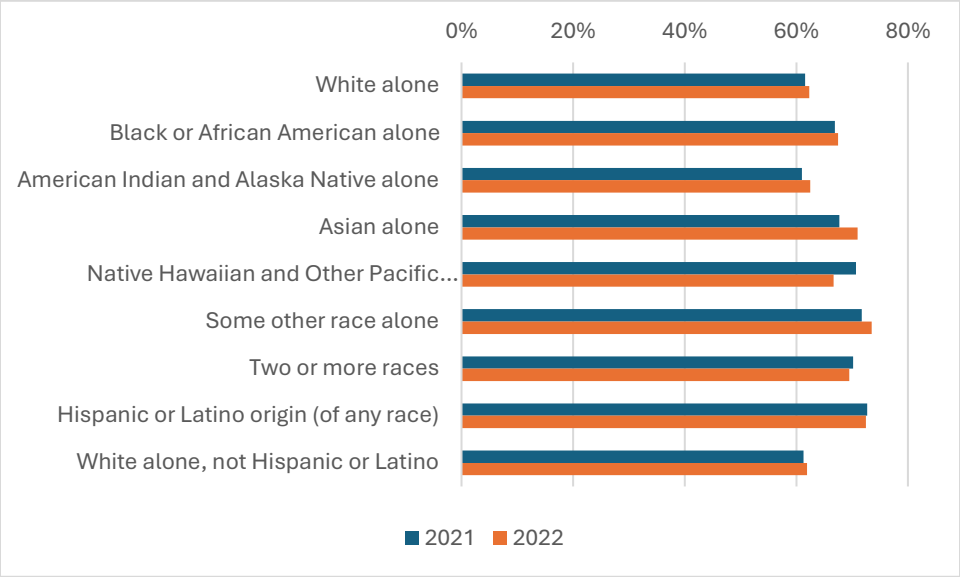
When broken out by racial and ethnic identity, differences in labor force participation emerged. Census-defined race and ethnic categories are broad and do not take into account some important differences that could be influential in terms of access to the labor market.

- Labor force participation for people who are white increased from 61.6% to 62.3% from 2021 to 2022, a statistically significant increase over the year.
- Labor force participation for people who are Black or African American increased from 66.9% to 67.5% in 2022. Black labor force participation in 2022 was statistically significantly higher than white labor force participation.
- American Indian and Alaska Native participation was 62.5% in 2022.
- The estimated one-year increase in labor force participation for Asian workers was a statistically significant jump from 67.7% to 71.0%.
- Native Hawaiian and Other Pacific Islander labor force participation was 66.7%, statistically higher than white labor force participation. Participation dropped by the year, but the drop was not statistically significant.
- Washington residents of Hispanic or Latino ancestry reported a 72.5% labor force participation rate.

- The highest labor force participation rates by race or ethnicity were Asian, Hispanic or Latino, and some other race.
- The lowest labor force participation rates were attributable to white and American Indian or Alaska Native populations.

Figure 2-3. Labor force participation rate by race and ethnicity

Washington, 2021, 2022. Source: U.S. Census Bureau, American Community Survey



Labor force participation by age cohort

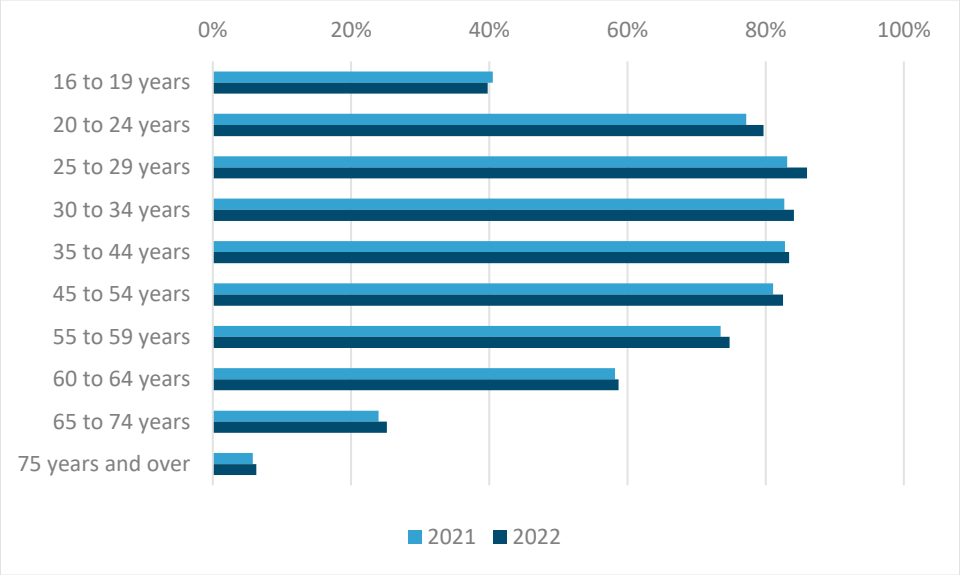
People are more or less likely to participate in the labor force at different ages. Generally speaking, labor force participation is lowest in the teen years and diminishes after workers reach their 60s.

- Labor force participation rates among teens aged 16-19 tend to be relatively low, as youth are more likely to have conflicting activities such as school and extracurricular activities. They are also likely to be dependents in multi-generational households. In 2022, the labor force participation rate for 16- to 19-year-olds was 39.8%.
- Estimated labor force participation rates for all cohorts over age 19 increased from 2021 to 2022. The one-year increases for workers aged 20-24 and 25-29 were statistically significant.

- Adults aged 30 to 54 consistently participate in the labor force at high rates; usually exceeding 80%.

Figure 2-4. Labor force participation rate by age

Washington, 2021, 2022. Source: U.S. Census Bureau, American Community Survey



Other characteristics of the labor force

The American Community Survey details labor force participation rates by a handful of other characteristics.

- Adults with self-reported disabilities are less likely to participate in the labor force than those without disabilities. The labor force participation rate for people with disabilities was 53.2% in 2022. This is statistically significantly higher than 49.4% in 2021.
- Poverty correlates with labor force participation. Only 43% of people below the federal poverty threshold were in the labor force, compared with 84.3% of adults at or above the threshold.
- Formal education positively correlates with labor force participation. The participation rate for adults with less than high school participated in the labor force at a rate of 66.7% compared with 86.6% for those with a bachelor's degree or higher in 2022.

Washington's labor market remains tight but has been moderating throughout 2023

The BLS expanded the Job Openings and Labor Turnover Survey (JOLTS) report to include state-level summary statistics. What follows is a comparison of Washington and the U.S. on labor turnover measures.

Job openings

Job opening trends in Washington tend to closely track U.S. trends. In 2023, the number and rate of job openings dropped in Washington and the U.S., however, the falling rate of job openings in Washington over the past several months has outpaced the nation. In January 2023, the rate of job openings in the U.S. was 6.4% and the rate in Washington was 6.0%; as of October 2023, the rates of job openings for the U.S. and Washington were down to 5.3% and 4.5%, respectively. These rates are still high by historic standards but have been dropping consistently throughout the year.

Hires

Similar to the pattern of job openings, the trend of new hires in Washington tends to closely follow the national trend. The rate of new hires slowed throughout 2023 at the national and state level. The rate of new hires in Washington has fallen to a greater extent than the national rate, indicating a cooling labor market. The rate of new hires in Washington fell from 4.2% in January 2023 to 3.2% by October 2023. The rate of new hires for the nation fell from 4.1% to 3.7%, respectively.

Separations by quits and layoffs

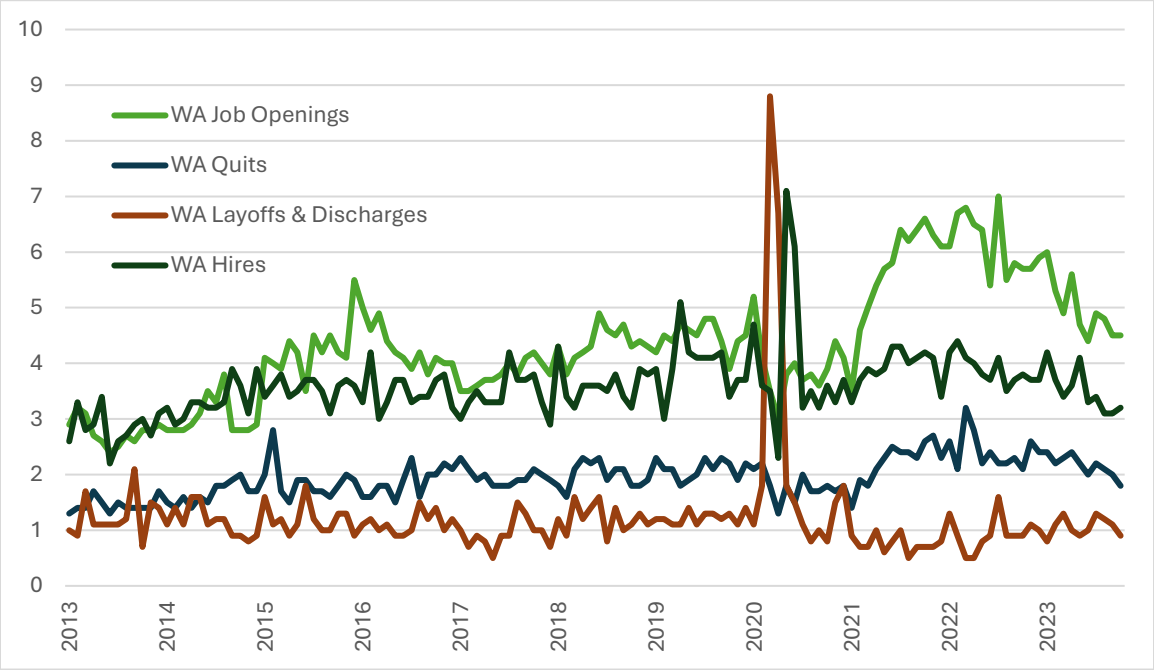
In tight labor markets, the quits rate tends to exceed the rate of layoffs and discharges. High quits rates indicate an abundance of opportunity for potential job seekers. The quits rate tends to move in concert with the pattern of job openings. The quits rate has been elevated since 2021 at national and statewide levels, as workers explored new opportunities. After reaching peak rates in 2022 (3.0% in the U.S. and 3.2% in Washington) quits trended downward through 2023. In October, the quits rate in Washington dropped to 1.8%. The comparable rate for the U.S. was 2.3%.

The rate of layoffs tends to fall during tight labor markets. Layoffs dropped in 2021 and 2022. Although layoffs have trended up slightly in 2023, the rate of layoffs remains relatively low. In October 2023, the rate of layoffs in Washington was 0.9%, compared to 1.0% for the U.S.

Together, these two measures suggest that the labor market remains historically advantageous for job seekers, but the two trends are beginning to converge, indicating that the labor market has been trending toward moderation throughout 2023.

Figure 2-5. Job opening, hire, quit and layoff rates, adjusted for seasonal patterns

Washington, January 2013 through October 2023. Source: U.S. Bureau of Labor Statistics, Job Openings and Labor Turnover Survey (JOLTS)



Washington's payroll growth slowed in 2023

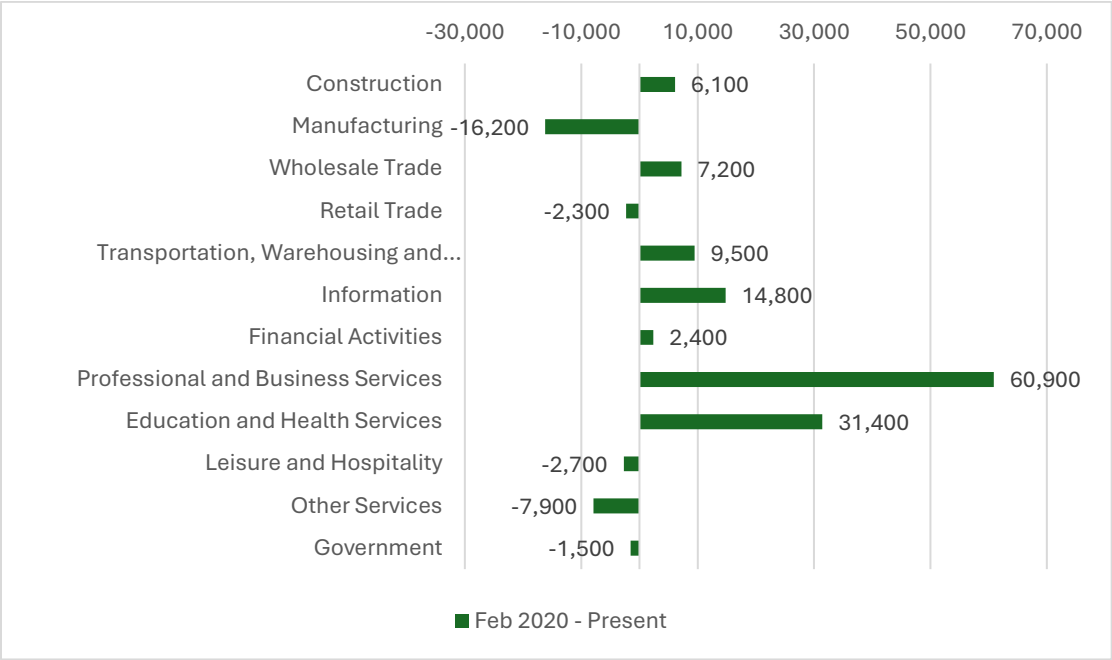
Although hiring in aggregate has slowed in recent months, the rate of growth (recovery) coming out of the pandemic was the product of a highly anomalous situation that was not sustainable.

Most industries have recovered the total number of jobs lost during the pandemic. At a sector level, professional and business services added the largest number of jobs since February

2020 followed by education and health services. Five sectors remain below pre-pandemic employment levels as of November 2023. Manufacturing and other services had the deepest losses over the course of the pandemic.

Figure 2-6. Total employment change, February 2020 to November 2023

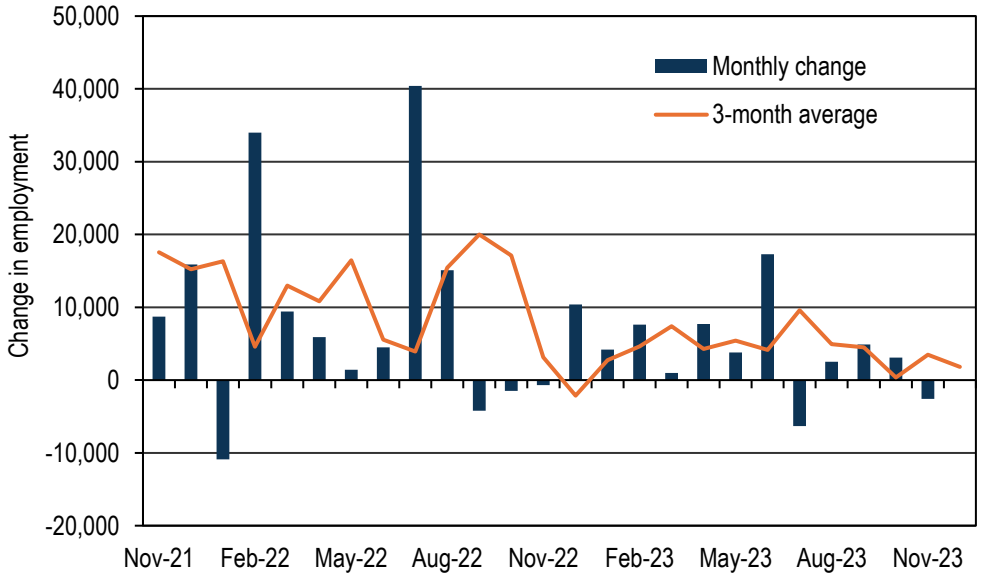
Washington. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Current Employment Statistics. Updated: December 15, 2023



Total nonfarm employment slowed toward the end of 2023. Preliminary estimates of November 2023 payroll data show an overall slowdown in monthly employment growth, with occasional dips in total estimated employment. Employment dipped in November, following three consecutive months of relatively low growth. The three-month average net employment change for the state was the addition of 1,800 jobs. The three-month rolling average in November 2022 exceeded 3,000 jobs for comparison.

Figure 2-7. Monthly employment change, seasonally adjusted

Washington, November 2021 through November 2023. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Current Employment Statistics. Updated: Dec. 15, 2023.



In 2023, hiring remained positive in most industries, although toward the end of the year, several sectors began to report 12-month employment losses. As of November 2023, preliminary not seasonally adjusted employment estimates place aggregate employment 1.1% above the level observed 12 months prior, with the addition of 40,700 jobs. At a sector level, the highest year-over-year gains were observed in government (20,100 jobs), education and health services (19,000 jobs) and leisure and hospitality (10,300 jobs). Several sectors reported over-the-year losses in November (preliminary) including construction (-7,800 jobs), information (-7,100 jobs) and professional and business services (-4,700 jobs).

Figure 2-8. Estimated employment change by industry over the year, not seasonally adjusted

Washington, November 2022 to November 2023. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Current Employment Statistics. Updated: December 15, 2023.

Total nonfarm	40,700
Government	20,100
Education and health services	19,000

Total nonfarm	40,700
Leisure and hospitality	10,300
Manufacturing	5,200
Wholesale trade	4,500
Other services	2,300
Transportation, warehousing	2,100
Mining and logging	-100
Financial activities	-200
Retail trade	-2,900
Professional and business	-4,700
Information	-7,100
Construction	-7,800

Government is a large and diverse employment sector, operating at multiple scales and in multiple industries. Government employment includes public education, local, state, federal, and tribal governance activities, public utilities and more. In aggregate, government employment has expanded since late 2020. While federal and state government have remained steady, local government has propelled growth over the past couple of years. Government employment in aggregate expanded by an estimated 40,700 jobs from November 2022 to November 2023.

Education and health services employment, in aggregate, reached pre-pandemic levels by mid-2021. Another large employment sector, private sector education and health services is a steady sector in terms of job creation. Within health care, ambulatory health care services (outpatient medical care such as doctors' offices) employ the largest number of workers. Employment in outpatient offices recovered quickly and continued to grow slowly but steadily over time. By comparison, employment at hospitals remained relatively flat, and nursing and residential care facilities continued to drop, and only began to recover in mid-2022. From November 2022 to November 2023, employment at outpatient offices expanded by 9,300 and employment in hospitals and nursing and residential care facilities expanded by an estimated 4,800 each.

Leisure and hospitality was hit harder than any sector during the pandemic, losing an estimated 147,700 jobs (a 42% drop) in early 2020. As of November 2023, the sector has not yet fully recovered the number of jobs lost but is approaching pre-pandemic employment levels. Over the course of 2023, the sector added 10,300 jobs on a not-seasonally adjusted basis, with the largest one-year gains attributable to food services and drinking places.

Manufacturing employment from February 2020 to June 2021 dropped by nearly 36,000 jobs, with losses concentrated in the state's aerospace sector. Employment has been recovering but remains below pre-pandemic employment levels in aggregate. Manufacturing employment has been recovering. From November 2022 to November 2023, the sector recovered an estimated 5,200 jobs. Nondurable goods manufacturing was, by comparison, steady over the past couple of years but lost momentum in 2023 with over-the-year losses in food manufacturing and paper manufacturing.

Wholesale trade employment has been steady over the past several years and throughout 2023. Wholesale trade expanded by 4,500 jobs over the year, with the largest gains attributable to wholesale trade of durable goods.

Other services is a collection of industries that includes personal services such as dry cleaning and hair salons, repair and maintenance, and membership organizations. As a whole, other services continues to lag behind other sector recoveries, as patterns of consumption shifted during the pandemic and have not entirely shifted back. From November 2022 to November 2023, the sector experienced some growth, adding 2,300 jobs.

Transportation, warehousing and utilities employment expanded employment over the course of the pandemic, losing momentum over time. In November 2023, aggregate employment was 2,100 above November 2022. The largest one-year shifts were observed in warehousing and storage (down 1,500) and support activities for transportation (up 2,300).

Mining and logging, a relatively small sector in Washington, contracted by 100 jobs over the year. Since the early 1990s, the mining and logging sector has contracted by more than 50%.

Financial activities employment was buoyed during the pandemic by a strong real estate market and the ability for the workforce to telecommute. Over the past 12 months, employment in this sector dropped by an estimated 200 jobs, with one-year losses concentrated in credit intermediation and related activities.

Retail trade employment dropped in 2023. At a sector level, retail trade recovered from the pandemic swiftly — in large part because many retail industries such as grocery stores were

considered essential during the pandemic. Online shopping also led to employment opportunities in this diverse sector. In 2023, retail employment dipped by an estimated 2,900 jobs. Most industries within the retail sector added jobs over the year, however some adjustments related to industry coding changes shifted employment out of other retail (a collection of industries that has included online retailers) providing the illusion that a larger number of jobs were lost from this sector than was actually the case. In all, retail trade has been a stable industry in terms of employment.

Professional and business services, and Information are two sectors that contain a large proportion of information technology jobs. Both sets of industries benefitted from the ability to telecommute. Both sets of industries also benefitted from other industries and households increasing their adoption of information technology and related services over the course of the pandemic. Starting in late 2022, layoffs in the tech sector began. From November 2022 to November 2023, employment in professional and business services was down 4,700 and employment in the information sector was down 7,100.

Construction employment recovered quickly during the pandemic, sustained by high demand for residential construction, even amid flat growth in nonresidential work. The recent drop in construction employment in 2023 was primarily among workers in residential construction and specialty trade construction and is related to inflation and higher mortgage rates that had a dampening effect in 2022 and 2023. In aggregate, construction employment dropped by 7,800 from November 2022 to November 2023.

Chapter 3: Seasonal, structural and cyclical industry employment

The purpose of this chapter is to identify the most influential factors affecting employment trends for different industries in Washington using administrative data. The results are important for providing a better understanding of current employment trends and for practical applications such as job placement, unemployment insurance and training programs. Annually, for instance, industries with high levels of seasonality experience significant variation in monthly employment. With this monthly variation, short-term high job demand follows the seasonal employment declines. For industries with high cyclical variation, periods of booming employment can be followed by periods of decline. Training programs should be developed in anticipation of such employment variation.

Employment Security also analyzed the relationships between industry and total state employment (*Appendix 1*). The results of this analysis can help create a better understanding of the key components of state employment trends.

Employment Security's analysis is based on historical employment data from January 2002 through December 2022.[2] The analysis splits industry employment trends among the following four components:

1. Seasonal: regular and predictable employment changes that recur each calendar year, caused by seasonal factors, which can include natural factors (changes in weather), administrative measures (starting and ending of the school year) and social, cultural, or religious traditions (fixed holidays such as New Year's Day).
2. Trend: shifts in long-term employment growth trends driven by fundamental structural change (a new technology like the internet) and productivity trends in industries, rather than the cyclical fluctuations in employment. Structural changes in employment can be initiated by productivity improvement, policy changes or permanent changes in resources, technology or society. Technological innovation has introduced entirely new industries and caused other industries to decline. In addition, it has reshaped the entire

[2] Historical data for employment covered by the unemployment insurance system was categorized by NAICS (North American Industrial Classification System) code, at the 3-digit code level. Altogether, the historical time series data included 95 industries and one series for total employment.

labor market through increased efficiencies, such as automated manufacturing, data collection and analysis and communications.

3. Cyclical: employment changes attributed to the business cycle in general or specific events such as the housing bubble bursting in 2007, cyclical variation in aerospace employment or the economic impact from the COVID-19 pandemic during 2020.
4. Irregular: random employment changes not picked up by regular seasonal and cyclical components (e.g., non-regular seasonality, weather variation and labor strikes).

Seasonal industries

The analysis this year showed that of 95 industries in Washington, 16 have high levels of seasonality with a seasonal factor[3] over 4.0%. Crop production, scenic and sightseeing transportation, and support activities for agriculture and forestry were the most seasonal industries (*Figure 3-1*).

Figure 3-1. Industries with high levels of seasonality

Washington, 2002 to 2022. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

NAICS	Industry	Seasonal factor
111	Crop production	29.93%
487	Scenic and sightseeing transportation	19.88%
115	Support activities for agriculture and forestry	16.97%
525	Funds, trusts, and other financial vehicles	15.18%
213	Support activities for mining	10.93%
711	Performing arts, spectator sports, and related industries	9.67%
237	Heavy and civil engineering construction	7.09%
519	Web search portals, libraries, archives, and other information services	6.10%
114	Fishing, hunting and trapping	5.81%
814	Private households	5.64%
492	Couriers and messengers	5.47%
721	Accommodation	5.21%

[3] See Appendix 1 for seasonal factor definition.

NAICS	Industry	Seasonal factor
312	Beverage and tobacco product manufacturing	5.06%
316	Leather and allied product manufacturing	4.55%
713	Amusement, gambling, and recreation industries	4.26%
311	Food manufacturing	4.10%

Crop production, scenic and sightseeing transportation and support activities for agriculture and forestry have historically been the industries with the highest degree of seasonality in Washington.

Structural and cyclical industries

Annual totals of seasonal, irregular and cyclical components represent a statistically insignificant share of employment. Cyclical is balanced between years, while seasonal and irregular are balanced within a year. For annual trends, the combination of the trend and cycle components represents virtually all total employment changes.

For total covered employment, the trend component accounts for 61.05% of employment changes (*Appendix figure A1-2*). There were seven industries where the structural (trend) component accounted for at least two-thirds of the change in employment (*Figure 3-2*). Ambulatory health care services, wholesale trade agents and brokers, and professional, scientific, and technical services were most highly influenced by the trend factor, and consequently influenced less by the cyclical factor.

Figure 3-2. Industries most influenced by structural factors

Washington, 2002 to 2022. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

NAICS	Industry	Structural factor
621	Ambulatory health care services	76.71%
425	Wholesale trade agents and brokers	74.88%
541	Professional, scientific, and technical services	73.25%
238	Specialty trade contractors	72.21%
236	Construction of buildings	71.19%
444	Building material and garden equipment and supplies dealers	68.87%
531	Real estate	67.11%

These Washington industries have been most influenced by structural factors such as technology changes, policy changes and changing demographics.

For 30 industries, the cyclical component accounted for more than half of the change in employment in the indicated industries (*Figure 3-3*). For total covered employment, the cyclical component accounted for 38.95% of total employment change (*Appendix figure A1-2*). Executive, legislative, and other general government support, support activities for mining, oil and gas extraction, funds, trusts, and other financial vehicles, pipeline transportation, performing arts, spectator sports, and related industries, and amusement, gambling, and recreation industries were most highly influenced by the cyclical factor, and consequently less by the structural (trend) factors.

Figure 3-3. Industries most influenced by cyclical factors

Washington, 2002 to 2022. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

NAICS	Industry	Cyclical factor
921	Executive, legislative and other general government support	79.33%
213	Support activities for mining	67.07%
211	Oil and gas extraction	61.84%
525	Funds, trusts and other financial vehicles	61.32%
486	Pipeline transportation	60.98%
711	Performing arts, spectator sports and related industries	60.47%
713	Amusement, gambling and recreation industries	60.46%
485	Transit and ground passenger transportation	60.04%
721	Accommodation	59.75%
487	Scenic and sightseeing transportation	59.15%
712	Museums, historical sites and similar institutions	58.33%
512	Motion picture and sound recording industries	57.70%
491	Postal service	56.00%
813	Religious, grantmaking, civic, professional and similar organizations	55.66%
483	Water transportation	54.41%
315	Apparel manufacturing	54.13%
316	Leather and allied product manufacturing	54.07%
324	Petroleum and coal products manufacturing	53.69%
331	Primary metal manufacturing	53.31%
332	Fabricated metal product manufacturing	52.31%
333	Machinery manufacturing	52.23%
482	Rail transportation	51.75%
336	Transportation equipment manufacturing	51.73%
901	Federal government (other)	50.32%

These Washington industries have been most sensitive to cyclical-factor movements and have exhibited shifts of relatively rapid employment growth and decline.

See *Appendix 1* for a description of the statistical methodology used to categorize and measure the major factors behind employment change by industries, and *Appendix figures A1-2* and *A1-3* with the full results of these analyses.

In summary, training providers and other planners should be aware that not every upswing in employment is an indication of an increase in demand. The upswing may simply be annual seasonal or cyclical fluctuations.

Chapter 4: Unemployment

This chapter discusses two important indicators of Washington's labor market: unemployment benefits and unemployment rates.

Unemployment insurance benefit recipients

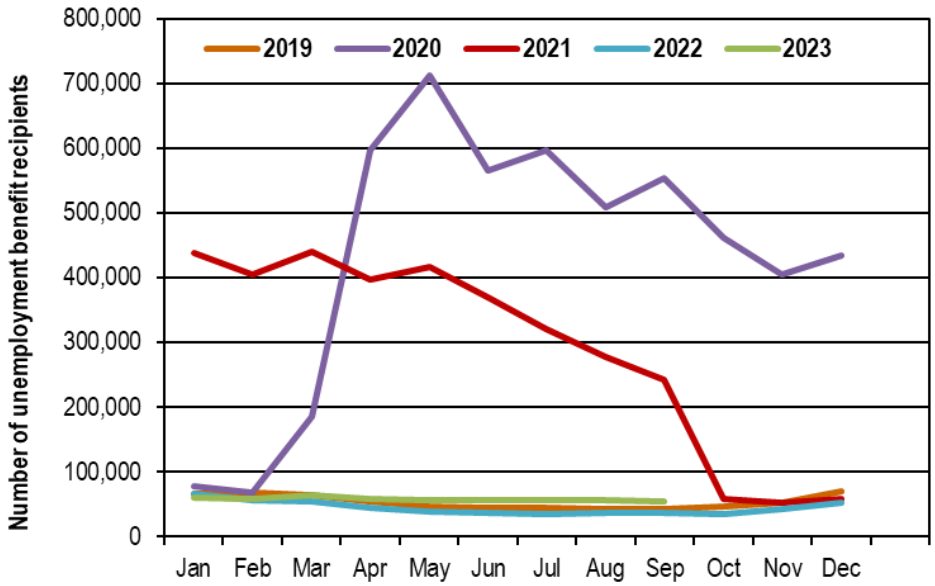
In September 2023, 54,073 people received an unemployment benefit payment. *Figure 4-1* shows the number of monthly beneficiaries in Washington from 2019 through September 2023 that received at least one payment of unemployment insurance benefits under regular unemployment compensation, pandemic unemployment assistance (PUA), pandemic emergency unemployment compensation (PEUC), and the extended benefits program (EB).

With the onset of the COVID-19 pandemic, unemployment insurance beneficiaries increased significantly starting in March 2020, with the number of paid claims increasing by nearly three times the number of paid claims in April 2020. Since April 2020, benefit payments have been decreasing with the number of beneficiaries dropping significantly starting in October 2021, with the EB program ending in March 2021, and the PEUC program ending Sept. 4, 2021. The number of paid claims peaked at a high of 711,945 in May 2020.

Since May 2020, the number of individuals receiving benefits in Washington has dropped and is currently at 54,073 claimants as of September 2023. The decrease in beneficiaries reflects factors including easing of COVID-19 concerns and restrictions, individual beneficiaries finding jobs, and less people being laid off and needing to apply for benefits.

Figure 4-1. Unemployment benefit recipients by month, all benefit entitlements[4]

Washington, January 2019 through September 2023. Source: Employment Security Department/DATA, Unemployment Insurance Data Warehouse



The number of Washingtonians receiving unemployment benefits as of September 2023 was 54,073.

Unemployment insurance benefit payments

Unemployment benefits provide claimants with temporary income when they lose their job through no fault of their own. The benefits are based on prior earnings.

Typically, workers covered by unemployment insurance can receive up to 26 weeks of benefits in a 52-week benefit year, which begins when they apply for unemployment benefits. Most claims receive between 13 and 26 weeks of benefits. In addition to being laid off through no fault of their own, they also must meet the following criteria to be eligible:

[4] All benefit entitlement programs include regular unemployment compensation, pandemic emergency unemployment compensation (PEUC), pandemic unemployment assistance (PUA) and extended benefits (EB).

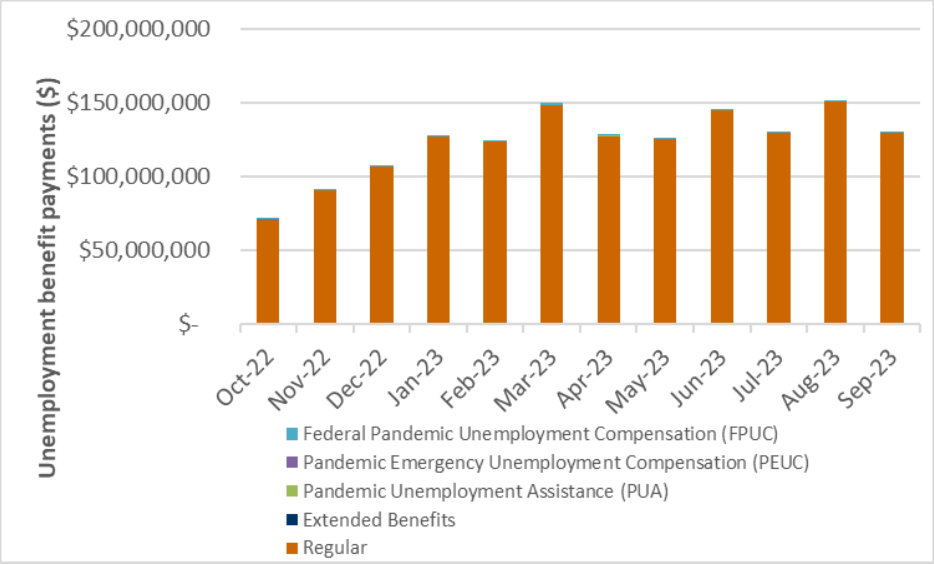
- They must have worked at least 680 hours in their base year.
- At least some wages must have been earned in Washington, unless they recently left the military and are currently located in Washington.

Figure 4-2 shows the monthly unemployment insurance benefit payouts from October 2022 through September 2023 for all benefits payments, which includes regular benefits, federal pandemic unemployment compensation (FPUC), PUA, PEUC and EB benefits.

From October 2022 through September 2023, Employment Security paid more than $1.48 billion in unemployment benefit payments. This compares to $1.19 billion paid in unemployment benefit payments in the prior 12-month period (October 2021 through September 2022).

Figure 4-2. Unemployment benefit payments by month, all benefit payments[5]

Washington, October 2022 through September 2023. Source: Employment Security Department/DATA, Unemployment Insurance Data Warehouse



Monthly benefits payments for all entitlement programs were at $130.1 million as of September 2023.

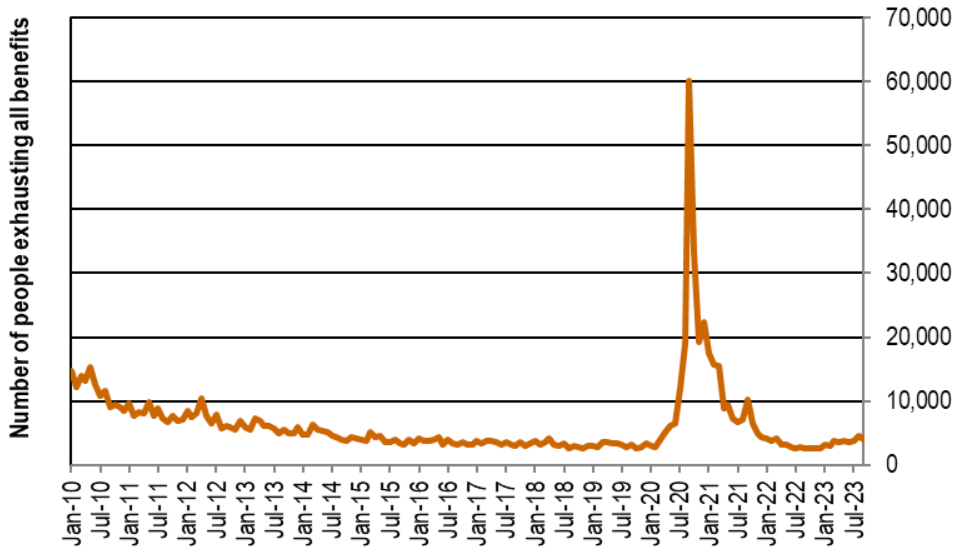
[5] All benefit payments include regular unemployment compensation, pandemic emergency unemployment compensation (PEUC), pandemic unemployment assistance (PUA), federal pandemic unemployment compensation (FPUC) and extended benefits (EB).

Benefit exhaustions have been decreasing

Unemployed individuals exhaust their benefits when they have received all regular unemployment benefits, PUA, PEUC and EB available to them. The following exhaustion analysis will focus on claimants that have exhausted regular benefits between October 2022 and September 2023. *Figure 4-3* shows the monthly exhaustions for Washington's regular unemployment benefits. The level of exhaustions of regular claims increased steadily since March 2020, with the peak of regular benefit exhaustions occurring in September 2020 (60,158 regular benefit exhaustions). Since September 2020, exhaustions of regular benefits have been decreasing, with September 2023 exhaustions currently at 3,930 claimants.

Figure 4-3. Number of people exhausting regular unemployment benefits

Washington, January 2010 through September 2023. Source: Employment Security Department/DATA, Unemployment Insurance Data Warehouse



In September 2023, 3,930 people exhausted their regular unemployment benefits.

Benefit exhaustions by industry, occupation and area

Higher levels of benefit exhaustions are generally associated with long-term unemployment. The following figures detail patterns of benefit exhaustions by industry, occupation and location.

Exhaustions by industry

Figure 4-4 presents exhaustions by industry for the 12-month period ending in September 2023. To provide further context, the figure also includes each industry's percent of total nonfarm employment and exhaustion-to-employment ratio. The exhaustion-to-employment ratio can be used to identify industries that are characterized by long-term unemployment and that continue to struggle in their recovery from the last recession. The larger the exhaustion-to-employment ratio, the more likely workers were to exhaust.

From October 2022 through September 2023, workers in the construction and mining sectors were most likely to exhaust regular unemployment benefits with an exhaustion-to-employment ratio of 2.7% and 2.1%, respectively. This statistic is presented in column six of *Figure 4-4*.

The construction sector accounted for the greatest portion of regular benefit exhaustions at 14.4%. This statistic is presented in column four of *Figure 4-4*. The construction and manufacturing industry's share of total covered employment was 6.3% and 7.6%, respectively; the exhaustion-to-employment ratio for those sectors was 2.7 and 1.2, respectively. Health care and social assistance represented 7.9% of all exhaustions.

Figure 4-4. Unemployment benefit exhaustions by industry

Washington, October 2022 through September 2023. Source: Employment Security Department/DATA, Unemployment Insurance Data Warehouse; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

NAICS	Industry sector	Annual exhaustions, regular benefits	Percent of exhaustions	Industry share of nonfarm employment	Exhaustions to employment ratio	QCEW 2022 average annual employment
23	Construction	5,846	14.4%	6.3%	2.7%	219,220

NAICS	Industry sector	Annual exhaustions, regular benefits	Percent of exhaustions	Industry share of nonfarm employment	Exhaustions to employment ratio	QCEW 2022 average annual employment
54	Professional, scientific and technical services	3,991	9.8%	7.2%	1.6%	250,149
56	Administrative and support and waste management and remediation services	3,756	9.2%	5.2%	2.0%	183,251
31-33	Manufacturing	3,244	8.0%	7.6%	1.2%	265,923
62	Health care and social assistance	3,197	7.9%	12.7%	0.7%	443,928
44-45	Trade	2,996	7.4%	9.6%	0.9%	333,601
51	Information	2,179	5.4%	4.4%	1.4%	153,560
	Unknown	2,047	5.0%	N/A	N/A	N/A
11	Agriculture, forestry, fishing and hunting	1,891	4.7%	2.7%	2.0%	94,641
52	Finance and insurance	1,852	4.6%	2.8%	1.9%	97,812
72	Accommodation and food services	1,807	4.5%	7.8%	0.7%	271,974
42	Wholesale trade	1,651	4.1%	3.9%	1.2%	135,115
48-49	Transportation and warehousing	1,353	3.3%	3.6%	1.1%	125,235
81	Other services	1,027	2.5%	2.8%	1.0%	98,900
53	Real estate, rental and leasing	1,012	2.5%	1.6%	1.8%	57,266
GOV	Government	839	2.1%	15.8%	0.2%	553,183
61	Educational services	825	2.0%	1.4%	1.7%	47,427
55	Management of companies and enterprises	567	1.4%	3.0%	0.5%	104,067
71	Arts, entertainment and recreation	423	1.0%	1.4%	0.9%	49,436
22	Utilities	63	0.2%	0.2%	1.1%	5,521
21	Mining	40	0.1%	0.1%	2.1%	1,941

NAICS	Industry sector	Annual exhaustions, regular benefits	Percent of exhaustions	Industry share of nonfarm employment	Exhaustions to employment ratio	QCEW 2022 average annual employment
	Total	40,606	100.0%	100.0%	1.2%	3,492,149

N/A = Not Available. Nonfarm employment does not include farmworkers, private households or non-profit organization employees. Exhaustion totals were not comparable to nonfarm employment totals. The majority of workers in unknown industries were a product of out-of-state employers. Washington State Employment Security Department is unable to identify industries where the primary employer is out of state. Construction workers were most likely to exhaust unemployment benefits from October 2022 through September 2023 (2.7%) exhaustion-to-employment ratio.

Exhaustions by occupation

Figure 4-5 examines unemployment benefit exhaustions by occupational group. Management and construction and extraction occupations accounted for the largest share of exhaustions between October 2022 and September 2023. Each of these two occupation groups accounted for 31.4% of all exhaustions. Since total covered employment is reported only by industry and not by occupation, each occupation's percent of total covered employment and exhaustion-to-employment ratio were not available to be included in *Figure 4-5*.

Figure 4-5. Unemployment benefit exhaustions by major occupational groups

Washington, October 2022 through September 2023. Source: Employment Security Department/DATA, Unemployment Insurance Data Warehouse

SOC	Major occupation group	Annual exhaustions, regular benefits	Percent of all exhaustions
11	Management occupations	7,508	18.5%
47	Construction and extraction occupations	5,247	12.9%
43	Office and administrative support occupations	3,950	9.7%
13	Business and financial operations occupations	2,644	6.5%
15	Computer and mathematical occupations	2,635	6.5%
41	Sales and related occupations	2,134	5.3%
53	Transportation and material moving occupations	2,046	5.0%
	Unknown	1,996	4.9%
51	Production occupations	1,950	4.8%
45	Farming, fishing and forestry occupations	1,712	4.2%

SOC	Major occupation group	Annual exhaustions, regular benefits	Percent of all exhaustions
35	Food preparation and serving related occupations	1,194	2.9%
49	Installation, maintenance and repair occupations	995	2.5%
37	Building and grounds cleaning and maintenance occupations	872	2.1%
31	Healthcare support occupations	852	2.1%
27	Arts, design, entertainment, sports and media occupations	847	2.1%
17	Architecture and engineering occupations	666	1.6%
39	Personal care and service occupations	665	1.6%
33	Protective service occupations	538	1.3%
29	Healthcare practitioners and technical occupations	534	1.3%
21	Community and social services occupations	426	1.0%
19	Life, physical and social science occupations	402	1.0%
25	Education, training and library occupations	364	0.9%
23	Legal occupations	322	0.8%
55	Military specific occupations	107	0.3%
	Total	**40,606**	**100.0%**

Management and construction and extraction occupations accounted for 31% of all individuals to exhaust regular unemployment benefits from October 2022 through September 2023. The acronym SOC stands for Standard Occupational Classification and is a federal statistical standard used to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data.

Exhaustions by workforce development area

Figure 4-6 presents exhaustions by workforce development area (WDA) for October 2022 through September 2023. To provide further context, the figure also includes each industry's percent of total nonfarm employment [6] and exhaustion-to-employment ratio.

From October 2022 through September 2023, workers in the South Central and Pierce WDAs were most likely to exhaust regular unemployment benefits with an exhaustion-to-employment ratio of 1.5 and 1.2.

[6] Seattle-King County accounted for the largest share of exhaustions and employment with an exhaustion-to-employment ratio of 0.7.

Seattle-King County accounted for more than one-fourth of exhaustions at 27.4% of all benefit exhaustions, with a 2022 industry share of over 41.4% of nonfarm employment. Seattle-King and Pierce County's share of total covered employment was 41.4% and 9.3%, respectively; the exhaustion-to-employment ratio for those counties was 0.7 and 1.2, respectively.

Seattle-King County accounted for the largest share of exhaustions and employment with an exhaustion-to-employment ratio of 0.7, driven by layoffs in the tech industry in 2023.

Figure 4-6. Unemployment benefit exhaustions by workforce development area

Washington, October 2022 through September 2023. Source: Employment Security Department/DATA, Unemployment Insurance Data Warehouse; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Workforce development area	Annual exhaustions, regular benefits	Percent of exhaustions	2022 industry share of nonfarm employment	Exhaustions to employment ratio
Seattle-King County	11,142	27.4%	41.4%	0.7
Out of state/unknown	6,047	14.9%	N/A	N/A
Pierce County	4,430	10.9%	9.3%	1.2
Snohomish County	3,568	8.8%	8.1%	1.1
South Central WA	2,392	5.9%	4.0%	1.5
Pacific Mountain	2,319	5.7%	5.6%	1.0
Southwest WA	2,271	5.6%	6.2%	0.9
Spokane County	1,951	4.8%	6.8%	0.7
Northwest WA	1,598	3.9%	4.8%	0.8
Benton-Franklin	1,593	3.9%	3.7%	1.1
North Central WA	1,401	3.5%	3.5%	1.0
Olympic	1,216	3.0%	3.6%	0.8
Eastern WA	678	1.7%	2.2%	0.8
Total	40,606	100.0%	100.0%	

South Central accounted for the largest exhaustion-to-employment ratio of 1.5.

Unemployment rate

The overall unemployment rate is a ratio of the estimated number of unemployed individuals looking for work divided by the civilian labor force. The labor force is made up of individuals who are employed or who are actively seeking work. This is the most familiar unemployment rate and includes both workers covered by unemployment insurance and those who are not[7].

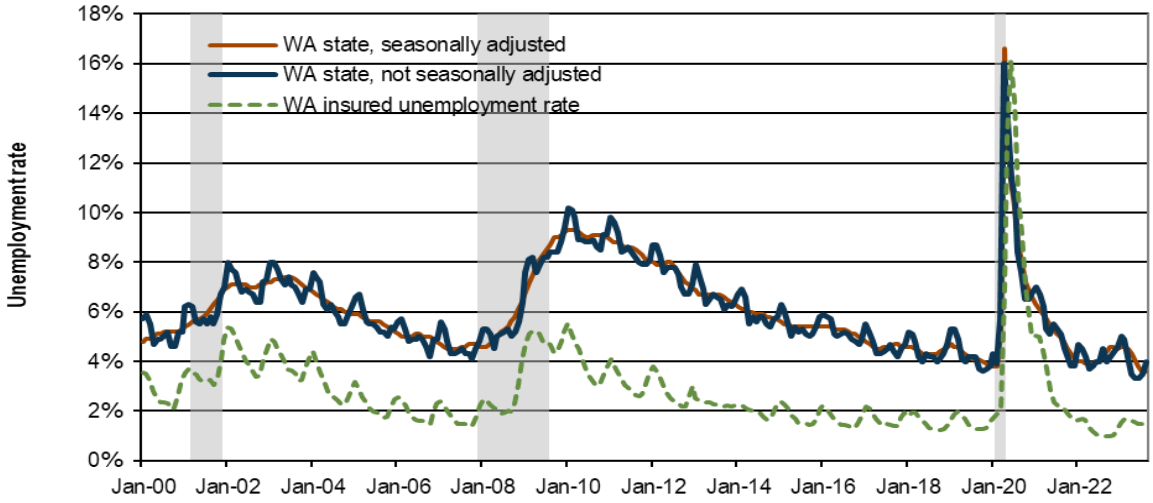
Particularly in the context of a discussion about unemployment benefits, the insured unemployment rate can be useful. The insured unemployment rate is a ratio of the number of insured unemployed (those drawing unemployment benefits) divided by the total number of individuals (working and not working) covered by unemployment insurance.

Figure 4-7 compares the overall and insured unemployment rates for Washington. The rates have moved in tandem, with the insured rate historically about half of the overall unemployment rate. In late 2008, both measures of unemployment began a dramatic rise, with rates peaking during first quarter 2010. However, since the onset of the COVID-19 pandemic, the gap between the overall and insured unemployment rates has narrowed. This means there were increasing numbers of unemployed workers eligible for unemployment benefits.

[7] Workers covered by unemployment insurance are unemployed through no fault of their own, as determined by state law. In order to qualify for this benefit program, they must have worked at least 680 hours in covered employment during the past 12 to 18 months. At least some of these hours must have been earned in Washington state. They must also be able to work and be available for work each week that they are collecting benefits.

Figure 4-7. Overall unemployment rate, seasonally and not seasonally adjusted, and insured unemployment rate

Washington, January 2000 through August 2023. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics



Shaded areas are U.S. recession periods. Following the most recent recession, the gap between the overall unemployment and insured unemployment rate has narrowed. This means there were increasing numbers of unemployed workers eligible for unemployment benefits.

The overall unemployment rate

The overall unemployment rate is widely used in economic analysis as a lagging indicator of the direction of the economy. As noted previously, the unemployment rate is a ratio of the estimated number of unemployed who are seeking work, divided by the labor force. The labor force is limited to individuals who are employed or seeking work.

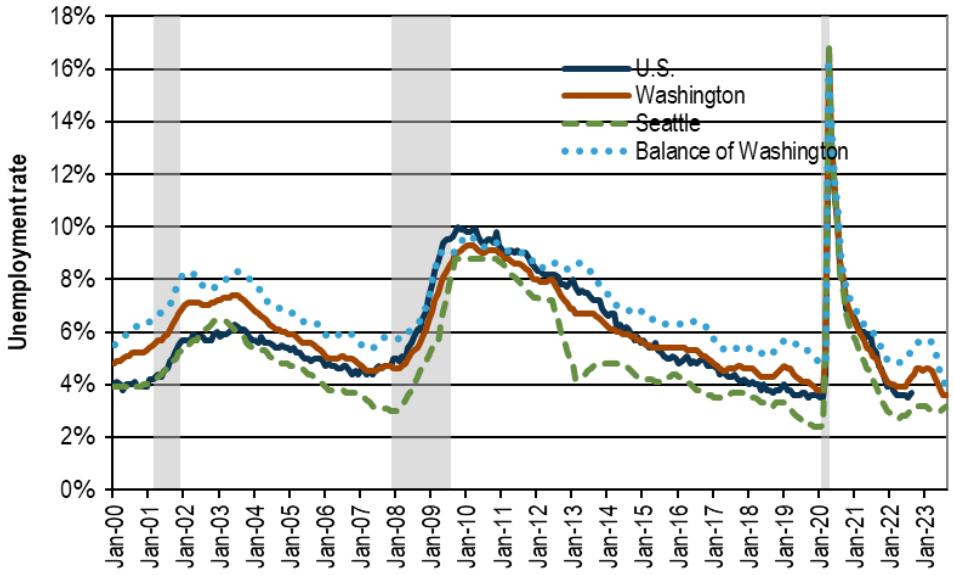
As shown in *Figure 4-8*, the state unemployment rate reached a high of 16.6% in second quarter 2020. Between 2000 and 2007, the unemployment rate for Washington remained higher than the national rate. Starting in June 2007, the state unemployment rate fell below the national rate and remained below the national rate through September 2014 before rising above the nation in October 2014 at 5.8%. For June 2015 through November 2020, the state unemployment rate remained above the national rate. In April 2020 both the national and state unemployment rates saw increases of more than 10 percentage points with the state

increasing from 5.2% in March 2020 to 16.6% in April 2020. The national unemployment rate increased from 4.4% in March 2020 to 14.7% in April 2020. By August 2020, both the state and national unemployment rates dropped below 10%. By August 2023, the state unemployment rate was 3.6%, while the national unemployment rate was 3.8%.

The Seattle-Bellevue-Everett Metropolitan Division has reported a lower unemployment rate than the rest of Washington and the nation since 2004. However, during April 2020 the district experienced a higher unemployment rate than the nation and the state. The unemployment rate in the district increased from 5.3% in March 2020 to 16.8% by April of 2020. For comparison, the national unemployment rate increased from 4.4% in March 2020 to 14.7% in April of 2020. By September 2023, the district unemployment rate was 3.2%.

Figure 4-8. Historical U-3 unemployment rates, seasonally adjusted

United States and Washington, January 2000 through August 2022. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics; National Bureau of Economic Research



Shaded areas are U.S. recession periods. National and state unemployment rates tracked closely during the pandemic. From May 2020 through September 2023, the Seattle unemployment rate declined more rapidly than both the Washington and U.S. unemployment rates.

Other measures of unemployment

Other measures of unemployment include alternative unemployment rates and unemployment rates by race and ethnicity.

Alternative unemployment rates

The U.S. Bureau of Labor Statistics (BLS) reports six alternative measures of labor underutilization, or unemployment. The commonly used definition of the unemployment rate, shown in *Figure 4-8*, is a ratio of the estimated number of unemployed who are seeking work, divided by the labor force. This is equivalent to what the BLS calls U-3.

A common criticism of the standard measurement of unemployment is that it is too narrow — for instance, it excludes individuals who are not working and would like to work but have given up looking for work.

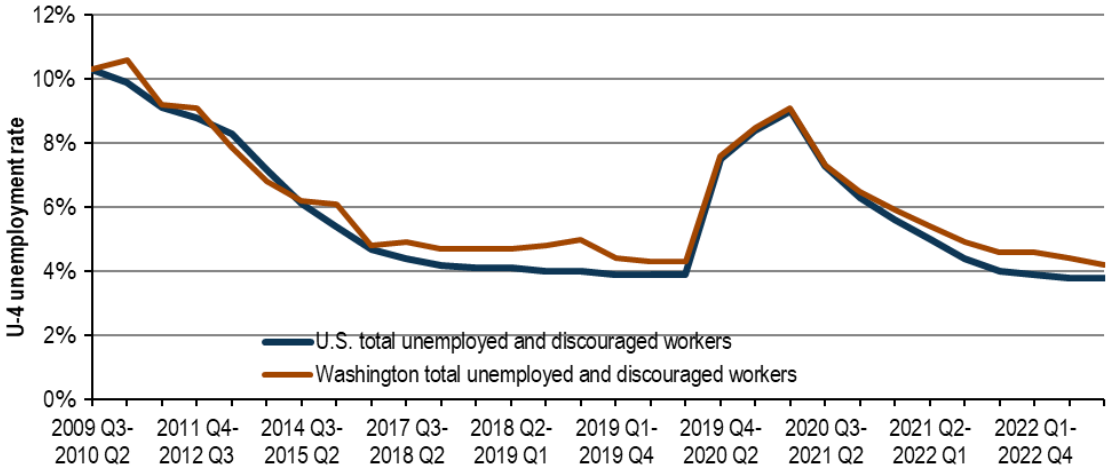
In response to criticism, the BLS has made available alternative measurements that are progressively more inclusive than the commonly reported unemployment rate. The standard measurement (U-3), along with two of the six alternative measurements, are defined as:

- U-3 — Unemployed as a percent of the labor force.
- U-4 — Unemployed plus discouraged workers, as a percentage of the labor force plus discouraged workers.
- U-6 — Unemployed plus all marginally attached workers and employees working part time for economic reasons, all as a percentage of the labor force plus all marginally attached workers.

The U-4 measure followed a similar pattern of decline in Washington and the country coming out of the Great Recession (*Figure 4-9*). The moving average for third quarter 2009 through second quarter 2010 had Washington and the nation both at 10.3%. From second quarter 2010 through second quarter 2020, the Washington U-4 unemployment rate decreased to 4.3% while the nation's rate decreased to 3.9%. With the onset of the COVID-19 pandemic, the U-4 unemployment measure for the state and nation increased significantly, peaking at 9% for the nation and 9.1% for the state, for the four-quarter period ending the first quarter of 2021. Since the peak, the state and nation's U-4 rate has declined. The U-4 rate for Washington for the third quarter 2022 through the second quarter 2023 was 4.2%, while the nation's rate was 3.8% over the same period.

Figure 4-9. U-4 unemployment rate (includes discouraged workers), four-quarter moving average

United States and Washington, third quarter 2009 through second quarter 2023. Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics

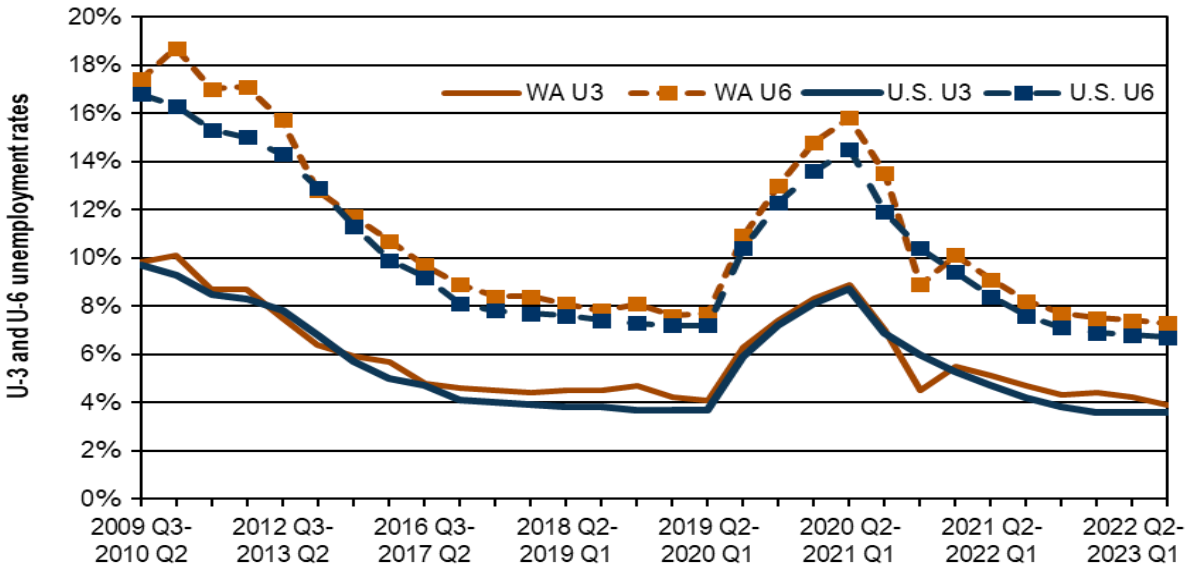


The U-4 measure of unemployment increased with the onset of the COVID-19 pandemic. As of June 2023, the state U-4 unemployment rate was 4.2%, while the nation's rate was 3.8%.

U-6 is the broadest measure of unemployment. The gap between the U-6 and U-3 rates for the state and the nation increased with the onset of the COVID-19 pandemic. This demonstrates the increase in the ranks of discouraged workers, marginally attached workers and those working part time involuntarily (*Figure 4-10*). This holds true for Washington, where many underutilized workers are employed part time for economic reasons. Washington's U-6 four-quarter moving average unemployment rate has remained higher than the nation's since 2014, except for the 12-month period ending third quarter 2021, when Washington had a lower U-6 unemployment rate (8.9%) than the nation (10.4%). Most recently, Washington's U-6 rate remains 0.6 percentage points above the national rolling average from third quarter 2022 through second quarter 2023 at 7.3% and 6.7%, respectively.

Figure 4-10. U-3 (standard) and U-6 (includes marginally attached workers and those working part time involuntarily) unemployment rates, four-quarter moving average.

United States and Washington, third quarter 2009 through second quarter 2023. Source: U.S. Bureau of Labor Statistics, Current Population Survey, Local Area Unemployment Statistics



The most broadly defined U-6 measure of unemployment for Washington remains above the national rolling average.

Unemployment by demographic characteristics

Unlike at the national level, Washington does not have monthly unemployment rates reported by demographic characteristics such as gender, race, ethnicity, and age. The American Community Survey (ACS) is a household survey developed by the Census Bureau to replace the long form of the decennial census program. The ACS is a large demographic survey collected throughout the year using mailed questionnaires, telephone interviews, and visits from Census Bureau field representatives. The ACS is large enough to support the publication of reliable state level annual labor force characteristics with demographic characteristics, but not the publication of monthly characteristics at the state or substate levels. Nonetheless, Employment Security can track current unemployment rates by gender, race, ethnicity, and age for workers in Washington using 12-month moving average estimates from the ACS.

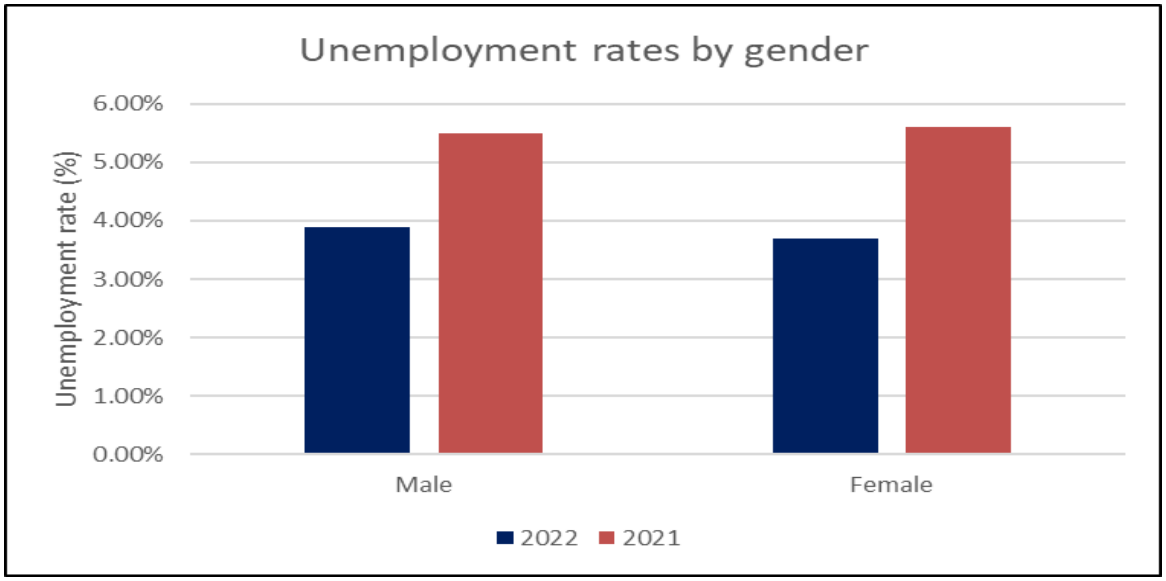
Below, Employment Security highlighted key findings using the 2022 ACS 12-month moving average unemployment rates estimates, as compared to the 2021 ACS 12-month average unemployment rate estimates for Washington.

Unemployment rate by gender

In 2022, the overall unemployment rate for Washington averaged 4.2%, but the rate varied across different groups. *Figure 4-11* tracks the overall unemployment rates for men and women in Washington between 2021 and 2022. The unemployment rate for women was 3.7% in 2022, a decrease of 1.9 percentage points from the 5.6% unemployment rate in 2021. The unemployment rate for men was 3.9% in 2022, down by 1.6 percentage points over the year. In 2022, the unemployment rates for women and men were 1.9 percentage points and 1.8 percentage points lower than their respective rates in 2021.

Figure 4-11. Unemployment rates by gender

Washington, 2021, 2022. Source: U.S. Census Bureau; American Community Survey 1-year estimates



Unemployment rate by race, ethnicity

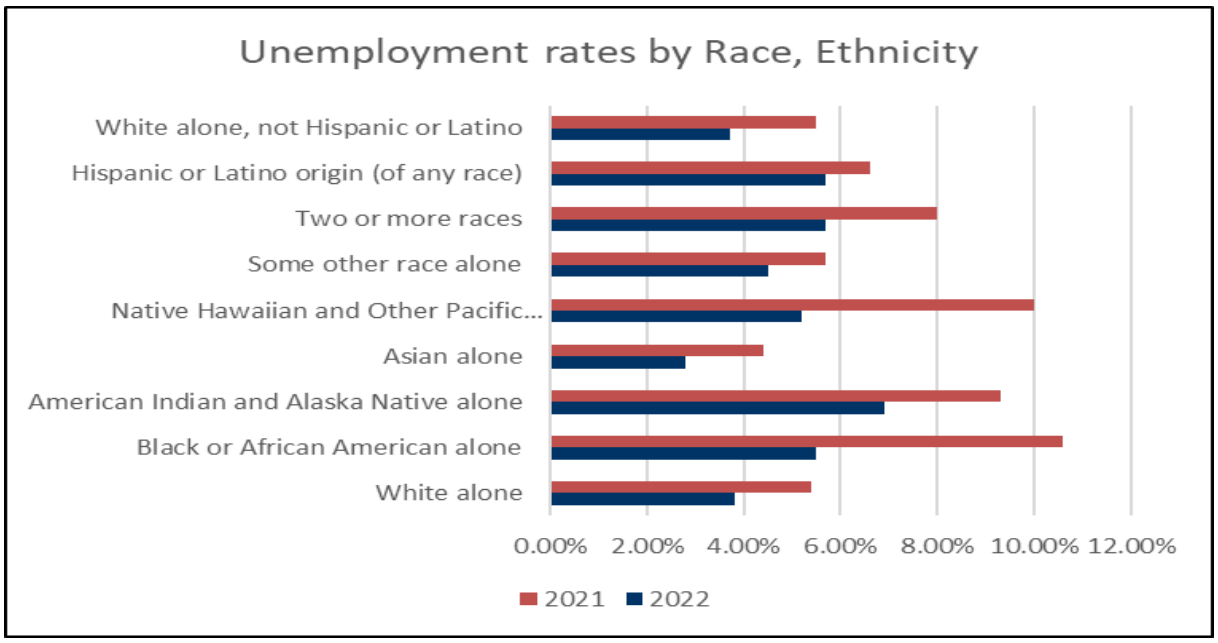
Unemployment rates vary by race and ethnicity. *Figure 4-11* tracks unemployment rates by race/ethnicity between 2021 and 2022, using state-level data from the Census Bureau's ACS one-year estimates.

In 2022, American Indian and Alaska Natives had the highest jobless rate in Washington among demographic groups (6.9%), followed by Hispanic or Latino origin (5.7%), Black or African Americans (5.5%), white (3.8%) and Asian (2.8%).

Between 2021 and 2022 the largest decrease in unemployment among demographic groups occurred for Black or African American, which saw the unemployment rate decrease by 5.1 percentage points over the year, going from 10.6% in 2021 down to 5.5% in 2022.

Figure 4-12. Unemployment rates by race, ethnicity

Washington, 2021, 2022. Source: U.S. Census Bureau; American Community Survey one-year estimates



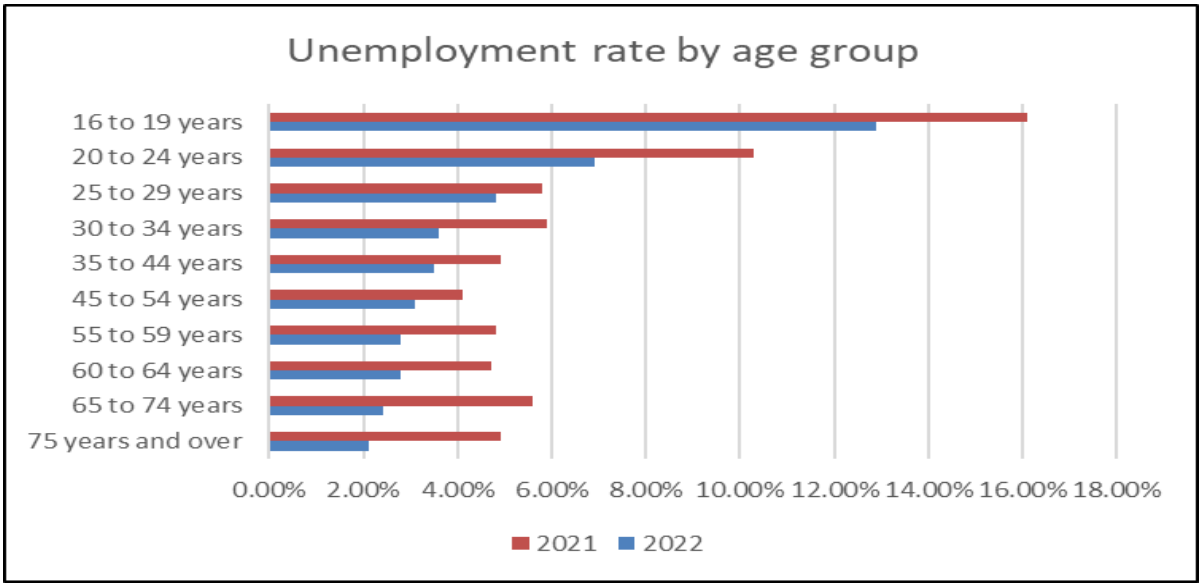
Unemployment rate by age

Figure 4-13 shows Washington unemployment rates by age group between 2021 and 2022, from the Census Bureau's American Community Survey one-year estimates.

The youth unemployment rate (age 16-24) was the highest among all age groups in 2021 (16.1%) and in 2022 (12.9%). The prime working age group unemployment rate (ages 25-54) decreased from an average unemployment rate of 5.2% in 2021 to 3.8% in 2022. The average unemployment rate for the older, pre-retirement age group (ages 55-64) decreased from 4.8% in 2021, to 2.8% in 2022. The unemployment rate for those 65 and older decreased from just above 5.2% in 2021 to 2.3% in 2022.

Figure 4-13. Unemployment rates by age group

Washington, 2021, 2022. Source: U.S. Census Bureau; American Community Survey one-year estimates



Chapter 5: Employment projections

About the employment, industry and occupational projections

Employment projections provide a general outlook for industry and occupational employment in Washington. The estimates provide job seekers, policy makers and training providers an idea of how much an industry or occupation is projected to change over time and reveal how the future demand for workers may change.

On an annual basis, Employment Security produces industry employment projections for two, five and 10 years from a base period. For this annual report, the base period for the two-year (short-term) projections is second quarter 2022. The base period for the five-year (medium-term) and 10-year (long-term) projections is 2021.

Staffing patterns show proportional compositions of occupations within industries and are used to convert industry projections into occupational projections.

Industry classifications are based on the North American Industry Classification System (NAICS). However, they have been modified to match industry definitions used by the BLS Occupational Employment and Wage Statistics (OEWS) program. The modified industry definitions are called Industry Control Totals (ICTs). The Standard Occupational Classification (SOC) system is used to group occupations. *Appendix 5* contains frequently asked questions relating to projections. *Appendix 6* provides a glossary of terms.

Data sets used to develop projections

The following data sets are used to produce projections:

1. Historical employment time series, consisting of U.S. BLS Quarterly Census of Employment and Wages (QCEW) data.
2. Employment not covered by the unemployment insurance system from the U.S. BLS Current Employment Statistics (CES) program.
3. Occupational employment by industries (staffing patterns) based on an OEWS survey.

4. National data for self-employed ratios, change factors, etc.
5. Independent variables (predictive indicators), which help to project the future direction of the economy, from IHS Global Insight's national forecast.

Use of employment projections

Employment projections are intended for career development over time, not as the basis for budget or revenue projections, or for immediate corrective actions within the labor market.

Employment projections are the basis of the Occupations in Demand (OID) list covering Washington's 12 workforce development areas (WDAs) and the state. The list is used to determine eligibility for a variety of training and support programs. It was created to support the unemployment insurance Training Benefits Program. *Appendix 3* contains a technical description of the OID list, which is accessible at Learn about an occupation.

This chapter highlights findings on specific aspects of Washington's employment outlook. The first section on industry projections results describes changes in employment by industry from 2021 to 2031. The next section on occupational projections results looks at major occupational groups and specific occupations.

Detailed information on the projected demand for industry and occupational employment is available on the Projections page on Employment Security's labor market information website. Detailed skill projections information is available in Appendix 4 of this report. The formal description of industry and occupational projection processes is presented in the 2019 Employment Projections Technical Report.

Key findings

The 10-year average annual growth rate for total nonfarm employment for 2021 to 2031 is projected to be 1.72%. This is an increase from the 1.70% average annual growth rate predicted last year for 2020 to 2030.

Industry projections

- The largest increases by share of employment are projected for the leisure and hospitality sector and professional business services.

- The largest decreases by shares of employment are projected for the retail trade sector and manufacturing sector.

Occupational projections

- The largest increases by shares of employment are projected for food preparation and serving related occupations and computer and mathematical occupations.
- The largest decreases by shares of employment are projected for production occupations and office and administrative support occupations.
- The largest projected employment shares in 2031, from largest to smallest, are projected for the office and administrative support occupations, sales and related occupations and food preparation and serving related occupations. As was the case in last year's projections report, the first two occupational groups are projected to have declining employment shares.

Two approaches to occupational job openings

A separations approach is based on BLS national rates. An alternative approach is based on job opening rates specific to Washington. The separations method does not track job openings created by turnover when workers stay within an occupation but change employers, while the alternative method does.

The separations and alternative data are available in the Occupational Projections data files on the Projections page. Information about the separations methodology is available on the BLS website. Information about the alternative methodology is available on the Projections page.

- For the separations method, fast food and counter workers occupations are projected to have the largest number of average annual total openings.
- For the alternative method, fast food and counter workers occupations are projected to have the largest number of average annual total openings.
- For both separations and alternative occupations, no growth openings exceeded turnover openings.

2023 industry projections results

Figure 5-1 presents 2021 estimated employment, and 2021, 2026 and 2031 employment shares, as well as changes in employment shares from 2021 to 2026, 2026 to 2031 and 2021 to 2031 by industry for Washington.

Through 2031, the three industry sectors with the largest increases in employment shares are projected to be professional and business services, leisure and hospitality, and information.[8] For this same time period, the industry sector with the largest projected decrease in employment shares is retail trade. The second and third-largest projected decreases are manufacturing and financial activities.

Figure 5-1. Base and projected nonfarm industry employment

Washington, 2021, 2026 and 2031. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Industry sector (based on CES definitions)	Est. empl. 2021	Est. empl. 2021	Est. empl. Shares 2021	Est. empl. Shares 2026	Est. empl. Shares 2031	Change in empl. Shares 2021-2026	Change in empl. Shares 2026-2031
Natural resources and mining	5,704	0.17%	0.14%	0.10%	-0.03%	-0.02%	-0.05%
Construction	223,615	6.64%	6.48%	6.40%	-0.15%	-0.11%	-0.27%
Manufacturing	259,350	7.70%	7.25%	6.90%	-0.45%	-0.36%	-0.81%
Wholesale trade	131,407	3.90%	3.77%	3.60%	-0.13%	-0.17%	-0.29%
Retail trade	403,702	11.98%	9.31%	8.90%	-2.68%	-0.41%	-3.08%
Transportation, warehousing and utilities	118,970	3.53%	3.69%	3.60%	0.15%	-0.13%	0.02%
Utilities	5,400	0.16%	0.15%	0.10%	-0.01%	-0.01%	-0.02%
Information	157,236	4.67%	5.14%	5.60%	0.48%	0.43%	0.91%
Financial activities	160,684	4.77%	4.48%	4.30%	-0.29%	-0.18%	-0.47%

[8] All tables contain values that are calculated and then rounded. As a result, details might not always add up to totals.

Industry sector (based on CES definitions)	Est. empl. 2021	Est. empl. 2021	Est. empl. Shares 2021	Est. empl. Shares 2026	Est. empl. Shares 2031	Change in empl. Shares 2021-2026	Change in empl. Shares 2026-2031
Professional and business services	448,906	13.33%	15.88%	16.10%	2.55%	0.24%	2.79%
Education and health services	500,562	14.86%	14.96%	15.60%	0.10%	0.65%	0.76%
Leisure and hospitality	283,222	8.41%	9.34%	9.50%	0.93%	0.17%	1.10%
Other services	113,546	3.37%	3.67%	3.80%	0.30%	0.11%	0.41%
Federal government	76,752	2.28%	1.98%	1.90%	-0.30%	-0.13%	-0.42%
State and local government other	253,005	7.51%	7.18%	7.20%	-0.33%	0.04%	-0.29%

The largest growth sectors for the state are projected for leisure and hospitality, information and professional and business services.

Historical and projected growth rates

Figure 5-2 shows the historical and projected growth rates for the state and Washington's 12 Workforce Development Areas (WDAs). Figure data are sorted on the projected growth rate 2021-2031 column.

Two of the 12 WDAs have projected growth rates greater than the previous 10 years, and 10 have projected growth less than the previous 10 years. The Seattle-King County WDA has the highest projected growth rate of 1.88% with the Southwest WDA coming in second at 1.78%. The statewide projected growth rate is 1.72%, 0.24 percentage points greater than the statewide historical growth rate.

The two WDAs with projected growth greater than the preceding 10-year period are Eastern and Olympic.

The largest positive difference between historical growth rates and projected growth rates is in the Eastern WDA. For this area, the difference between the historical and projected rates is 0.18 percentage points. Olympic WDA came in second place with a positive difference of 0.12 percentage points.

Southwest WDA has the largest negative difference between projected and historical rates, of all WDAs and the state, with a difference of -1.14 percentage points. However, this area has the second largest projected growth rate of 1.78%.

The last column in *Figure 5-2* represents the long-term growth rate on the historical linear trend line on all available history. Variances between long-term trend line rates and projected growth rates show the effects of the most recent changes in local employment trends. These variances may reflect differences in cyclical behavior.

Figure 5-2. Historical and projected total nonfarm employment growth

Washington and workforce development areas, 1990 to 2021 and 2021 to 2031. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Workforce Development Area	Historical growth rate 2011-2021	Projected growth rate 2021-2031	Historical trend growth 1990-2021
Seattle-King County	2.58%	1.88%	1.39%
Southwest	2.92%	1.78%	1.83%
Washington	**2.24%**	**1.72%**	**1.48%**
Tacoma-Pierce	2.32%	1.64%	1.68%
Spokane	2.06%	1.60%	1.25%
North Central	1.87%	1.59%	1.30%
Benton-Franklin	1.68%	1.58%	2.15%
Northwest	1.61%	1.55%	1.58%
Snohomish	1.64%	1.51%	1.95%
Pacific Mountain	1.95%	1.50%	1.27%
South Central	1.56%	1.46%	1.13%
Eastern	1.22%	1.40%	1.00%
Olympic	1.25%	1.37%	1.07%

Workforce development areas are regions within Washington with economic and geographic similarities. Historical growth is based only on covered employment. Historical trend growth is the growth rate of the linear trend line. Two of the 12 WDAs have projected growth rates greater than the previous 10 years.

2023 occupational projections results

Figure 5-3 shows major occupational group employment estimates and employment shares for Washington.

At the state level, 11 occupational groups are projected to receive increases in employment shares from 2021 to 2031. Of these 11, computer and mathematical occupations are projected to increase the most regarding employment shares by 0.93 percentage points. The next highest increase in employment shares is projected for food preparation and serving related occupations, with an increase of 0.76 percentage points.

The three largest projected decreases in employment shares by 2031 at the state level are sales and related at -0.78 percentage points, office and administrative support at -0.75 percentage points, and production at -0.59 percentage points.

By 2031, the top state occupational groups for shares of employment are projected to be:

- Office and administrative support occupations (10.45%)
- Sales and related occupations (8.93%)
- Food preparation and serving related occupations (7.65%)

By 2031 these three groups are projected to represent approximately 27.03% of total employment shares for the state.

Figure 5-3. Base and projected occupational employment

Washington, 2021 to 2031. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Occupational Employment Statistics

2-digit Standard Occupational Classification	Major occupational group	Est. empl. 2021	Est. empl. shares 2021	Est. empl. shares 2026	Est. empl. shares 2031	Change in empl. shares 2021-2026	Change in empl. shares 2026-2031
11-0000	Management	194,798	5.07%	5.30%	5.35%	0.23%	0.05%
13-0000	Business and financial operations	269,684	7.03%	7.32%	7.39%	0.30%	0.07%
15-0000	Computer and mathematical	204,248	5.32%	5.92%	6.25%	0.60%	0.33%

2-digit Standard Occupational Classification	Major occupational group	Est. empl. 2021	Est. empl. shares 2021	Est. empl. shares 2026	Est. empl. shares 2031	Change in empl. shares 2021-2026	Change in empl. shares 2026-2031
17-0000	Architecture and engineering	76,327	1.99%	1.96%	1.90%	-0.02%	-0.06%
19-0000	Life, physical, and social science	58,167	1.52%	1.54%	1.56%	0.03%	0.02%
21-0000	Community and social service	84,641	2.20%	2.26%	2.34%	0.05%	0.09%
23-0000	Legal	30,286	0.79%	0.77%	0.76%	-0.02%	-0.01%
25-0000	Education, training, and library	196,648	5.12%	5.18%	5.16%	0.06%	-0.02%
27-0000	Arts, design, entertainment, sports and media	79,103	2.06%	2.04%	2.04%	-0.03%	0.01%
29-0000	Healthcare practitioners and technical	186,314	4.85%	4.77%	4.89%	-0.08%	0.12%
31-0000	Healthcare support	154,377	4.02%	4.10%	4.33%	0.07%	0.23%
33-0000	Protective service	67,918	1.77%	1.80%	1.86%	0.03%	0.06%
35-0000	Food preparation and serving related	264,670	6.89%	7.48%	7.65%	0.59%	0.17%
37-0000	Building and grounds cleaning and maintenance	116,395	3.03%	3.14%	3.22%	0.11%	0.08%
39-0000	Personal care and service	92,559	2.41%	2.60%	2.67%	0.19%	0.07%
41-0000	Sales and related	372,780	9.71%	9.21%	8.93%	-0.50%	-0.28%
43-0000	Office and administrative support	430,231	11.21%	10.69%	10.45%	-0.52%	-0.23%
45-0000	Farming, fishing and forestry	102,143	2.66%	2.38%	2.30%	-0.28%	-0.08%
47-0000	Construction and extraction	244,277	6.36%	6.21%	6.10%	-0.16%	-0.10%
49-0000	Installation, maintenance and Repair	143,206	3.73%	3.66%	3.56%	-0.07%	-0.10%
51-0000	Production	178,554	4.65%	4.27%	4.06%	-0.38%	-0.21%

2-digit Standard Occupational Classification	Major occupational group	Est. empl. 2021	Est. empl. shares 2021	Est. empl. shares 2026	Est. empl. shares 2031	Change in empl. shares 2021-2026	Change in empl. shares 2026-2031
53-0000	Transportation and material moving	291,556	7.59%	7.41%	7.21%	-0.19%	-0.20%

At the state level, 11 occupational groups are projected to receive increases in employment shares from 2021 to 2031.

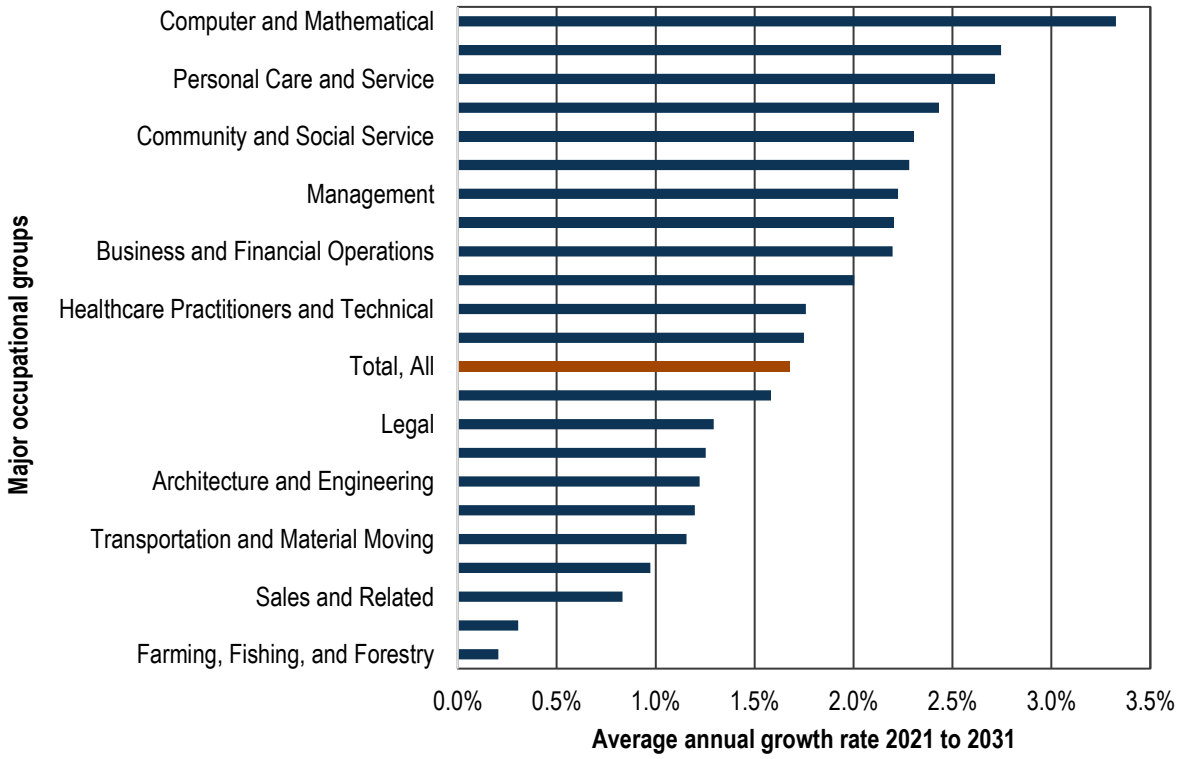
The projected average annual growth rates for the major occupational groups in Washington are presented in *Figure 5-4***.** Computer and mathematical occupations (3.33%), food preparation and serving related occupations (2.75%), and personal care and services occupations (2.72%) are projected to grow faster than other occupational groups from 2021 to 2031.

In the long term, four occupational groups are projected to fall below a 1% average annual growth rate:

1. Office and administrative support occupations (0.97%).
2. Sales and related occupations (0.83%).
3. Production occupations (0.31%).
4. Farming, fishing and forestry occupations (0.20%).

Figure 5-4. Projected average annual growth rates for major occupational groups

Washington, 2021 to 2031. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Occupational Employment Statistics



Computer and mathematical, food preparation and serving related, and personal care and service occupations are projected to experience the largest growth rates from 2021 to 2031 (3.33%, 2.75% and 2.72%, respectively).

Separations and alternative job openings

The BLS separations method[9] measures job openings created by workers who leave occupations and need to be replaced by new entrants. In this method, workers who exit the labor force or transfer to an occupation with a different SOC are identified as generating

[9] Information about the separations methodology is available at https://www.bls.gov/opub/mlr/2018/article/occupational-separations-a-new-method-for-projecting-workforce-needs.htm.

separation openings at the national level. This method does not track turnover within occupations. Turnovers within occupations occur when workers stay in occupations but change employers. This also means that under the BLS method, jobs filled by interstate movement when workers stay within occupations, are not identified as new jobs.

Beginning with the 2017 projections cycle, Employment Security created a new Washington specific alternative occupational method[10] to the BLS separations method. The objective was to track job openings that occur when workers transfer within occupations. For simplicity, we refer to this method as the alternative method and to the rates as the alternative rates. While the alternative method can be used for any states that have usable wage files, the alternative results are based on Washington wage records and are specific to Washington.

The alternative rates track openings created by turnover within occupations (i.e., workers stay within occupations but transfer to different companies) and when workers leave one occupation for another or leave the workforce.

The method consists of three major steps:

1. Estimating the total number of annual industry transfers that include:
    a. Transfers between industries.
    b. Transfers inside industries.
    c. New individuals in Washington wage records (wage file).
    d. Exits or individuals who are no longer in the wage file.
2. Converting industry transfers to occupational transfers using occupation-to-industry staffing patterns (shares of occupations for each industry).
3. Calculating alternative rates as total transfers, minus growth or decline, divided by estimated occupational employment for a base period.

Figure 5-5 presents a comparison between separations and alternative methodologies. Average annual total openings are compared at the two-digit SOC level. Alternative openings are on average almost 2 1/2 times larger than separations openings. The alternative method increase makes sense since it measures openings not tracked by BLS. The alternative method measures

[10] Information about the alternative methodology and a list of separations and alternative projected employment is available at https://esd.wa.gov/labormarketinfo/projections.

turnover within occupations, while the BLS method does not. Also, BLS labor force exits measure national exits, but do not track exits from states.

The average alternative-to-separations ratio is 2.53 at the state level. A ratio above this average indicates that a worker is more likely to change jobs within a given occupation than to transfer to another occupation.

In *Figure 5-5,* the three largest projected alternative-to-separations ratios are for health care practitioners and technical (3.44), construction and extraction (3.42), and management (2.98) occupations.

Figure 5-5. Comparison of alternative and separations methodologies on total openings

Washington, 2021 and 2031. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

2-digit SOC	Major occupational group	Est. empl. 2021	Est. empl. 2031	Alternative average annual total openings 2021-2031	Separations average annual total openings 2021-2031	Ratio alternative to separations
11-0000	Management	194,798	242,745	79,812	26,794	2.98
13-0000	Business and financial operations	269,684	335,177	105,805	40,124	2.64
15-0000	Computer and mathematical	204,248	283,311	82,215	33,383	2.46
17-0000	Architecture and engineering	76,327	86,183	20,845	7,799	2.67
19-0000	Life, physical, and social science	58,167	70,932	18,885	8,075	2.34
21-0000	Community and social service	84,641	106,290	30,017	13,666	2.2
23-0000	Legal	30,286	34,438	8,814	2,973	2.96
25-0000	Education, training, and library	196,648	233,876	53,264	26,746	1.99
27-0000	Arts, design, entertainment, sports, and media	79,103	92,557	29,656	11,675	2.54
29-0000	Healthcare practitioners and technical	186,314	221,828	62,113	18,044	3.44

2-digit SOC	Major occupational group	Est. empl. 2021	Est. empl. 2031	Alternative average annual total openings 2021-2031	Separations average annual total openings 2021-2031	Ratio alternative to separations
31-0000	Healthcare support	154,377	196,311	70,487	29,455	2.39
33-0000	Protective service	67,918	84,440	24,038	12,285	1.96
35-0000	Food preparation and serving related	264,670	347,032	149,089	72,675	2.05
37-0000	Building and grounds cleaning and maintenance	116,395	145,844	55,985	23,053	2.43
39-0000	Personal care and service	92,559	120,995	47,910	20,570	2.33
41-0000	Sales and related	372,780	404,999	141,285	55,660	2.54
43-0000	Office and administrative support	430,231	473,974	152,737	58,782	2.6
45-0000	Farming, fishing, and forestry	102,143	104,254	45,265	16,289	2.78
47-0000	Construction and extraction	244,277	276,658	107,953	31,561	3.42
49-0000	Installation, maintenance, and repair	143,206	161,308	50,802	18,139	2.8
51-0000	Production	178,554	184,078	51,426	21,426	2.4
53-0000	Transportation and material moving	291,556	327,042	118,312	46,838	2.53
00-0000	**Totals**	**3,838,882**	**4,534,272**	**1,506,710**	**596,007**	**2.53**

On average, alternative openings are 2.53 times larger than separations openings.

Specific occupations

Figure 5-6 shows the top 20 specific occupations by total openings based on the separations methodology. *Figure 5-7* shows the top 20 specific occupations by total openings based on the alternative methodology.

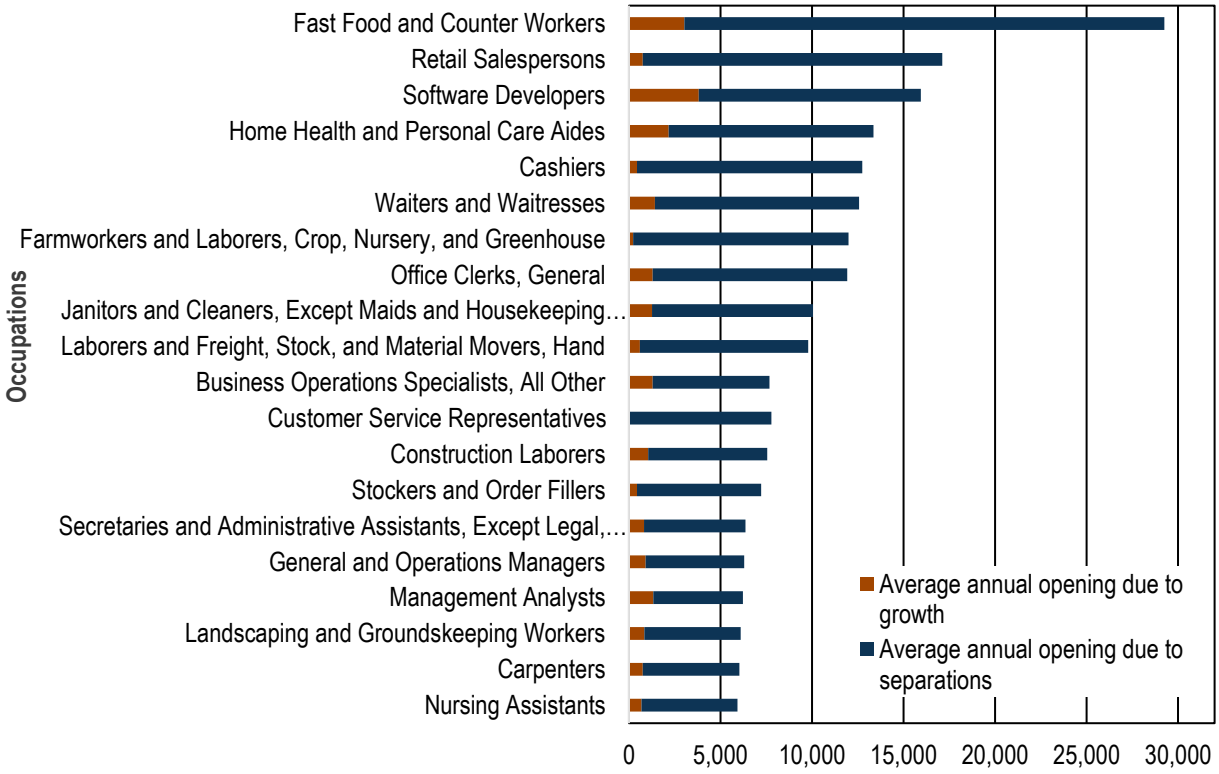
The number of openings due to job growth did not exceed openings due to separations or alternative job turnover in all of the top 20 occupations listed in *Figure 5-6* and *Figure 5-7*.

Customer service representatives is the only occupation within the top 20 occupation designation that resulted in negative projected average annual openings due to growth.

For both the separations and alternative methodologies, the fast food and counter workers occupation is projected to have the largest number of total openings. Sixteen of the top 20 specific occupations are the same in both methods.

Figure 5-6. Top 20 specific occupations by average annual total openings, separations methodology

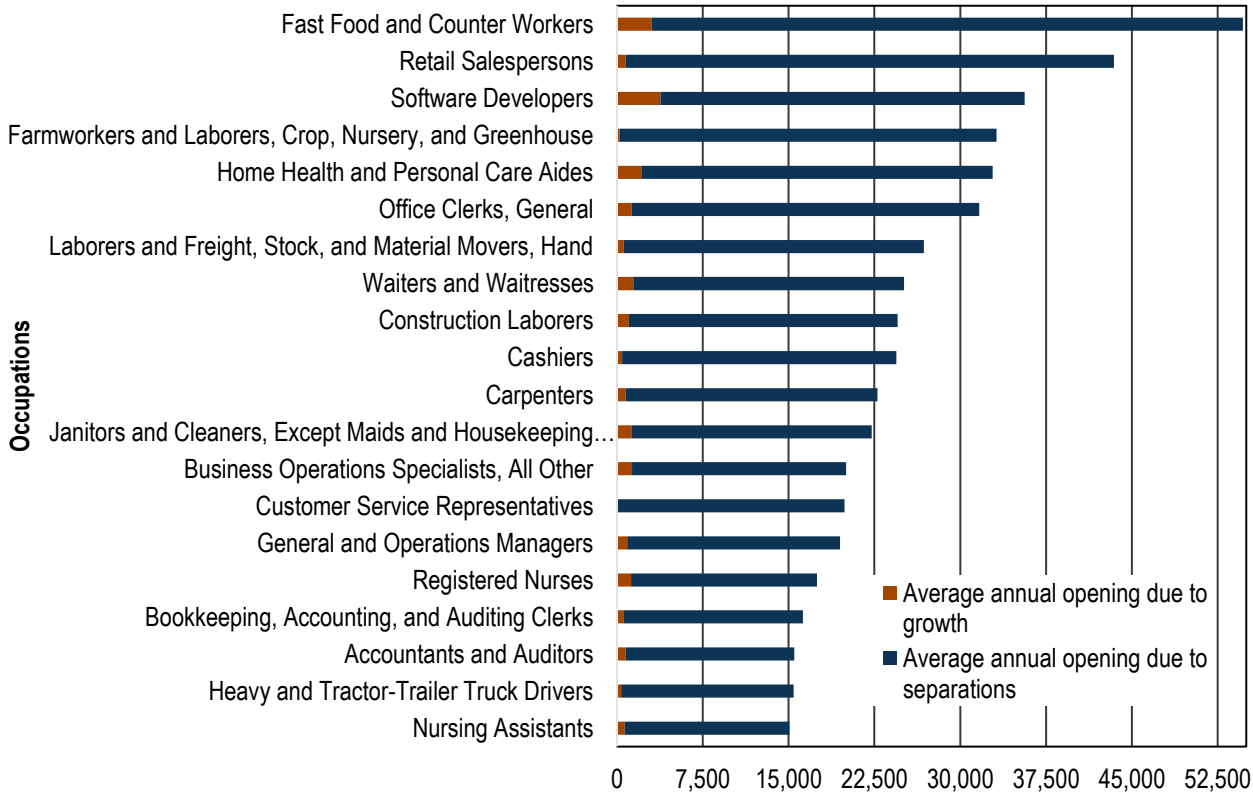
Washington, 2021 to 2031. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Occupational Employment Statistics



In the separations methodology, the number of openings due to job growth did not exceed openings due to job turnover in any occupations.

Figure 5-7. Top 20 specific occupations by average annual total openings, alternative methodology

Washington, 2021 to 2031. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Occupational Employment Statistics



Chapter 6: Income

Over the past several years, many of the aggregated datasets that inform us about income and wages in Washington have told a story of rising prosperity. Median household income and wages have risen over time. Taking a more intentional and broad-based approach, however, reveals a more nuanced story. This chapter explores measures related to household income and well-being for Washington residents.

Summary

- Although wages are an important component of income for most households, it is not the only mechanism through which individuals and families access resources. In 2022, 78.8% of households reported having earnings from a job. Other quantifiable components of income include investment income, public and private retirement benefits and various types of government assistance.
- The portion of households reporting retirement income has increased over time, as the baby-boom generation enters retirement. In 2022, 23.9% of households reported having retirement income, compared with 19.6% in 2018 and 18.3% 10 years prior.
- Household income increased by 5.2% from 2018 to 2022 but doesn't necessarily mean that people are better off. In 2022, more than 50% of renters were paying more than 30% of their household income on housing.

Household[11] and family income

The year 2020 was a difficult year for many reasons. One of the challenges brought forth by the COVID-19 pandemic was a significant disruption in data collection. This disruption left a one-year gap in the U.S. Census Bureau's American Community Survey (ACS) — the data product that informs this chapter. This chapter references a five-year period (2018 to 2022).

[11] The U.S. Census Bureau divides households into two types. A family household contains at least two people, and at least one other person in the household is related to the householder by birth, marriage or adoption. A non-family household may contain only one person or additional people that are not related to the householder.

Due to the missing year of data, the narrative in this chapter generally compares pre-pandemic data (2018 and 2019) with current or post-pandemic data (2021 and 2022). As a result, exploration of impacts is limited to how well Washingtonians collectively made it through to the other side of a once-in-a-lifetime crisis, without being able to examine the tumult of an unprecedented year. The omission of 2020 data, however, also allows Employment Security to view the disruption in a broader temporal context. From this perspective, impacts of the disruption become the focus, rather than the disruption itself.

The year 2020 was a unique year for several reasons, including a complex and rapidly changing policy environment that directly affected household income. Faced with a public health emergency, several public and private policies were swiftly put into place that were intended to curb the spread of COVID-19[12]. Policies that mandated physical distancing disproportionately impacted businesses that rely on face-to-face contact, and disproportionately impacted the workers who, in many cases, were already the most vulnerable to economic shocks. Policy measures such as required physical distancing, ushered in another set of programs intended to minimize economic damages, and shield the most vulnerable from crisis in a once-in-a-lifetime event. Federal programs were quickly put into place that, among other things, provided direct household stimulus[13], extended unemployment insurance unemployment insurance (UI) benefits to more workers and increased UI benefit payments[14], provided forgivable loans to businesses to keep employees on payroll[15], expanded food assistance for families[16], and provided pre-paid child tax credits[17].

For the most part, 2021 and 2022 were years characterized by labor market resilience and recovery. Traditional indicators in Washington such as industry employment and unemployment recovered to pre-pandemic levels in 2022 for the most part. However, the shift from a high unemployment rate to a low unemployment rate, for example, tells only part of the story. Inflation, housing market, and other conditions with varying connection to the labor market influence the ability for individuals and families to draw income and thrive.

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[12] See governor.wa.gov for full documentation of executive policies specific to Washington. Policies were also put in place by businesses.
[13] Internal Revenue Service
[14] CARES Act
[15] Payroll Protection Program (PPP loans)
[16] Pandemic Electronic Benefit Transfer (EBT)
[17] Internal Revenue Service

This chapter describes several facets and trends related to household income as published by the ACS. When reading ACS reports, it is important to consider the following:

1. Income is not limited to earnings from wages. Household income, as defined by the U.S. Census Bureau, is derived from five sources: earnings from wages, earnings from self-employment, investment income, transfer payments such as Social Security, and private retirement payments.
2. Each annual observation represents a statistical average of one-month observations over the course of a year. It provides an annual snapshot. Language about increasing income means that the annual income of a region increased but does not address the mechanisms underlying that change. That is, rising income could reflect year-to-year pay raises; it could also reflect wealthy neighbors moving into the neighborhood.
3. The pandemic disrupted data collection, resulting in a loss of state- and county-level statistics for 2020. Observations in 2018 and 2019 will occasionally be referred to as pre-pandemic recession and observations in 2021 and 2022 will be referred to as post-pandemic recession.

The decade between the Great Recession and the COVID-19 pandemic was characterized by employment growth as well as household income growth. According to the U.S. Census Bureau, the real[18] median household income in Washington remained more-or-less flat from 2010 to 2013 and began to increase starting in 2014. Median household income increased almost every year until reaching a pre-pandemic peak of $90,349 in 2019 *(Figure 6-1)*.

The median household income in Washington increased by 5.2% ($4,711) from 2018 to 2022. By comparison, the median household income for the United States was 4.1% ($2,347) over the same period.

While different explanations contribute to this finding, it is worth pointing out that that some of the highest employment growth rates, both before and during the COVID-19 pandemic, have been observed in high-wage industries including information services, professional and business services, and online retail trade. In addition, the deepest pandemic-related job losses were observed in relatively lower wage sectors such as leisure and hospitality and other services.

[18] Adjusted for inflation using the PCE deflator (2005 to 2017); adjusted for inflation by the U.S. Census Bureau (2018 to 2022)

The impact of the pandemic on household income differed for family households[19] compared to non-family households.[20] Despite relatively strong and consistent income growth leading up to 2020, the economic disruptions caused by the COVID-19 pandemic essentially put the brakes on household income growth, especially for non-family households. At a national level, the median household income decreased by an adjusted $94 dollars from 2019 to 2021. Washington household income increased by $714 over the same two-year period (0.8% growth over two years). Within that, the median income for family households increased by $1,699 or 1.6% while non-family household income dropped by $1,196 or 2.1% from 2019 to 2021.

Income stagnation continued into 2022. From 2021 to 2022, national median household income continued to drop, declining by $603 or 0.8%. Median household income in Washington increased by 0.3% or $243. Within that, the median family household income dropped by $1,254 (down 1.1%) and non-family household income expanded by $1,032 or 1.8%. By any measure, these relative gains and losses were modest, and the lack of income growth signals a shift from the consistent growth that characterized the five years preceding the pandemic.

Figure 6-1. Median household income in 2022 dollars

United States and Washington, 2018 through 2022. Source: U.S. Census Bureau, American Community Survey

Household type	2018	2019	2020	2021	2022
All households, U.S.	$72,408	$75,452		$75,358	$74,755
All households, Washington	$86,595	$90,349		$91,063	$91,306
Family households	$102,470	$108,747		$110,446	$109,192
Non-family households	$54,703	$57,463		$56,267	$57,299

Real median household income increased by 4.1% in Washington from 2018 to 2022.

[19] According to the U.S. Census Bureau, "A family includes a householder and one or more people living in the same household who are related to the householder by birth, marriage, or adoption. All people in a household who are related to the householder are regarded as members of his or her family."
[20] A nonfamily household consists of a householder living alone (a one-person household) or where the householder shares the home only with people to whom they are not related (e.g., a roommate).

The following section describes a selection of income-related statistics pertaining to Washington households according to the ACS. Supporting data are found in *Figure 6-2*.

Poverty

During and immediately after the Great Recession, the poverty rate[21] for Washington individuals increased from 11.3% in 2008 to 14.1% in 2013. The poverty rate steadily decreased from 2013 to 2019, when the rate fell to a pre-pandemic low of 9.8%. Following the pandemic recession, the 2021 poverty rate for Washington was 9.9%, unchanged from the 2019 rate. In 2022, the rate increased slightly to 10.1%.

Children tend to have higher poverty rates than the general population and follow a similar trend. In 2013, child poverty peaked at 18.8%. By 2019, the rate dropped to 12.0%. Similarly to the adult poverty rate, the child poverty rate was unchanged from 2019 to 2021. Unlike the general poverty rate, child poverty dipped slightly from 2021 to 2022. The latest observation was 11.4% in 2022. This is noteworthy because the rates appear to be converging, with child poverty on average appearing less prevalent than general poverty.

The relative stability of the poverty rate and the child poverty rate is likely a reflection of pandemic-specific policies, including but not limited to, expanded unemployment insurance eligibility, economic stimulus, child tax credit advances, and expanded access to Pandemic Electronic Benefit Transfer (EBT) for families that needed additional support. The longer-term convergence could also reflect larger demographic trends such as an aging population and smaller family sizes.

Household earnings

The Great Recession had lasting effects on the share of households reporting earnings from wage employment. The share of households reporting earnings from wage employment dropped from 81.3% in 2008 to 78.5% in 2013 and 2015. Despite a slight increase in

[21] Following the Office of Management and Budget's (OMB's) Directive 14, the U.S. Census Bureau uses a set of income thresholds that vary by family size and composition to determine who is in poverty. If the total income for a family falls below the relevant poverty threshold, then the family (and every individual in the family) is considered to be in poverty.

households reporting earnings from 2015 to 2017, the portion of households reporting wage income just before the pandemic remained relatively low by recent standards at 78.8%.

The sudden large-scale job losses experienced during the pandemic-induced recession of 2020 created a temporary drop in the portion of households reporting earnings, however, the loss of 2020 data obscures this likely scenario. By 2021, the portion of households reporting earnings dropped below the 2019 reading to 78.4%. This measure has not changed much over time but has exhibited a consistent downward trend. The relative stability and consistent change over time suggests that the gradual retirement of the baby-boom generation is probably the largest contributing factor. Despite the long-term downward trend, the portion of households reporting earnings increased slightly in 2022, likely buoyed by a generally strong labor market and low unemployment rates.

Despite the relative drop in the portion of households reporting earnings from a job, average household earnings from a job have increased steadily over time. As of 2019, the average household earnings from a job were $122,885 in 2022 dollars. From 2019 to 2021, average earnings jumped to $128,199 — a 4.3% increase over two years. Household earnings continued to increase slightly in 2023, with an average increase of $1,388 over the year.

Households can, and often do, include multiple wage earners that contribute income. It is also worth pointing out that average household earnings from a job exceed the median household income. While the median indicates the midpoint of statistical values, average household income can be significantly influenced by high-wage households.

Full-time and part-time work

Responses to the ACS are consistent in that the share of workers reporting full-time employment exceeds the share of workers reporting part-time employment. Of course, the opportunities to work decrease during recessions and increase during times of economic expansion. During the Great Recession, the portion of workers reporting full-time employment (35 or more hours per week) dropped from 61.6% in 2007 to 55.7% by 2011. By 2017, the portion of workers reporting full-time employment returned to pre-recession levels.

From 2019 to 2021, the portion of full-time workers dropped from 61.9% to 60.5%. The proportional drop was relatively low when compared to the Great Recession and was short-lived. From 2021 to 2022, the portion of workers reporting full-time employment reached 62.8%.

During times of economic distress, it is not uncommon to see an increase in the portion of workers in part-time employment. Individuals reporting part-time work (fewer than 35 hours per week) increased during the Great Recession, as full-time work became less available. During times of economic expansion, many jobs shift from part-time to full-time hours. In 2019, the portion of workers reporting part-time employment was 17.9%. If the COVID-19 recession followed the expected pattern, we could expect to see an increase in the portion of part-time workers. Instead, the portion of workers reporting part-time employment dropped to 17.4% in 2021 and to 16.9% in 2022.

Together, a drop in the portion of the part-time workforce paired with an expansion of full-time workforce reinforces the observation that 2021 and 2022 characterized a strong labor market — one that was favorable for employees.

Earnings from a job or self-employment

According to the U.S. Census Bureau, inflation-adjusted median earnings increased every year since 2014 (except for 2020). From 2019 to 2021, median earnings increased from $47,921 to $50,750, an increase of $2,829 or 5.9%. In 2022, median earnings continued to increase. Over the year, median earnings increased to $51,540 — nearly 1.8%. The median earnings for full-time, year-round workers increased by $4,714 or 7.1% from 2019 to 2021 but decreased by $1,110 from 2021 to 2022.

Comparing median earnings for male versus female full-time/year-round workers reveals a persistent earnings gap[22]. Women's median earnings ($61,862 in 2022) were $13,725 or 81.8% of men's median earnings ($75,587). From 2019 to 2021, the median earnings for both female and male full-time workers increased. Women's median earnings increased by $3,930 (7.1%) while men's median earnings jumped by $6,589 (9.1%). The earnings gap decreased by approximately one percentage point over the course of the pandemic. In 2022, median earnings for both men and women in the full-time, year-round workforce dipped. Men's median earnings dropped by $4,474 to $75,336 and women's median earnings dropped by $362 to $61,862.

[22] According to the U.S. Census Bureau American Community Survey. The gap in earnings by gender is also covered in chapter 7, referencing a different data resource.

Despite proliferation of employment-related apps such as ride sharing, the proportion of people reporting self-employment has remained more-or-less unchanged over the past several years, however the U.S. Census Bureau noted that there was a statistically significant decrease in the portion of self-employed Washingtonians when comparing 2018 against 2022. In 2022, 5.5% of workers reported that they were employed in their own non-incorporated business.[23]

The one-year lag in the data being used for this report is important to acknowledge. Although monetary figures in this report are adjusted for inflation, 2022 and 2023 were characterized by rapidly rising inflation. In some ways, this report could read very differently one year from now. The drop in earnings from 2021 to 2022 is likely an artifact of inflation exceeding wage growth during a critical one-year period of data collection.

Income other than from earnings

Income includes several components, one of which is earnings. This section describes trends in transfer payments and retirement income.

Baby Boomers (a particularly large generation) are reaching retirement age. The proportion of households reporting Social Security and pension payments has increased gradually over the past several years. This is one contributing factor to the phenomenon of a decreasing number of households reporting wage earnings in the previous section. As of 2022, 28.9% of Washington households received Social Security payments, and 23.9% received private pension payments. For perspective, the comparable figures from five years earlier were 29.7% and 19.6%, respectively.

The average annual payout for households collecting private pensions in 2022 was $32,828, or an average monthly payment of $2,570. In 2018, the adjusted monthly amount was $3,138.

Supplemental Security Income (SSI) is a federal program that pays benefits to disabled adults and children who have limited income and resources, and to people 65 years and older without disabilities who meet financial requirements. In 2022, 4.4% of all Washington

[23] Self-employment is difficult to measure accurately. Estimates from different data sources (e.g., household surveys versus tax filings) can differ substantially.

households received SSI during the year. This proportion has decreased slightly since 2018. The average monthly payment for households receiving SSI was $856 in 2022.

The proportion of households collecting welfare cash payments increased rapidly during the Great Recession, reaching a peak of 4.6% in 2010. By 2019, that proportion had dropped to 2.5%. The COVID-19 pandemic also had a substantial impact on welfare receipt. Although 2020 is not directly noted in this document, the proportion of households receiving welfare payments jumped to 4.1% in 2021. In 2022 the proportion dropped somewhat, but not to the levels observed just before the pandemic. In 2019, 2.5% of households reported that they were receiving welfare cash payments. The average monthly payout for welfare recipients in 2022 was $397.

The Supplemental Nutrition Assistance Payment (SNAP) is a type of non-cash transfer payment for households that fall beneath certain income thresholds. It is often referred to as food assistance or food stamps. Over the past 10 years, SNAP benefits have represented a portion of household income for at least 10% of households. In 2012, 15.1% of households received food assistance. The proportion of SNAP recipients decreased each year until 2019 when SNAP was estimated to reach 10.6% of Washington households. The COVID-19 pandemic brought increased need for food security. SNAP benefits increased to cover 12.3% of households by 2021 and dipped to 11.3% in 2022. During the pandemic, the U.S. Congress created a temporary extension of Pandemic-EBT (P-EBT) aid to ensure that children who lost access to free and reduced-price school meals would not lose food security at home. This at least partially explains the increased proportion of households receiving food assistance.

Health insurance

Prior to the introduction of the Affordable Care Act (ACA, commonly called “Obamacare”), the portion of Washington residents reporting no health coverage hovered around 14%. In 2014, the proportion of uninsured households dropped from 14% to 9.2%. By 2016, the proportion had dropped to 6%; it rose slightly over the next three years. In 2021, 6.4% of Washington residents (488,053 people) reported that they were uninsured. In 2022, the number and proportion of households without insurance dropped to 467,690 and 6.1% respectively.

For the most part, Washington residents with health insurance are covered in the private market — usually through their employers. The proportion of households reporting private coverage has remained steady since this question has been asked of respondents. During the Great Recession, responses dropped from 71.0% in 2008 to 68.5% in 2012. As of 2022, 70.8% of Washington residents were covered by private insurance. On the flip side, residents relying

solely on public health insurance jumped from 17.2% in 2013 to 20.1% in 2014. In 2021 and 2022, 20.7% of Washington residents relied solely on the public market for health insurance.

Homeownership and rent

The homeownership rate in Washington decreased from 66.1% in 2007 to 61.7% in 2014, reflecting the housing bubble that preceded the Great Recession. The rate has increased every year to 2019, when it reached 63.1%. In 2022 it was estimated at 64.2% — still below observed rates prior to the Great Recession but increasing over time.

The cost of living can vary substantially from one place to another, making income levels an inadequate measure when trying to assess local conditions. For example, the same level of household income can imply very different standards of living depending on whether a family resides in Bellevue or Yakima. One way to measure economic stress, regardless of geographic variation, is to compare the cost of housing relative to household income. Thirty percent is a federally defined threshold for indicating economic duress.

The percent of Washington households in economic distress by this definition rose in 2008 and 2009, but then declined through the foreclosure process as a large number of homeowners transitioned to renters. Within that estimation, the percentage of renters exceeding the 30% threshold increased during the recession, reaching 48.4% in 2010. By 2017, the proportion of economically distressed renters decreased to 45.2%. In 2018, the downward trend reversed. In 2018 and 2019, 47.7% of renters were reported to have paid more than 30% of household income on housing-related costs. In 2021, that proportion increased to 49.0% and by 2022, 51.2% of renters were estimated to be in economic distress by this measure.

Homeowners with a mortgage paying more than 30% of their income toward housing rose in the lead-up to the recession, exceeding 40% from 2007 to 2010. Over the course of the recovery, that proportion decreased, in part due to an overall decline of homeownership. By 2021, the proportion of economically distressed homeowners with a mortgage was 28.8%, unchanged from 2019, and well below pre-recession levels. In 2022, the trend began to reverse, with a slight uptick in homeowners paying more than 30% on their housing (29% in 2022). On the surface, this appears to be a positive statistic. Note, however, that the data represent snapshots in time. Many economically distressed households during the Great Recession became renters.

Figure 6-2. Selected household statistics

Washington, 2018 through 2022. Source: U.S. Census Bureau, American Community Survey

Household statistic	2018	2019	2020	2021	2022	Change 2018-2022
Median household income*	$86,595	$90,349	x	$91,063	$91,306	5.4%
Median family income*	$102,470	$108,747	x	$110,446	$109,192	6.6%
Poverty rate, all individuals	10.3%	9.8%	x	9.9%	10.1%	-1.9%
Poverty rate, children under 18	12.5%	12.0%	x	12.0%	11.4%	-8.8%
Households with earnings from a job **	79.0%	78.8%	x	78.4%	78.8%	-0.3%
Average household earnings from a job* ***	$118,507	$122,885	x	$128,199	$129,587	9.3%
Full-time workers****	63.9%	61.9%	x	60.5%	62.8%	-1.7%
Part-time workers	18.5%	17.9%	x	17.4%	16.9%	-8.6%
Median earnings for all workers*	$47,097	$47,921	x	$50,750	$51,640	9.6%
Median earnings for full-time, year-round workers*	$63,888	$66,731	x	$71,446	$70,336	10.1%
Median earnings for male full-time, year-round workers*	$72,091	$73,472	x	$80,061	$75,587	4.8%
Median earnings for female full-time, year-round workers*	$56,941	$58,113	x	$62,224	$61,862	8.6%
Percent of workers who are self-employed in own not incorporated business	6.0%	5.7%	x	5.6%	5.5%	-8.3%
Households receiving social security	29.7%	29.7%	x	28.7%	28.9%	-2.7%
Households with retirement income	19.6%	25.0%	x	24.0%	23.9%	21.9%
Avg. mo. payout for households receiving private retirement income*	$3,138	$3,169	x	$3,062	$2,570	-18.1%
Households receiving supplemental security income (SSI)**	4.6%	4.5%	x	4.5%	4.4%	-4.3%

Household statistic	2018	2019	2020	2021	2022	Change 2018-2022
Average monthly payout for those receiving SSI*	$1,154	$1,046	x	$1,025	$856	-25.9%
Households receiving welfare cash payments**	2.9%	2.5%	x	4.1%	3.3%	13.8%
Average monthly payout for welfare recipients*	$262	$294	x	$487	$397	51.5%
Households receiving food assistance**	11.1%	10.6%	x	12.3%	11.3%	1.8%
Residents without health insurance	6.4%	6.6%	x	6.4%	6.1%	-4.7%
Number of residents without health insurance	477,284	496,047	x	488,053	467,690	-2.0%
Residents with private health insurance	70.6%	71.1%	x	70.5%	70.8%	0.3%
Residents relying solely on public health insurance	20.7%	20.1%	x	20.7%	20.7%	0.0%
Homeownership rate	62.8%	63.1%	x	64.0%	64.2%	2.2%
Renters paying more than 30% of income for housing	47.7%	47.7%	x	49.0%	51.2%	7.3%
Homeowners with a mortgage paying more than 30% of income for housing	29.1%	28.8%	x	28.8%	29.5%	1.4%
PCE deflator	102	104	x	109	116	13.7%

*In 2022 dollars. ** Households may fall into more than one of these categories. *** Includes earnings from all members in the household. **** Full-time workers usually worked at least 35 hours per week (but may not be year-round workers). Census data was largely unavailable for 2020. Most readings for 2021 track closely with pre-pandemic metrics.

Income inequality

One of the challenges of working with aggregated data is that nuanced stories and trends can get lost beneath the surface. *Figure 6-3* illustrates the share of households that fell within certain income ranges in 2022 dollars. Examining household income ranges allows for a more nuanced view of how the economic recovery has varied across socioeconomic groups.

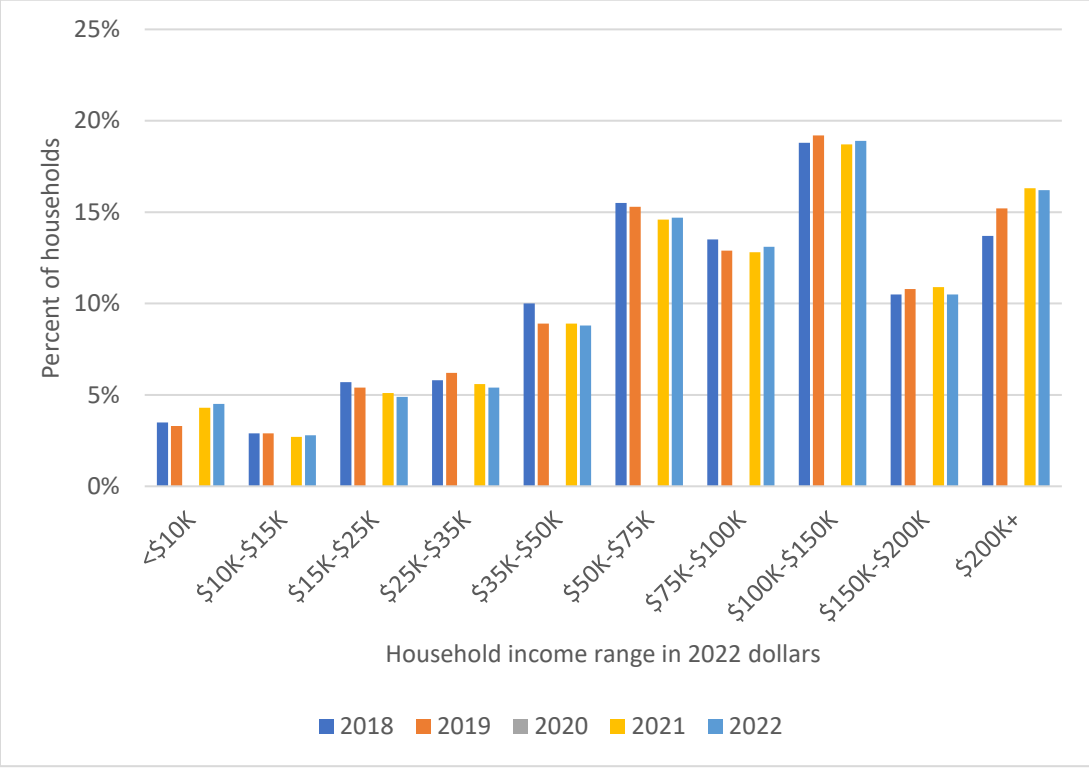
Over the past five years, the proportion of households with $35,000 or less in inflation adjusted annual income has gradually but steadily decreased. Households with income ranges less than $35,000 accounted for about 17.9% of all households in 2018. By 2022, the share was 17.6%. This observation runs parallel to the observation that poverty rates have fallen over time.

The share of households with incomes between $35,000 and $100,000 declined from about 39% in 2018 to just over 36% in 2021. In the past year, the general declining trend shifted. Thirty-six-point six percent of households were estimated in this defined middle-income range.

Meanwhile, upper and upper-middle income households increased as a share of total Washington households over the past five years. Households earning more than $100,000 per year increased as a share of total households from 2018 to 2019 (up from 43% to 45%) and increased then again in 2021 (nearly 46%). In 2022, the share of upper income households declined slightly to 45.6%.

Figure 6-3: Percent of households by income range, 2022 dollars

Washington, 2018 through 2022. Source: U.S. Census Bureau, American Community Survey



From 2021 to 2022, the share of households in most income brackets remained more-or-less unchanged. Taking a longer-run view, the share of households earning more than $100,000 post-pandemic increased relative to before 2020. The share of households earning between $35,000 and $100,000 decreased, and the share of households earning less than $35,000 remained steady.

Chapter 7: Wages

Summary

- Job losses during the COVID recession were predominantly in lower-wage jobs. The recovery, which began in earnest in early 2021, featured faster-than-average hiring in many (but not all) lower-wage industries, and strong growth in many higher-wage industries. In 2022, real wage growth dropped as inflation took hold.
- Both the average and median hourly wage decreased in 2022, reflecting inflation. Over the past several years (excluding 2022), the average hourly wage has consistently risen faster than the median, indicating that wage inequality widened. The ratio of the best-paying 10% of jobs to the lowest-paying 10% of jobs decreased to 11.3, after reaching the highest value since the data series began in 1990 — when the ratio was 7.7.
- Wage inequities among different demographic groups have persisted for decades and continued in 2022. The average monthly wage for African American workers was 77.3% of the average for all workers, lower than it was in 1992 (83.6%). Earnings for Indigenous workers were 69.7% below average, while Pacific Islanders earned 72.7% of the average and Latino/Hispanic worker wages were at 72.4%. The average for women was 79.7% of the all-job average, and 66.9% of the average for men, like in 1992.
- The number of jobs paying below $20.00 per hour plummeted in 2020, from 483,941 down to 354,800, due primarily to the loss of lower-wage jobs during the pandemic. In 2021 and 2022, the number of jobs in that pay range continued to decrease. This was due to lower-wage industries recovering and a tight labor market. Jobs paying more than $56.00 per hour increased from 605,553 in 2019 to 659,006 in 2020, as high wage jobs — many in the tech sector — expanded. The number of high wage jobs by this measure continued to grow in 2021 and 2022.

Introduction to the data

Much of the analysis in this chapter is based on the state's quarterly wage files. Each record in these files includes an employee ID, and employer ID, wages earned in the quarter, and hours worked, for every non-federal employee in the state covered by unemployment insurance. Data is available for every quarter (three-month period) going back to 1990. In the first quarter of 2023, when the state labor market had fully recovered from the COVID-19 recession, there

were 4.0 million records. The quarterly wage files help determine the hourly wage for each job, and from there to calculate the median and average hourly wage, average wage by decile (e.g., the average wage for the lowest paid 10% of jobs), and the number of jobs in different wage ranges (e.g., below $14 per hour). Data is available by county and industry, but there is no information on the demographics of workers in the quarterly files. All data below has been adjusted for inflation to 2021 dollars.

Note that almost 50,000 corporate officers (usually the highest paid employees in large corporations) are not included in the data, as they have opted out of the system. Also, benefits and tips are not included as wages.

A quarterly analysis means a loss of some of the nuance of monthly changes. However, insight is gained into the total hours worked — when workers might not have lost their job, but had their hours cut, for example, or worked intermittently (e.g. one week on, one week off).

Quarterly employment from the wage files will be reported on a full-time equivalency (FTE) basis, with 40 hours per week — usually 520 hours per quarter — considered as one FTE job. Two half-time jobs are equal to one FTE job. This is different from the monthly employment published in the Quarterly Census of Employment and Wages (QCEW) data series, in which a part-time job and a full-time job are both considered to be one job.

The quarterly Local Employment Dynamics (LED) database is a partnership of the U.S. Census Bureau and the states. The LED provides an average wage for each quarter going back to 1990 by county, industry, and demographics like gender, age, race, ethnicity and education.

Considering the broader labor market, what happened with wages?

- Total payroll
- Median wage
- Hourly wage
- Wage dispersion

The COVID-19 recession and recovery: employment, payrolls, wages and inflation

The COVID-19 recession began in March 2020 and effectively ended in June of that year when employment started to recover. The recovery of the labor market from COVID-19, which proceeded in fits and starts after May 2020, began in earnest in February 2021. Job openings soared, and the rate at which workers were quitting their jobs picked up. Many businesses struggled to find workers. All of these factors an upward pressure on wages.

In 2022, the number of jobs covered by unemployment insurance (QCEW jobs, with the exclusions noted above) averaged 3.48 million a month, an increase of 4.6% from the previous year. This measure is based on average monthly counts of jobs, with full- and part-time work getting equal weight. When employment increases more than hours worked, that means that a disproportionate number of part-time and/or seasonal jobs were created (as opposed to full-time, year-round jobs). These tend to be lower-wage jobs. Two industries fit that description: employment in arts, entertainment and recreation expanded by 23.4% in 2022, and leisure and hospitality added jobs at a 14.6% rate, as they recovered from horrendous losses in 2020. These two industries made up nearly 10% of all jobs in 2022 but accounted for 30% of job growth that year.

While employment rose, total payroll and the average annual wage did not keep up with inflation. Total payroll declined by 1.4%, from $284 billion to $280 billion after adjusting for inflation. The average annual wage fell by 5.8% to $84,039. Ten sectors were above average in job growth, payroll growth, and average wage growth, as shown in *Figure 7-1.*

Figure 7-1. Sectors with faster than average growth in jobs, payroll and average wage

Washington, 2021-2022. Source: Employment Security Department/DATA Division, Quarterly Census of Employment and Wages (QCEW)

Sector	NAICS	Total employment, 2022	Employment growth, 2021-2022	Total payroll (billions), 2022	Payroll growth, 2021-2022	Average annual wage, 2022	Average wage growth, 2021-2022
All industries		**3,335,323**	**4.59%**	**$280.3**	**-1.43%**	**$84,039**	**-5.75%**
Management of companies and enterprises	55	103,987	140.70%	$20.5	229.02%	$196,685	36.69%
Arts, entertainment, and recreation	71	49,598	23.38%	$2.1	23.47%	$43,152	0.07%
Transportation and warehousing	48-49	125,322	15.47%	$9.0	12.51%	$72,135	-2.56%
Accommodation and food services	72	272,349	14.58%	$8.3	16.11%	$30,483	1.34%
Professional and technical services	54	250,168	10.93%	$32.5	7.53%	$30,483	1.34%
Educational services	61	47,498	9.87%	$2.3	6.09%	$129,769	-3.06%
Other services, except public administration	81	91,351	8.60%	$4.9	4.58%	$47,510	-3.45%
Administrative and waste services	56	183,360	7.16%	$12.3	9.66%	$53,240	-3.70%
Real estate and rental and leasing	53	57,322	5.85%	$4.3	5.00%	$67,070	2.34%
Wholesale trade	42	135,189	4.67%	$13.3	1.94%	$74,556	-0.81%

Median hourly wage and average hourly wage both decline in 2022

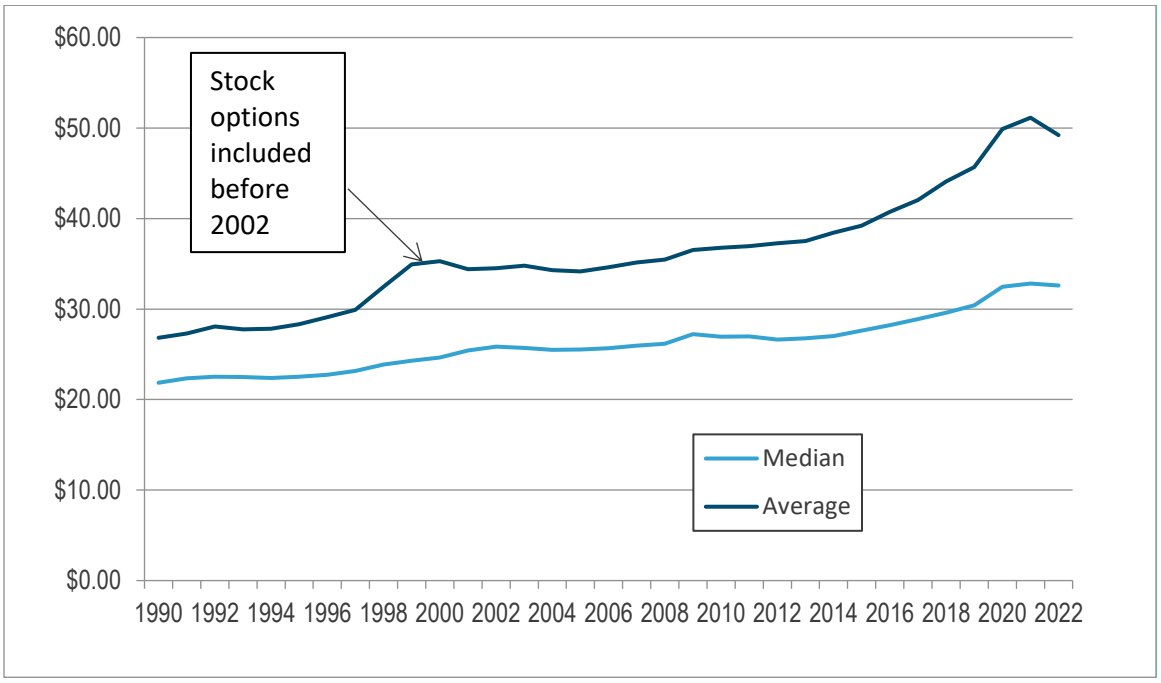
After rising sharply in 2020 and increasing at a slower rate in 2021, both the median hourly wage and average hourly wage declined in 2022, after adjustment for inflation (see *Figure 6-2*).

The average hourly wage fell from $51.14 to $49.22, a drop of 3.8%. The average was still 7.7% above the 2019 figure.

The median hourly wage dipped by 0.7%, from $32.82 in 2021 to $32.60 in 2022. As with the average wage, an increase in the nominal median wage did not keep up with inflation. The 2022 median was 7.1% higher than the 2019 median.

Figure 7-2. Median hourly wage and average hourly wage

Federal employment, NAICS 814 and DSHS/COPES employment excluded. Adjusted for inflation. Washington, 1990 to 2022. Source: Employment Security Department/DATA Division Unemployment Insurance Data Warehouse



The average hourly wage fell by 3.8% in 2022 while the median hourly wage declined by 0.7%.

Wage inequality declined in 2022 but was higher than in 2019

A common way to measure wage inequality is to compare wage levels at the top with wages at the bottom. We can divide jobs into 10 equal groups, starting with the 10% of jobs with the lowest hourly wage, then the next 10%, and so on until we get to the top 10%. The

mathematical term for each group is a decile. To track wage inequality, we can calculate the 90/10 ratio, defined as the ratio of the average hourly wage for the top 10% of jobs with the average hourly wage for the bottom 10% of jobs.

Figure 7-3 provides detail on how decile average wages have changed over time. Notably, in 2022, lower-wage jobs held their own, with wages for the lower-paid 40% of jobs increasing faster than inflation. Wages generally shifted downward slightly for the next 40% of jobs, while there was a substantial drop in the average wage paid to the best-paid 10% of jobs.

When compared with 2019, wages were up across the board by 7% to 9%, with the best-paid jobs up 10%. Thus, even with the sharp drop in wages at the top in 2022, wage inequality was slightly greater in 2022 than in 2019 — despite Washington having the highest state minimum wage in the nation.

Figure 7-3. Measuring the wage gap, 2022 dollars

Washington, selected years, 2001 to 2022. Source: Employment Security Department/DATA Division, Unemployment Insurance Data Warehouse

							Percent change	
Wages	2001	2007	2019	2020	2021	2022	2021-2022	2019-2022
Median hourly wage	$25.44	$25.97	$30.43	$32.47	$32.82	$32.60	0.7%	7.1%
Average hourly wage for								
All jobs	$34.41	$35.15	$45.68	$49.90	$51.14	$49.22	-3.8%	7.7%
Lowest paid 10% of jobs	$11.01	$11.24	$14.14	$15.36	$15.33	$15.41	0.5%	9.0%
Second-lowest 10% of jobs	$14.00	$14.01	$17.40	$18.48	$18.74	$18.98	1.3%	9.1%
Third-lowest paid 10% of jobs	$16.99	$17.07	$20.13	$21.46	$21.78	$22.00	1.0%	9.3%
Fourth-lowest paid 10% of jobs	$20.16	$20.40	$23.54	$25.13	$25.50	$25.57	0.3%	8.6%
Fifth-lowest paid 10% of jobs	$23.59	$24.00	$27.91	$29.75	$30.11	$29.98	-0.4%	7.4%
Fifth-highest 10% of jobs	$27.50	$28.24	$33.46	$35.66	$36.08	$35.79	-0.8%	7.0%

Fourth-highest 10% of jobs	$32.40	$33.82	$40.96	$43.57	$44.10	$43.79	-0.7%	6.9%
Third-highest 10% of jobs	$39.14	$41.65	$51.39	$54.64	$55.29	$55.30	0.0%	7.6%
Second-highest 10% of jobs	$48.81	$53.23	$67.81	$72.34	$73.40	$73.80	0.5%	8.8%
Highest-paid 10% of jobs	$111.00	$108.03	$158.67	$184.00	$192.89	$174.42	-9.6%	9.9%
Ratio of highest 10 to lowest 10	10.1	9.6	11.2	12.0	12.6	11.3	NA	NA
Ratio of highest 10 to median	4.4	4.2	5.2	5.7	5.9	5.4	NA	NA
Ratio of median to lowest 10	2.3	2.3	2.2	2.1	2.1	2.1	NA	NA

*Boosted by stock options. Without stock options, the average would have been about $90.00 in 2022 dollars and the 90/10 ratio would have been about 9. The gap between the highest- and lowest-paid jobs decreased from 2021 to 2022 but was still slightly larger than in 2019.

To add a bit more nuance, the gap between the average wage for the top 10% and the median hourly wage increased to its highest level on record in 2021 (5.9), before declining to 5.4, still wider than in 2019. The distance between the median and the average for the bottom 10% declined slightly in 2020 to 2.1, where it has remained. The latter has trended down from 2.3 over the last couple decades. Stated more plainly, the average job in the top 10% paid more than five times the median hourly wage, while jobs in the bottom 10% averaged about half the median wage.

From 2021 to 2022, wage growth did not keep up with inflation, resulting in one-year declines in the average and median wage measures for the state. The median hourly wage dropped by 0.9% and the average hourly wage dropped by 3.8% in 2022. Within that, real wage growth was observed among the lowest paying jobs and slight one-year declines were observed in mid-range wages. The average wage of the highest 10% of jobs declined by 9.6% over the year.

From 2019 to 2022, the inflation-adjusted median hourly wage increased by 7.1% and the average hourly wage increased by 7.7%. Pre- to post-pandemic wage increases were observed at all wage levels, with the greatest proportional increases observed among the lowest and highest-paid wage brackets. The largest proportional wage increases were attributable to the highest-paid 10% of jobs (up 9.9% from 2019 to 2022).

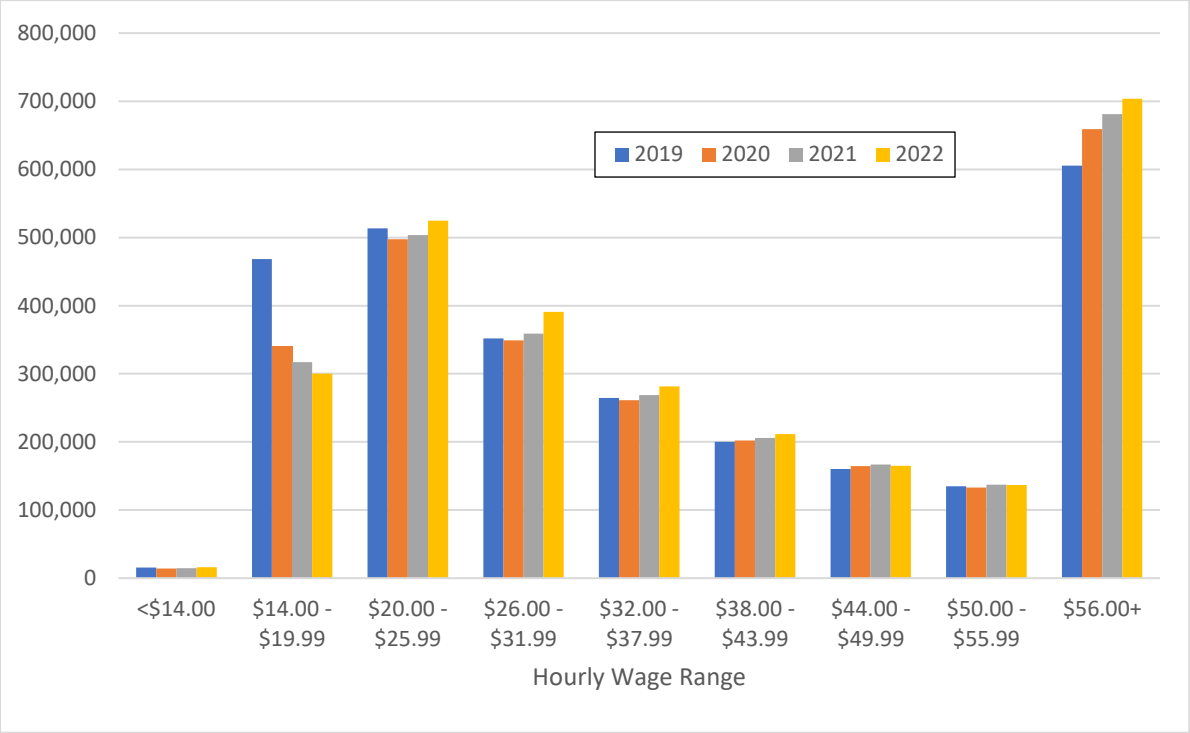
More higher-wage jobs, fewer lower-wage jobs in 2022

Figure 7-4 shows how hourly wages shifted from 2019 to 2022, in seven wage categories. Some takeaways:

- First, the number of FTE jobs — reflecting the number of hours worked across the state — declined by 3.4% in 2020 and then grew by 1.3% in 2021 and 2.9% in 2022. In contrast, the change in the number of jobs as measured by the QCEW fell by 5.8% in 2020 before bouncing back with gains of 2.9% in 2021 and 4.6% in 2022. The differences reflect the fact that the COVID-19 recession had a disproportionate impact on lower-wage service jobs. The net change in FTE jobs from 2019 to 2022 was an increase of 17,200, only 0.6%.
- There were almost 88,000 fewer FTE jobs paying below $14.00 per hour in 2022 than in 2019, a drop of 76%. The overall decline had two major causes: in 2020, there were major COVID-19-related job losses in lower-wage industries. In addition, the increase in the minimum wage in 2020 from $12.00 to $13.50 helped push jobs into the next higher ($14.00+) wage range during the recovery years. As noted in previous annual reports, there was no evidence that the increase in the minimum wage led to job losses. In both 2021 and 2022, the minimum wage did not keep up with inflation, declining by 2.7% and 0.6%, respectively. The inflation-adjusted decline in the minimum wage explains the small increase in jobs paying below $14.00 per hour in 2021 and 2022.
- The number of FTE jobs paying between $14.00 per hour and $19.99 per hour declined by 87,000. In some cases, the decrease was due to an increase in wages that pushed jobs into the next higher pay bracket — the number of jobs paying between $20.00 and $25.99 per hour grew by almost 41,000. In other cases, depending on the industry, it was due to job loss.
- The steady increase in jobs paying $56.00 per hour or more continued in 2019-2022, although at a slower pace in the last two years.

Figure 7-4. Employment by hourly wage ranges

Federal employment, NAICS 814 and DSHS/COPES employment excluded
Adjusted for inflation. Washington, 2019-2022. Source: Employment Security Department/DATA Division, Unemployment Insurance Data Warehouse



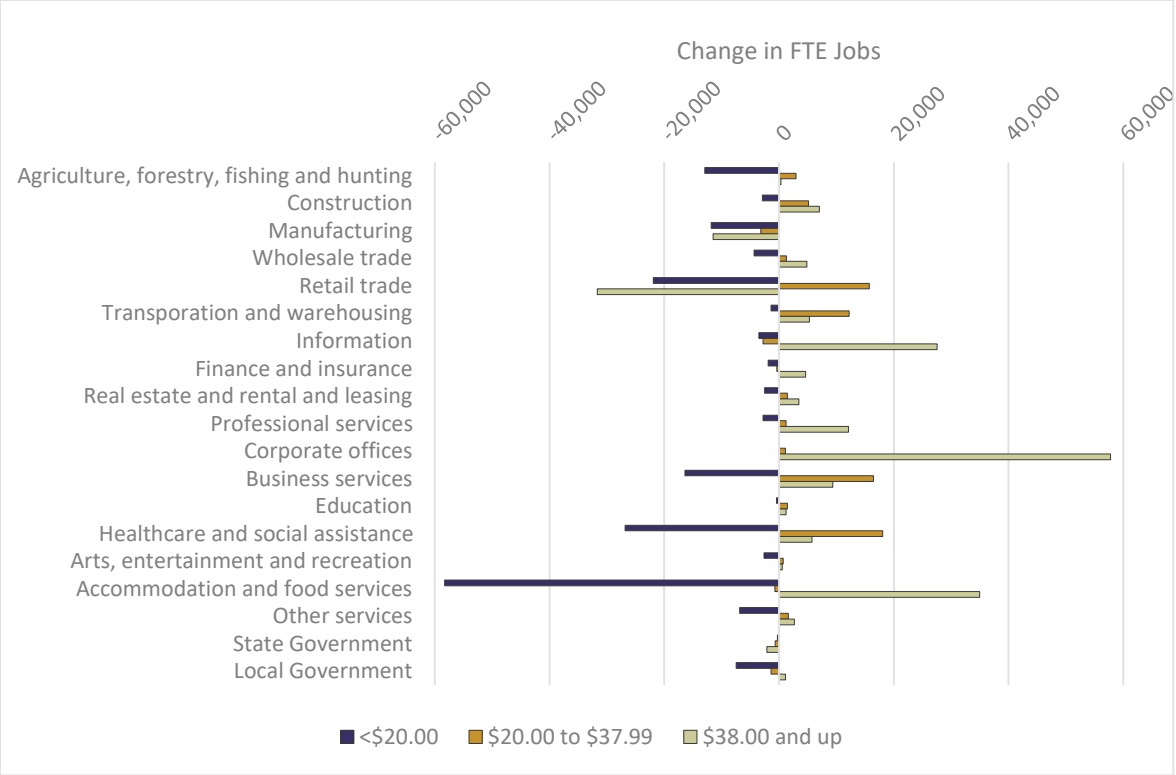
The number of jobs in the lowest-paid wage ranges fell dramatically from 2019 to 2022, while the number of higher-paying jobs continued to climb.

Wages by sector

Figure 7-5 compares the 2022 wage distribution of jobs by sector. The descriptions below make use of both average monthly employment from the Quarterly Census of Employment and Wages (QCEW) and full-time equivalent (FTE) employment and hourly wages based on the quarterly wage files.

Figure 7-5. Change in FTE employment by hourly wage ranges, by sector and selected industries

Washington, 2019-2022. Source: Employment Security Department/DATA DIVISION, Unemployment Insurance Data Warehouse



Job losses in the COVID recession were disproportionately low-wage jobs but varied widely by sector. By contrast, employment gains were generally among high wage jobs.

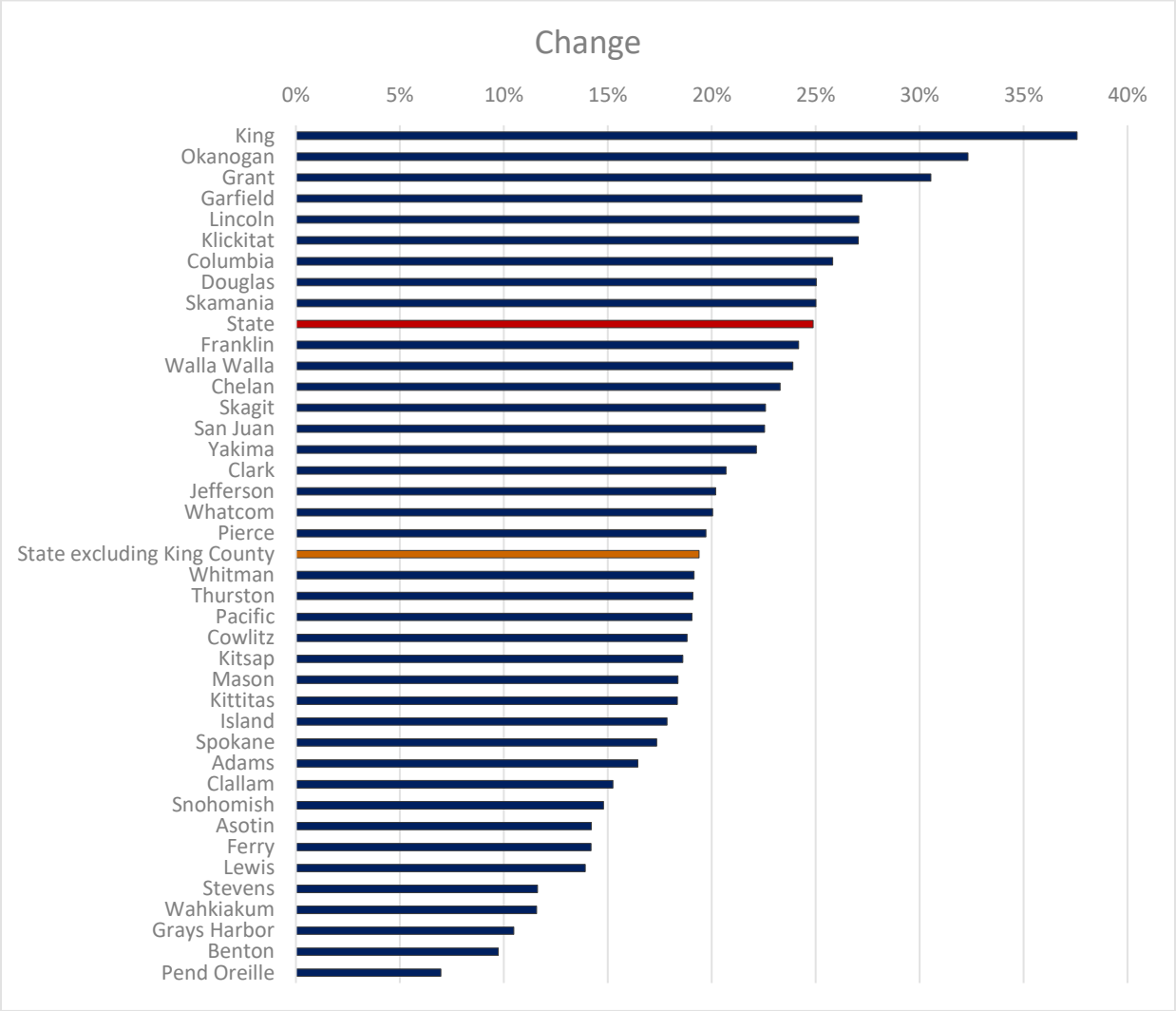
Wage inequality across the state

Not surprisingly, wage levels vary widely across the state. The median hourly wage by county in 2022 varied from $42.96 in King County to $20.80 in Yakima County. Wages at the county level are determined in large part by the industries present, the occupational pattern of employment in those industries, and the cost of living (the biggest difference county to county being housing costs).

Figure 7-6 shows the inflation-adjusted change in the median hourly wage for each county, from 2007 to 2022. While King County takes the top spot, most of the counties with more rapid growth in the median were east of the Cascades. It should be noted that these counties still lagged the state median by at least $5 per hour, and one of them, Okanogan, had the second lowest median in the state.

Figure 7-6. Change in median hourly wage, 2022 dollars

Washington and its counties, 2007 to 2022. Source: Employment Security Department/DATA Division; Unemployment Insurance Data Warehouse



The median hourly wage increased in every county from 2007 to 2022, but with great variation. Seven counties exceeded the state's gain of 26.1%, led by King County at 38.8%.

Average monthly wages by worker demographics

The Longitudinal Employment-Household Dynamics (LEHD) program is a partnership between the U.S. Census Bureau and states in which Census adds demographic detail to state employment databases. One of the program's products is the Local Employment Dynamics (LED) database, which provides employment data and average monthly wage by industry and

county with three demographic breakouts: age group by gender (although only male and female are available); education by gender (for those aged 30 and above); and race by ethnicity (Hispanic/non-Hispanic).

LED data is based on the quarterly wage files, and so does not correspond exactly to monthly employment estimates from the Quarterly Census of Employment and Wages (QCEW). Calculating an average wage is problematic on a quarterly basis because the number of hours worked by a particular worker with a particular employer can vary tremendously, from as little as one hour, up to 520 hours (equivalent to working eight hours a day, five days a week) or more depending upon overtime. LED addresses this challenge in part by identifying "full-quarter" jobs — jobs which exist not only in the quarter being analyzed, but in the previous and subsequent quarters as well. The presumption is that the job provided steady work (whether part time or full time) throughout the quarter, and so an average monthly wage — total quarterly earnings divided by three — would be representative. Note that because shorter-term jobs, which generally are lower paid, are not included, the averages shown are significantly higher than the average wage for all jobs.

As shown in *Figure 7-14*:

- The average monthly wage for full-quarter jobs held by women ($5,885) was 79.7% of the average for all jobs. The ratio of the average for women vs. the average for men was 66.9%. This was the same ratio observed in 1992.
- The average monthly wage for jobs held by African American, Indigenous, Pacific Islander, and multi-racial workers was significantly below the average for all jobs. Wages for African American and Indigenous workers have grown more slowly than the average for all workers. Indigenous workers had the lowest average wage in 2022.
- The average wage paid to Asian American workers was substantially higher than the average for all jobs. It should be noted that this racial group, like all others, is very diverse, with some members whose families have been here for many generations to some who have only recently arrived in this country. There is likely a more unequal distribution of wages within this racial grouping than any other.
- The average for Latino/Hispanic workers was the second-lowest for any racial/ethnic group.
- The peak age for earnings was the 45 to 54 age group. Average wages increase with age, before dropping somewhat above the age of 54, probably because higher-wage

workers can afford to retire earlier. The average for workers aged 65 and older has grown rapidly, possibly because more are working a full-time schedule.

- The wage premium for graduating with a four-year degree (or more) has increased since 1992 but has decreased slightly since 2006.

Figure 7-7. Demographic wage gaps, in constant 2022 dollars

Washington, 1992, 2006 and 2022. Source: Local Employment Dynamics database/Census Bureau, states. Calculations by Employment Security/DATA Division

Wages	1992	Percent of average for all jobs	2006	Percent of average for all jobs	2022	Percent of average for all jobs
All jobs	$4,417	100.0%	$5,199	100.0%	$7,386	100.0%
By gender						
Male	$5,243	118.7%	$6,327	121.7%	$8,800	119.2%
Female	$3,507	79.4%	$4,019	77.3%	$5,885	79.7%
By race						
African American	$3,692	83.6%	$4,157	80.0%	$5,707	77.3%
Indigenous	$3,240	73.4%	$3,825	73.6%	$5,147	69.7%
Asian American	$3,783	85.6%	$5,200	100.0%	$10,244	138.7%
Pacific Islander	$3,184	72.1%	$3,739	71.9%	$5,370	72.7%
Multi-racial	$3,484	78.9%	$4,214	81.1%	$6,063	82.1%
White	$4,508	102.0%	$5,307	102.1%	$7,174	97.1%
By ethnicity						
Latino/Hispanic	$2,906	65.8%	$3,567	68.6%	$5,347	72.4%
Non-Latino/Hispanic	$4,484	101.5%	$5,328	102.5%	$7,666	103.8%
White non-Hispanic	$4,574	103.6%	$5,441	104.6%	$7,451	100.9%
By age						
14-18	$788	17.8%	$1,002	19.3%	$1,265	17.1%
19-21	$1,669	37.8%	$1,846	35.5%	$2,477	33.5%
22-24	$3,344	75.7%	$2,830	54.4%	$4,060	55.0%
25-34	$3,929	88.9%	$4,521	87.0%	$6,720	91.0%
35-44	$5,233	118.5%	$5,980	115.0%	$8,535	115.6%
45-54	$5,351	121.1%	$6,255	120.3%	$9,019	122.1%
55-64	$5,059	114.5%	$5,881	113.1%	$7,963	107.8%
65+	$2,502	56.6%	$3,350	64.4%	$5,380	72.8%
By education (aged 25 and older)						

Wages	1992	Percent of average for all jobs	2006	Percent of average for all jobs	2022	Percent of average for all jobs
Did not finish high school	$3,132	70.9%	$3,313	63.7%	$5,954	80.62%
High school diploma/GED	$3,788	85.7%	$4,200	80.8%	$6,311	85.45%
Some college/AA	$4,453	100.8%	$4,996	96.1%	$6,932	93.86%
Bachelor's or higher	$6,230	141.0%	$7,652	147.2%	$10,560	142.98%
Under age 25	$2,281	51.6%	$2,167	41.7%	$3,032	41.05%

Data for full-quarter jobs show that there are significant differences between the average wage for workers by gender, race, ethnicity, age and education, many of which have persisted for decades.

Appendix 1: Seasonal, structural and cyclical industry employment

Theoretical base for employment decomposition

We used R's advanced decomposition models for time series.

Decomposition of employment for each point in time (months, in our case) is:

Employment = (trend + cycle) + seasonal + irregular.

Within the decomposed employment components, trends are a result of structural changes.

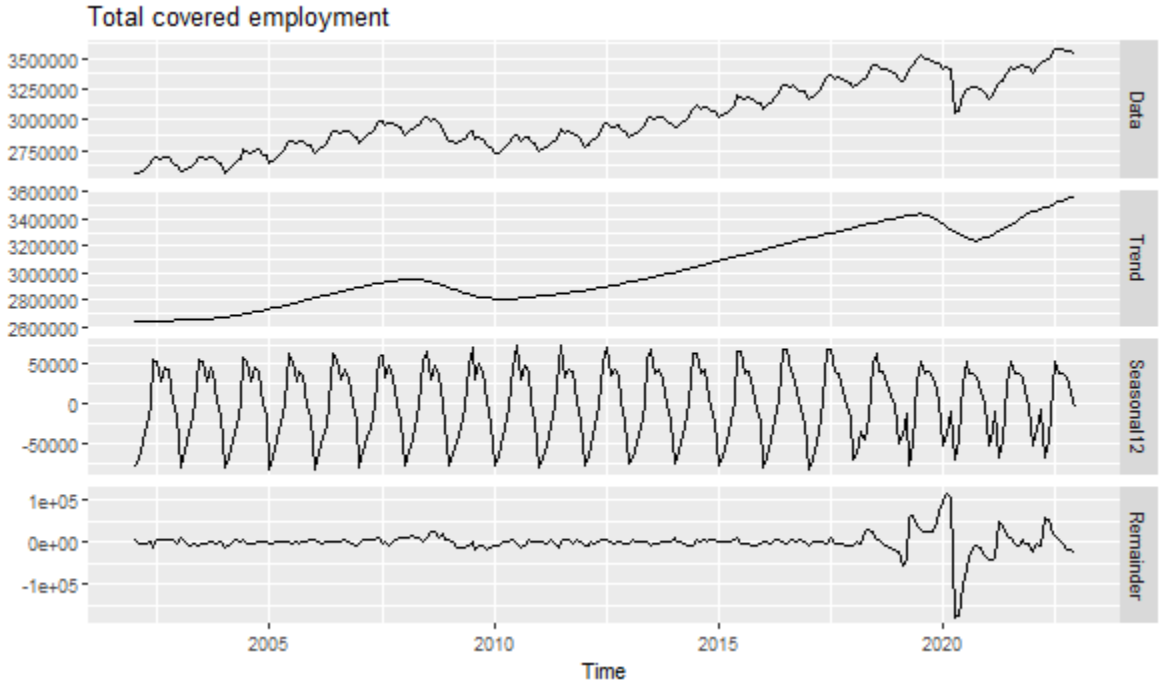
There are two steps in the process of time series decomposition:

1. Split the series between; combined trend (which includes trend + cycle), seasonal and irregular (remainder) components.
2. Split the combined trend (trend + cycle) into trend and cyclical components.

Appendix figure A1-1 represents the main components of decomposition for total nonfarm employment. The trend component in the figure is the result of the first step of decomposition and represents the combination of trend plus cycle. The trend plus cycle component is used in further sequential processing steps later in the decomposition process.

Appendix figure A1-1. Total employment time series and its main components

Washington, 2002 to 2022. Source: Employment Security Department/DATA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages



Employment Security used a state space model with auto selection of model variations (types of error, trend and seasonality). Model variations can be additive, multiplicative, none, etc. The software also includes the choice of 30 exponential smoothing variations. The main advantage of this type of approach is that the types of models are not predefined and thus can vary for different series. In standard U.S. Census Bureau ARIMA models, parameters are estimated for each series, but models are predefined and remain the same for all series.

The software selects the model that minimizes the Akaike's Information Criteria (AIC).

The state space approach allows for the optimized selection of models for each individual series. This entails the selection of the best model and then parameters are subject to change as time periods change. This is a major difference from classical regression (one level models). In addition, under this approach, regardless of the selection of seasonal or irregular models (additive or multiplicative), the sum of decomposition components (combined trend, seasonal and irregular) remains equal to the initial series for each month.

In step two, Employment Security used the combined trend series from step one for our analyses of the contributions of structural and cyclical components to growth. To accomplish this, Employment Security used the Hodrick-Prescott (HP) filter. This filter is a smoothing method that is widely used among macroeconomists to obtain a smooth estimate of the long-term trend component of a series.

Technically, the HP filter is a two-sided linear filter that computes the smoothed series *s* of *y* by minimizing the variance of *y* around *s*, subject to a penalty that constrains the second difference of *s*. That is, the HP filter chooses *s* to minimize:

$$\sum_{t=1}^{T}(y_t - s_t)^2 + \lambda * \sum_{t=2}^{T-1}[(s_{t+1} - s_t) - (s_t - s_{t-1})]^2$$

The penalty parameter λ controls the smoothness of the series *s*. The larger the λ, the smoother the *s*. As λ->∞, *s* approaches a linear trend.

Employment Security used default value λ=14,400 for monthly frequencies. This default value was defined by dividing the number of months per year by four raised to a power (default value 2)[24] and multiplying by 1,600. For our purpose, for all series regardless of the model selected, the HP filter chooses *s* to minimize:

$$\sum_{t=1}^{T}(y_t - s_t)^2 + 14{,}400 * \sum_{t=2}^{T-1}[(s_{t+1} - s_t) - (s_t - s_{t-1})]^2$$

Industry seasonality levels

The level of employment seasonality for an industry is defined as an average of absolute values of the seasonal component divided by the initial series (mean (|seasonal| /employment)). The levels are presented in column three of *Appendix figure A1-2*. A larger level value indicates a larger seasonality value for the industry. To interpret the seasonal factors, arbitrary thresholds

[24] Employment Security stayed with the power of two for this analysis, but the other possibility is to use the power of four.

were established. Industries with a seasonal factor value of up to 1.0% were identified as not seasonal. Industries with a factor value greater than 1.0 and up to 2.0% were identified as having low levels of seasonality. Industries with a factor value greater than 2.0 and up through 4.0% were identified as having moderate levels of seasonality, while industries with a factor value greater than 4.0% were considered to have high levels of seasonality. The results are listed in column four of *Appendix figure A1-2*.

Structural and cyclical contributions to industry employment changes

Relative contributions to monthly employment change are calculated as the average for all months of absolute differences (one-month difference) for specific factors (presented in columns five and six of the table in *Appendix figure A1-2*). The percentages of relative contributions for trend (structural) and cycle components are presented in columns seven and eight. The industry that had the lowest cyclical component contribution (23%) was Ambulatory Health Care services, while Executive, Legislative and other General Government Support had the highest cyclical component contribution (79%). The structural component (trend) accounted for the dominant share of change in total employment (61%), while the cyclical component accounted for the residual (39%).

Appendix figure A1-2. Employment decomposition components

Washington, 2002 to 2022. Source: Employment Security Department/DATA; Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

NAICS	Industry	Seasonal factor	Level of seasonality	Trend (average)	Cycle (average)	Trend (%)	Cycle (%)
000	**Total covered employment**	**1.29%**	**Low**	**4,251**	**2,712**	**61.05%**	**38.95%**
111	Crop production	29.93%	High	133	130	50.57%	49.43%
112	Animal production and aquaculture	2.15%	Moderate	6	5	56.92%	43.08%
113	Forestry and logging	2.25%	Moderate	14	8	65.06%	34.94%
114	Fishing, hunting and trapping	5.81%	High	5	5	52.00%	48.00%
115	Support activities for agriculture and	16.97%	High	60	54	52.44%	47.56%

212	Mining (except oil and gas)	3.23%	Moderate	10	6	63.65%	36.35%
213	Support activities for mining	10.93%	High	1	3	32.93%	67.07%
221	Utilities	0.64%	Not seasonal	7	6	55.11%	44.89%
236	Construction of buildings	2.33%	Moderate	219	89	71.19%	28.81%
237	Heavy and civil engineering	7.09%	High	57	30	65.40%	34.60%
238	Specialty trade contractors	2.97%	Moderate	518	199	72.21%	27.79%
311	Food manufacturing	4.10%	High	34	26	55.93%	44.07%
312	Beverage and tobacco product	5.06%	High	31	18	63.91%	36.09%
313	Textile mills	1.92%	Low	1	1	51.14%	48.86%
314	Textile product mills	1.02%	Low	5	5	50.46%	49.54%
315	Apparel manufacturing	1.75%	Low	6	7	45.87%	54.13%
316	Leather and allied product	4.55%	High	1	2	45.93%	54.07%
321	Wood product manufacturing	1.00%	Low	46	29	61.62%	38.38%
322	Paper manufacturing	0.59%	Not seasonal	24	14	62.88%	37.12%
323	Printing and related support activities	0.76%	Not seasonal	20	13	59.88%	40.12%
324	Petroleum and coal products	1.66%	Low	5	5	46.31%	53.69%
325	Chemical manufacturing	0.56%	Not seasonal	15	11	56.76%	43.24%
326	Plastics and rubber products	0.76%	Not seasonal	19	16	54.00%	46.00%
327	Nonmetallic mineral Product	1.89%	Low	23	15	59.79%	40.21%
331	Primary metal manufacturing	0.75%	Not seasonal	18	20	46.69%	53.31%
332	Fabricated metal product manufacturing	0.75%	Not seasonal	41	45	47.69%	52.31%

333	Machinery manufacturing	0.75%	Not seasonal	39	43	47.77%	52.23%
334	Computer and electronic product manufacturing	0.32%	Not seasonal	39	35	53.01%	46.99%
335	Electrical equipment, appliance, and component manufacturing	0.49%	Not seasonal	9	8	54.20%	45.80%
336	Transportation equipment manufacturing	0.56%	Not seasonal	264	282	48.27%	51.73%
337	Furniture and related product manufacturing	1.03%	Low	25	14	65.13%	34.87%
339	Miscellaneous manufacturing	0.86%	Not seasonal	15	14	52.13%	47.87%
423	Merchant wholesalers, durable goods	0.45%	Not seasonal	113	84	57.33%	42.67%
424	Merchant wholesalers, nondurable goods	1.25%	Low	45	36	55.50%	44.50%
425	Wholesale trade agents and brokers	1.18%	Low	101	34	74.88%	25.12%
441	Motor vehicle and parts dealers	1.11%	Low	76	54	58.49%	41.51%
444	Building material and garden equipment and supplies dealers	3.49%	Moderate	67	30	68.87%	31.13%
445	Food and beverage retailers	1.31%	Low	57	57	50.10%	49.90%
449	Furniture, home furnishings, electronics, and appliance retailers	N/A	N/A	95	70	57.42%	42.58%
455	General merchandise retailers	N/A	N/A	328	245	57.31%	42.69%

456	Health and personal care retailers	N/A	N/A	82	61	57.41%	42.59%
457	Gasoline stations and fuel dealers	N/A	N/A	62	46	57.47%	42.53%
458	Clothing, clothing accessories, shoe, and jewelry retailers	N/A	N/A	84	63	57.06%	42.94%
459	Sporting goods, hobby, musical instrument, book, and miscellaneous retailers	N/A	N/A	189	141	57.18%	42.82%
481	Air transportation	0.68%	Not seasonal	41	33	55.66%	44.34%
483	Water transportation	2.82%	Moderate	8	9	45.59%	54.41%
484	Truck transportation	1.98%	Low	38	27	58.13%	41.87%
485	Transit and ground passenger transportation	2.34%	Moderate	11	17	39.96%	60.04%
486	Pipeline transportation	1.27%	Low	1	1	39.02%	60.98%
487	Scenic and sightseeing	19.88%	High	3	5	40.85%	59.15%
488	Support activities for transportation	1.04%	Low	43	36	54.19%	45.81%
491	Postal service	3.59%	Moderate	1	1	44.00%	56.00%
492	Couriers and messengers	5.47%	High	53	27	65.99%	34.01%
493	Warehousing and storage	2.46%	Moderate	111	61	64.37%	35.63%
512	Motion picture and sound recording industries	3.85%	Moderate	20	27	42.30%	57.70%
513	Publishing industries	N/A	N/A	414	309	57.25%	42.75%
517	Telecommunications	0.40%	Not seasonal	54	28	65.47%	34.53%

518	Computing infrastructure providers, data processing, web hosting and related services	1.82%	Low	98	62	61.24%	38.76%
519	Web search portals, libraries, archives and other information services	6.10%	High	174	112	60.86%	39.14%
521	Monetary authorities-central bank	0.75%	Not seasonal	1	0	61.02%	38.98%
522	Credit intermediation and related activities	0.21%	Not seasonal	102	57	64.29%	35.71%
523	Securities, commodity contracts and other financial investments and related activities	0.35%	Not seasonal	25	17	59.36%	40.64%
524	Insurance carriers and related Activities	0.33%	Not seasonal	34	26	57.34%	42.66%
525	Funds, trusts and other financial vehicles	15.18%	High	3	5	38.68%	61.32%
531	Real estate	1.14%	Low	77	38	67.11%	32.89%
532	Rental and leasing services	2.92%	Moderate	34	24	58.66%	41.34%
533	Lessors of nonfinancial intangible assets (except copyrighted works)	3.68%	Moderate	4	3	58.82%	41.18%
541	Professional, scientific, and technical services	0.40%	Not seasonal	503	184	73.25%	26.75%
551	Management of companies and enterprises	1.34%	Low	324	237	57.71%	42.29%

561	Administrative and support services	2.80%	Moderate	381	234	61.99%	38.01%
562	Waste management and remediation services	0.81%	Not seasonal	31	28	52.34%	47.66%
611	Educational services	3.35%	Moderate	89	58	60.38%	39.62%
621	Ambulatory health care services	0.43%	Not seasonal	250	76	76.71%	23.29%
622	Hospitals	0.34%	Not seasonal	121	65	65.19%	34.81%
623	Nursing and residential care facilities	0.29%	Not seasonal	75	47	61.61%	38.39%
624	Social assistance	1.25%	Low	373	300	55.44%	44.56%
711	Performing arts, spectator sports, and related industries	9.67%	High	31	47	39.53%	60.47%
712	Museums, historical sites and similar institutions	3.70%	Moderate	7	10	41.67%	58.33%
713	Amusement, gambling and recreation industries	4.26%	High	81	124	39.54%	60.46%
721	Accommodation	5.21%	High	81	121	40.25%	59.75%
722	Food services and drinking places	2.02%	Moderate	519	505	50.68%	49.32%
811	Repair and maintenance	0.88%	Not seasonal	32	32	50.26%	49.74%
812	Personal and laundry services	1.21%	Low	61	58	51.09%	48.91%
813	Religious, grantmaking, civic, professional and similar organizations	2.09%	Moderate	44	55	44.34%	55.66%
814	Private households	5.64%	High	296	268	52.51%	47.49%
901	Federal government (other)	1.00%	Low	61	61	49.68%	50.32%
902	State government (other)	1.54%	Low	81	63	56.49%	43.51%

903	Local government (other)	1.55%	Low	308	248	55.36%	44.64%
921	Executive, legislative and other general government support	N/A	N/A	0	0	20.67%	79.33%

Theoretical base to identify relations between industry and total employment

The Granger causality test is a technique for determining whether one time series is useful in forecasting another. Put another way: this test answers the question of whether a time series "X" causes time series "Y." Also, it tests to see how much of the current "Y" values can be explained by past values of the same series, and then to see whether adding lagged values of "X" can improve the explanation.

In our case, the question is whether employment in specific industries "Granger-causes" total employment.

The results of Granger causality are not always clear enough to be able to state that a series "X" Granger-causes series "Y," but not the other way around. In such cases, we can find that neither series Granger-causes the other, or that each Granger-causes the other.

Moreover, Granger causality does not imply true causality. If both series "X" and "Y" are driven by a common third process (variable, series), but with different lags, there would be Granger causality. However, the changes in one series would not have a significant effect on the other. To address this issue, we estimated Granger causality in both directions. We estimated specific industry on total employment and total employment on specific industry employment.

Results of industry and total employment analysis

The last five columns of *Appendix figure A1-3* represent an attempt to connect employment time series for specific industries with employment time series of total covered employment. The first of these five columns represents correlations of series of monthly employment between industries and total employment, while the second of these columns represents correlations of the first differences (monthly changes) for the same series.

The third of these five columns represents an attempt to identify the industries for which monthly employment could help in predicting the next month's total employment. F-statistics from the Granger causality test for time series, with a lag of one month, are presented in this column. The value of "F" indicates the significance of the impact of employment in the industry on the next month's total employment.

Larger values indicate effects that were more significant. Probabilities for the rejection of the hypotheses of significance, associated with F-statistics, are listed in the next to last column. A lower probability indicates higher confidence that the effect is significant. To address the issue of possible mutual causality we also tested inverse causality of total employment on specific industries.

As previously noted, if both direct and inverse causality are significant, it means that an industry employment series might not be a good indicator for the next month's total employment. The last column of *Appendix figure A1-3* indicates if significant direct causality of industry on total employment without significant inverse causality exists (indicator "yes"). All other cases have an indicator of "no". The cutoff for such definitions was the following: p-value for direct test is not more than 0.01, but for inverse test not less than 0.1. Last year nine industries had the indicator "yes." This year, nine industries have an indicator of "yes."

The combination of predictive abilities (indicator "yes") and correlation with total employment and total employment growth can be used to identify the main industries used as coincidental and leading (i.e., one step ahead) economic indicators. In addition, this combination can be used for the one-step-ahead prediction of employment changes. The industries identified by this process are miscellaneous manufacturing, motor vehicle and parts dealers, truck transportation, social assistance, and state government (other).

Appendix figure A1-3. Relationships between industry and total employment

Washington, 2002 to 2022. Source: Employment Security Department/DATA; Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

NAICS	Industry	Correlation with total employment	Correlation of first differences	F-statistic granger test (one-month lag)	Probability	Significant one-way impact
000	Total covered employment	100.0%	100.0%	N/A	N/A	N/A
111	Crop production	63.0%	-0.7%	0.07	0.79	No

NAICS	Industry	Correlation with total employment	Correlation of first differences	F-statistic granger test (one-month lag)	Probability	Significant one-way impact
112	Animal production and aquaculture	87.9%	14.0%	0.21	0.64	No
113	Forestry and logging	-77.4%	43.6%	7.40	0.01	No
114	Fishing, hunting and trapping	-93.2%	0.5%	5.53	0.02	No
115	Support activities for agriculture and forestry	96.6%	18.9%	2.08	0.15	No
211	Oil and gas extraction	80.5%	9.7%	2.50	0.11	No
212	Mining (except oil and gas)	-61.7%	43.6%	3.25	0.07	No
213	Support activities for mining	46.1%	5.6%	1.58	0.21	No
221	Utilities	78.8%	19.1%	22.94	0.00	No
236	Construction of buildings	74.2%	72.9%	0.04	0.85	No
237	Heavy and civil engineering construction	32.7%	53.5%	0.01	0.93	No
238	Specialty trade contractors	82.5%	71.1%	0.78	0.38	No
311	Food manufacturing	92.9%	77.9%	2.57	0.11	No
312	Beverage and tobacco product manufacturing	97.3%	83.5%	2.74	0.10	No
313	Textile mills	-35.7%	44.7%	3.35	0.07	No
314	Textile product mills	-51.2%	41.1%	14.50	0.00	Yes
315	Apparel manufacturing	-68.9%	33.8%	0.92	0.34	No
316	Leather and allied product manufacturing	-46.9%	3.3%	45.09	0.00	Yes
321	Wood product manufacturing	-59.8%	49.4%	7.16	0.01	Yes
322	Paper manufacturing	-82.1%	40.2%	0.09	0.76	No
323	Printing and related support activities	-77.8%	65.4%	0.00	0.96	No

NAICS	Industry	Correlation with total employment	Correlation of first differences	F-statistic granger test (one-month lag)	Probability	Significant one-way impact
324	Petroleum and coal products manufacturing	72.5%	24.8%	1.02	0.31	No
325	Chemical manufacturing	96.5%	54.7%	0.77	0.38	No
326	Plastics and rubber products manufacturing	-44.8%	67.0%	4.18	0.04	No
327	Nonmetallic mineral product manufacturing	12.7%	72.3%	0.01	0.92	No
331	Primary metal manufacturing	-41.4%	50.6%	1.36	0.25	No
332	Fabricated metal product manufacturing	75.5%	74.9%	8.81	0.00	Yes
333	Machinery manufacturing	62.9%	70.0%	1.18	0.28	No
334	Computer and electronic product manufacturing	-71.1%	54.4%	2.29	0.13	No
335	Electrical equipment, appliance and component manufacturing	94.3%	20.3%	110.21	0.00	No
336	Transportation equipment manufacturing	20.7%	43.4%	8.58	0.00	Yes
337	Furniture and related product manufacturing	-44.9%	65.3%	1.03	0.31	No
339	Miscellaneous manufacturing	13.0%	65.7%	23.59	0.00	Yes
423	Merchant wholesalers, durable goods	69.7%	85.9%	2.11	0.15	No
424	Merchant wholesalers, nondurable goods	89.7%	84.9%	1.16	0.28	No

NAICS	Industry	Correlation with total employment	Correlation of first differences	F-statistic granger test (one-month lag)	Probability	Significant one-way impact
425	Wholesale trade agents and brokers	47.1%	-8.5%	0.88	0.35	No
441	Motor vehicle and parts dealers	57.0%	80.0%	6.22	0.01	No
444	Building material and garden equipment and supplies dealers	90.3%	35.5%	7.07	0.01	Yes
445	Food and beverage retailers	91.6%	-7.0%	11.95	0.00	No
449	Furniture, home furnishings, electronics, and appliance retailers	45.2%	38.6%	13.19	0.00	No
455	General merchandise retailers	45.2%	38.5%	13.13	0.00	No
456	Health and personal care retailers	45.2%	38.6%	13.21	0.00	No
457	Gasoline stations and fuel dealers	45.2%	38.6%	13.20	0.00	No
458	Clothing, clothing accessories, shoe and jewelry retailers	45.0%	38.2%	12.92	0.00	No
459	Sporting goods, hobby, musical instrument, book and miscellaneous retailers	45.1%	38.3%	13.00	0.00	No
481	Air transportation	75.8%	69.2%	0.15	0.70	No
482	Rail transportation	-15.9%	-30.9%	0.66	0.42	No
483	Water transportation	8.7%	72.9%	4.30	0.04	No
484	Truck transportation	73.6%	68.1%	19.65	0.00	Yes
485	Transit and ground passenger transportation	50.7%	74.5%	18.29	0.00	Yes
486	Pipeline transportation	87.6%	18.5%	35.38	0.00	No
487	Scenic and sightseeing transportation	10.1%	67.6%	3.42	0.07	No

NAICS	Industry	Correlation with total employment	Correlation of first differences	F-statistic granger test (one-month lag)	Probability	Significant one-way impact
488	Support activities for transportation	88.0%	81.9%	0.02	0.90	No
491	Postal service	35.1%	0.1%	0.95	0.33	No
492	Couriers and messengers	80.5%	-13.0%	1.68	0.20	No
493	Warehousing and storage	80.3%	45.2%	11.38	0.00	No
512	Motion picture and sound recording industries	31.1%	84.2%	0.95	0.33	No
513	Publishing Industries	45.1%	38.4%	13.03	0.00	No
516	Broadcasting and content providers	35.3%	37.0%	16.11	0.00	No
517	Telecommunications	-91.8%	24.1%	16.09	0.00	Yes
518	Computing infrastructure providers, data processing, web hosting and related services	87.2%	45.3%	6.22	0.01	No
519	Web search portals, libraries, archives and other information services	85.3%	-34.2%	9.09	0.00	No
521	Monetary authorities-central bank	-53.3%	39.3%	0.70	0.40	No
522	Credit intermediation and related activities	-55.4%	24.0%	0.72	0.40	No
523	Securities, commodity contracts and other financial investments and related activities	92.9%	52.1%	2.04	0.15	No
524	Insurance carriers and related activities	57.2%	35.0%	1.47	0.23	No
525	Funds, trusts and other financial vehicles	-65.4%	8.5%	0.17	0.68	No
531	Real estate	97.7%	81.0%	0.01	0.93	No

NAICS	Industry	Correlation with total employment	Correlation of first differences	F-statistic granger test (one-month lag)	Probability	Significant one-way impact
532	Rental and leasing services	-55.7%	84.7%	3.02	0.08	No
533	Lessors of nonfinancial intangible assets (except copyrighted works)	-11.8%	50.9%	5.45	0.02	No
541	Professional, scientific and technical services	96.0%	68.2%	2.88	0.09	No
551	Management of companies and enterprises	71.0%	44.5%	18.38	0.00	No
561	Administrative and support services	96.8%	85.5%	76.98	0.00	No
562	Waste management and remediation services	79.4%	-1.8%	6.12	0.01	No
611	Educational services	96.7%	86.3%	0.76	0.38	No
621	Ambulatory health care services	96.3%	62.9%	0.48	0.49	No
622	Hospitals	93.7%	15.1%	8.63	0.00	No
623	Nursing and residential care facilities	60.7%	7.9%	8.00	0.01	No
624	Social assistance	95.5%	19.9%	6.79	0.01	Yes
711	Performing arts, spectator sports and related industries	51.2%	82.7%	0.87	0.35	No
712	Museums, historical sites and similar institutions	78.6%	80.8%	11.96	0.00	Yes
713	Amusement, gambling and recreation industries	39.6%	86.6%	0.03	0.86	No
721	Accommodation	42.6%	88.3%	3.98	0.05	No
722	Food services and drinking places	91.3%	91.5%	2.70	0.10	No
811	Repair and maintenance	28.7%	93.0%	2.91	0.09	No

NAICS	Industry	Correlation with total employment	Correlation of first differences	F-statistic granger test (one-month lag)	Probability	Significant one-way impact
812	Personal and laundry services	87.7%	86.1%	1.55	0.21	No
813	Religious, grantmaking, civic, professional and similar organizations	96.2%	81.0%	26.58	0.00	No
814	Private households	-86.5%	-25.2%	2.95	0.09	No
901	Federal government (other)	74.5%	-67.4%	13.87	0.00	Yes
902	State government (other)	79.5%	0.8%	57.07	0.00	Yes
903	Local government (other)	96.5%	81.9%	73.82	0.00	No
921	Executive, legislative and other general government support	33.7%	-42.4%	15.77	0.00	Yes

Appendix 2: Use and misuse of employment projections

Employment Projections are intended for career development over time, not as the basis for budget or revenue projections, or for immediate corrective actions within the labor market.

Employment projections provide a general outlook for industries and occupations in Washington. Occupational projections show how many job openings are projected due to occupational employment growth and replacement needs (*separations* and *alternative*).[25] For technical details see: 2019 Employment Projections Technical Report.

For the *separations* method, replacement includes openings created by retirements and occupational separations. It does not measure turnover within occupations, i.e., when workers stay within the same occupation, but change employers. For the *alternative* method, replacement includes normal turnover as workers go from one employer to another while staying in the same occupation. *Separations* total openings from occupational projections do not represent total demand but can be used as an indicator of demand. *Alternative* total openings for occupational projections do represent total demand. Total demand may be filled by new entrants to the state market. New entrants can be workers from other states or nations, and new entrants can also be graduates from this state, other states or nations. In addition, occupations can be filled by workers already within the market, within a given occupation or from another occupation. Available job openings cannot be reserved for any of these categories since the majority of jobs are open and competitive.

Occupational details for employment (with at least 10 jobs) are presented for the state and all workforce development areas in our employment projections data files on our Projections page.

Observed and predicted extremes in employment growth and other indicators, such as fastest-growing occupations and shortage of skills, can be used for placement and short-term

[25] This is discussed in the 2019 Employment Projections Technical Report. Due to the non-additive for calculating total openings, in this round of projections we calculated total openings for aggregated occupations as a total for detailed occupations. As a result, the aggregated level of total openings might not equal the total of growth plus replacement.

training decisions. However, these should be limited for use when developing long-term education programs. There are two main reasons for this limitation:

1. First, with more education targeting occupations with skills shortages, there is a higher probability that this will cause an oversupply in those occupations and skills sets.[26]
2. Second, the general development of transferable skills is much more productive than trying to catch up with a skills shortage.

BLS cautions using Office of Management and Budget (OMB) classifications: "The 2018 SOC was designed solely for statistical purposes. Although it is likely that the 2018 SOC also will be used for various non-statistical purposes (e.g., for administrative, regulatory, or taxation functions), the requirements of government agencies or private users that choose to use the 2018 SOC for non-statistical purposes have played no role in its development, nor will OMB modify the classification to meet the requirements of any non-statistical program.

Consequently, the 2018 SOC is not to be used in any administrative, regulatory, or tax program unless the head of the agency administering that program has first determined that the use of such occupational definitions is appropriate to the implementation of the program's objectives."[27]

Different programs use different SOC coding systems. Combining the employment projections with other data sources generally requires a case-by-case analysis; an understanding of the differences of each program should be clearly explained and properly handled.

[26] Occupational projections are the basis of the Occupations in Demand list. This list is used for determining eligibility for a retraining program (Training Benefits), as well as other education and training programs. See: https://esd.wa.gov/labormarketinfo/LAAO

[27] See: https://www.bls.gov/soc/2018/soc_2018_user_guide.pdf, page 24.

Appendix 3: Occupations in Demand (OID) methodology

Employment projections are the basis of the Occupations in Demand (OID) list covering Washington's 12 workforce development areas (WDAs) and the state as a whole. This list is used to determine eligibility for a variety of training and support programs but was initially created to support the unemployment insurance Training Benefits Program.
The full OID list is accessible through the "Learn about an occupation" tool located at: https://esd.wa.gov/labormarketinfo/LAAO.

All occupations in the list have demand indication definitions. The definitions come in three forms: in demand, not in demand or balanced. These definitions indicate the probability of a job seeker gaining employment in a given occupation. The term in demand indicates a greater probability of gaining employment. The term not in demand indicates a lesser probability and balanced indicates an uncertain probability between success and failure in gaining employment.

The definitions are created through a four-step process.

The data sources for the OID list:

The 2022 list is based on projections with state specific *alternative* rates used for turnover openings:

- Five-year projections for 2021 to 2026, using average annual growth rates and total job openings.
- Ten-year projections for 2021 to 2031, using average annual growth rates and total job openings.
- A combination of two-year (second quarter 2022 to second quarter 2024) and ten-year (2021 to 2031) projections, using average annual growth rates and total job openings.

All of these time frames use unsuppressed occupations with employment in a base year (2021), consisting of 50 or more employees, for the state and WDAs.

In addition to projections, the OID list uses supply and demand data:

- Supply data: annual counts of unemployment claimants for WDAs for the period June 2022 to May 2023.
- Demand data: annual counts of job announcements from Help Wanted OnLine (HWOL) mid-monthly time series for the period June 2022 to May 2023.

Step one: Identifying initial in-demand and not-in-demand categories for each period

- For each time frame, occupations with average annual growth rates of at least 90% of their respective geographic area's (statewide or WDA), total average annual growth rates *and* a share of total openings of at least 0.08% are defined as in demand.
- Occupations with average annual growth rates less than 70% of their respective geographic area's total growth rates *and* a share of total openings of less than 1.0% are defined as not in demand.

Step two: Identifying provisional occupational categories

- If within any of the three projection time frames (five-year, 10-year and two-/10-years combined), an occupation is categorized as being in demand, it receives the first provisional identification as in demand.
- If within any of the three projection time frames, an occupation is categorized as not in demand, it receives a second provisional identification of not in demand.

Step three: Create final projections definitions

- If an occupation has only one provisional definition, it equals the final projections definition.
- If an occupation has two provisional definitions of in demand and not in demand, it gets identified as balanced.
- All other occupations, without provisional definitions (i.e., not meeting the thresholds from step one), are identified as balanced.

Step four: Create final adjustment definitions

The projections definitions are now put through an adjustment process, using current labor market supply/demand data which compares online job announcements to information on unemployment insurance (UI) claimants.

Adjustments are applied when current supply/demand data significantly contradicts the model-based projections definitions.

The adjustment methodology

- Supply/demand data are used for adjustments if they are significant. Significant supply-demand data are those data where the share of the largest value between UI claimants and online job announcements are more than 1% of openings, and where the largest values between announcements and UI claimants more than 10, or the largest values between UI and announcements not less than five, for the period 2021 to 2031.
- If the projections definition is in demand or balanced but the ratio of supply to demand is more than 2.5, then the adjusted definition is not in demand.
- If the projections definition is in demand and the ratio of supply to demand is not larger than 2.5, but more than 1.5, then the adjusted definition is balanced.
- If the projections definition is not in demand or balanced, but the ratio of supply to demand is less than 0.4, then the adjusted definition is in demand.
- If the projections definition is not in demand and the ratio is at least 0.4, but less than 0.6, then the adjusted definition is balanced.

The final list: Local adjustments

The Employment Security Department's Data Architecture, Transformation and Analytics (DATA) division uses the methodology outlined above to prepare the initial lists for the state as a whole and by WDA. Those lists are then given to local workforce development boards to review, adjust and approve based on their local experience and knowledge.

Appendix 4: Skill projections

In order to project skills, occupational projections are converted into skill projections. To project skills, we rely on the content of employers' job postings rather than predefined, general O*NET skills.

Data sources

The main source for this analysis was a download of skills for each detailed (six-digit SOC) occupation for Washington from The Conference Board's Help Wanted OnLine job announcement index. The downloaded files represent extracted hard skills for each occupation from online job announcements, posted in the last three years (from July 2021 to June 2023). Each skill is displayed with the number of job announcements from which it was extracted. A skill drawn from a greater number of job announcements is relatively more important. The number of job announcements is summed for each occupation. Some occupations contain few if any listed skill components, thus the summation value for a given occupation can be very small or nonexistent and that value is removed in later processes.

For creating skills-to-occupations matrices, we included occupations that satisfy the following conditions only:

1. Total skill counts are not less than five.
2. Total skill counts are not less than 2.0% of base year employment.
3. Estimated employment for second quarter 2022 are not less than five.

Each occupational vector of skill numbers was normalized (i.e., scaled) to totals of one.

By combining these vectors, we created skills-to-occupations matrices. These matrices were used to convert occupational estimations and projections into comparable numbers expressed as common skills.

The skills-to-occupations matrices are similar in structure and function to normalized matrices used for occupational/industries staffing patterns. The skills-to-occupations matrices were based on statewide data and were used to convert occupational projections for the state and all WDAs into skills projections.

After conversion, we deleted all records where estimated or projected employment numbers were less than five. We consider estimations below five as unreliable. As a result of excluding missing skill/occupation vectors and removing results below five, only a portion of the occupational employment estimates were converted into skills.

A uniform skill to occupation staffing matrix is applied to all areas. Due to differences in occupational employment in each area, and the exclusion of employment below five, available skill counts in each area vary. Skills from online job postings for Washington were reported by three major categories: common, related software, and specific skills. These major categories were ranked on combined average annual openings and growth rates for 2021 to 2031.

As a result, the largest number of unique common skills were 320 for Washington, followed by Seattle-King County WDA with 302 and followed by the Tacoma-Pierce County WDA with 260. The lowest number was for Eastern Washington at 216 skills. The top 20 skills ranked by combined average annual openings and growth for the categories of common, related software and specific skills can be found in *Appendix figures A5-1, A5-2 and A5-3*.

Appendix figure A5-1. Top 20 common skills ranked by combined average annual openings and growth

Washington, 2021 to 2031. Source: Employment Security Department/DATA; The Conference Board, Help Wanted OnLine job announcements

Combined rank	Skill category	Estimated skill employment 2021	Projected skill employment 2031	Average annual growth rate 2021-2031	Total average annual openings 2021-2031
1	Communications	315,399	377,075	1.80%	124,520
2	Customer service	254,147	298,116	1.61%	104,573
3	Management	171,223	204,727	1.80%	66,861
4	Detail oriented	124,609	145,116	1.54%	49,228
5	Operations	120,740	142,613	1.68%	46,027
6	Lifting ability	110,992	127,905	1.43%	45,653
7	Sales	113,552	129,008	1.28%	44,514
7	Leadership	95,939	115,759	1.90%	36,468
7	English language	87,651	102,539	1.58%	34,601
10	Problem solving	86,600	103,748	1.82%	32,936
11	Writing	81,069	96,968	1.81%	29,955
11	Planning	70,735	85,780	1.95%	26,014

Combined rank	Skill category	Estimated skill employment 2021	Projected skill employment 2031	Average annual growth rate 2021-2031	Total average annual openings 2021-2031
13	Self-motivation	60,689	70,980	1.58%	23,569
14	Professionalism	57,712	68,518	1.73%	23,440
15	Interpersonal communications	57,483	69,214	1.87%	22,732
15	Multitasking	55,276	65,190	1.66%	22,300
15	Cleanliness	47,507	57,307	1.89%	22,113
15	Coordinating	55,957	67,328	1.87%	21,073
19	Verbal communication skills	53,576	64,380	1.85%	20,929
20	Time management	49,495	58,126	1.62%	19,508

Appendix figure A5-2. Top 20 software related skills ranked by combined average annual openings and growth

Washington, 2021 to 2031. Source: Employment Security Department/DATA; The Conference Board, Help Wanted OnLine job announcements

Combined rank	Skill category	Estimated skill employment 2021	Projected skill employment 2031	Average annual growth rate 2021-2031	Total average annual openings 2021-2031
1	Microsoft Office	435,395	504,297	1.48%	162,189
2	Microsoft Excel	392,654	454,512	1.47%	147,080
3	Microsoft Outlook	300,814	348,487	1.48%	113,883
4	Microsoft Word	160,355	186,254	1.51%	59,919
5	Microsoft PowerPoint	143,723	168,580	1.61%	53,257
6	Spreadsheets	96,245	110,727	1.41%	35,979
7	Operating systems	51,507	61,352	1.76%	20,209
7	Inventory management system	49,063	53,866	0.94%	19,288
7	Epic EMR	50,867	60,936	1.82%	17,394
10	Framer	34,253	39,860	1.53%	16,892
11	Microsoft Access	35,123	41,666	1.72%	13,317
11	Salesforce	34,508	39,845	1.45%	12,707
13	Zoom (video conferencing tool)	33,558	39,672	1.69%	11,649
14	SQL (programming language)	29,718	37,802	2.44%	11,596
15	Microsoft SharePoint	31,417	37,666	1.83%	11,591

Combined rank	Skill category	Estimated skill employment 2021	Projected skill employment 2031	Average annual growth rate 2021-2031	Total average annual openings 2021-2031
15	SAP applications	29,826	34,032	1.33%	11,021
15	Python (programming language)	27,639	35,051	2.40%	9,908
15	Google Workspace	26,997	31,828	1.66%	9,787
19	Amazon Web Services	25,136	32,032	2.45%	9,681
20	Squeegee	21,058	25,855	2.07%	9,239

Appendix figure A5-3. Top 20 specific skills ranked by combined average annual openings and growth

Washington, 2021 to 2031. Source: Employment Security Department/DATA; The Conference Board, Help Wanted OnLine job announcements

Combined rank	Skill category	Estimated skill employment 2021	Projected skill employment 2031	Average annual growth rate 2021-2031	Total average annual openings 2021-2031
1	Warehousing	70,682	77,687	0.95%	28,217
2	Merchandising	69,888	76,850	0.95%	28,017
3	Restaurant operation	43,730	56,787	2.65%	24,346
4	Project management	54,528	66,690	2.03%	21,023
5	Marketing	45,302	53,287	1.64%	17,535
6	Selling techniques	43,594	48,215	1.01%	17,168
7	Construction	38,497	44,458	1.45%	16,403
7	Cash handling	32,790	39,234	1.81%	15,192
7	Auditing	39,019	45,478	1.54%	14,592
10	Accounting	37,510	44,056	1.62%	14,513
11	Forklift truck	36,609	39,880	0.86%	14,505
11	General mathematics	34,186	39,091	1.35%	14,409
13	Food safety and sanitation	28,325	35,329	2.23%	14,387
14	Food services	26,982	34,537	2.50%	14,289
15	Housekeeping	30,929	36,301	1.61%	13,906
15	Cash register	29,453	33,268	1.23%	12,397
15	Invoicing	28,726	32,439	1.22%	10,980

15	Hand tools	26,629	29,628	1.07%	10,347
19	Data entry	27,888	31,657	1.28%	10,328
20	Carpentry	21,440	24,911	1.51%	9,934

Skill based related occupations

Skills-to-occupations matrices allow us to create a tool for defining related occupations, based on common skills. To achieve this, we calculated a matrix of correlations based on skills between occupations. The results are presented in the Related occupational skills file, available within the Employment Projections data files at https://esd.wa.gov/labormarketinfo/projections. The matrix in the file's "main" tab is symmetric around the main diagonal. The main diagonal contains values equal to one. There are two ways of using the file's data when opened with the enabled-macros feature:

1. You can select an occupational title of interest, from a column heading, in the "main" tab and then sort the numbers below the title of interest from largest to smallest. Starting from row three in column B you would see the sorted list of related occupations (row two will be the same occupation as selected). To restore the original sort-configuration, sort the key-column (column A) from smallest to largest.
2. You can select an occupation of interest, from a column heading, in the "main" tab and then click the Ctrl and A keys simultaneously. This will execute a macro. The macro opens a table in a "table" tab. In the table, you will find a list of the top 15 occupations related to your occupation of interest.

An example of a list for software developers, applications is in *Appendix figure A5-4.*

Appendix figure A5-4. Top 15 occupations related to software developers

Washington, 2023. Source: Employment Security Department/DATA; The Conference Board, Help Wanted OnLine job announcements

Standard Occupational Classification	151252 - Software Developers
151242 - Database administrators	0.964
172199 - Engineers, all other	0.961
151299 - Computer occupations, all other	0.944
151251 - Computer programmers	0.940
151211 - Computer systems analysts	0.935
172061 - Computer hardware engineers	0.928
151241 - Computer network architects	0.923

172141 - Mechanical engineers	0.922
172071 - Electrical engineers	0.917
172072 - Electronics engineers, except computer	0.915
172041 - Chemical engineers	0.913
172112 - Industrial engineers	0.908
151231 - Computer network support specialists	0.903
151254 - Web developers	0.901
152051 - Data scientists	0.901

Numbers in the table represent coefficients of correlations for normalized vectors of skill shares.

The related occupations tool may be useful for job seekers. The results are specific for Washington since the skills come from job announcements in this state.

Appendix 5: Frequently asked questions

Q: What are the steps in industry projections?

A: There are two major steps in industry projections. The first step is developing aggregated statewide industry projections using Global Insight national forecasts. The second step produces detailed industry projections. The principal data source for industry projections is a detailed covered employment time series of four-digit NAICS data for all Washington counties, specifically, the U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW).

Q: Why are the detailed industry projections not comparable with U.S. Bureau of Labor Statistics, Current Employment Statistics (CES) definitions?

A: Industry projections are classified according to U.S. Bureau of Labor Statistics, Occupational Employment and Wage Statistics (OEWS) definitions, which are somewhat different from CES.

Q: What is the source for occupational/industry ratios?

A: The primary source for occupational/industry ratios is the OEWS survey. However, this survey uses different area designations than the state's workforce development areas (WDAs) and has limited industry coverage (agriculture, non-covered employment, private households and self-employment are excluded) necessitating the use of other staffing patterns as well.

Q: Why can the ratio for industry and occupational projections differ from the OEWS survey outputs?

A: Employment Security uses raw sample and limited numbers of imputations while standard OEWS processing using significant share of imputations. We also use extra information from WEB job announcements. In cases when sample is weak or missing, we use substituted area (state staffing patterns) or combined areas (King and Snohomish counties).

Q: Why can occupational/industry ratios differ between the base year and projected years?

A: This is due to the use of change factors, which predict changes in the occupational shares for each industry over time.

Q: Why can't occupational projections be benchmarked or verified?

A: There are no administrative records for employment by occupation; therefore, the data cannot be reliably benchmarked or verified by non-survey means.

Q: How are occupational projections used?

A: Occupational projections are the only data source for statewide and WDA-specific occupational outlooks. Projections are also the foundation for developing the Occupations in Demand list, which is used to determine eligibility for a variety of training and support programs but was created to support the unemployment insurance Training Benefits Program.

Q: How are industry projections used?

A: Industry projections can be used by policy makers, job seekers, job counselors and economic analysts. For any policy decisions, the projections should be supplemented with other available data sources (e.g., unemployment insurance claims, educational data, job announcements, etc.).

Q: Which occupational codes are used?

A: The 2018 Standard Occupational Classification (SOC) system was used for this round of projections.

Q: Can the SOC be used for administrative purposes?

A: According to BLS, the 2018 SOC was designed solely for statistical purposes. To use SOC for administrative programs, the head of an agency considering using SOC must first determine if the use of SOC definitions is appropriate for a program's objectives.

Q: Why don't the occupational totals by WDA equal the state total?

A: The totals are not additive due to the use of local staffing patterns for projections by WDA, which differ from the statewide staffing pattern.

Q: What is the difference between the Bureau of Labor Statistics *separations* rate and *alternative* state specific rate methodologies?

A: The separations method measures job openings created by workers who leave occupations and need to be replaced by new entrants. In this method, workers who exit the labor force or transfer to an occupation with a different Standard Occupational Classification (SOC) are identified as generating separations openings at the national level. This means that jobs filled by workers within the same occupations are not identified as new jobs.

The alternative rates track openings created by turnover within occupations (i.e., workers stay within occupations but transfer to different companies) and when workers leave one occupation for another or leave the workforce. In contrast to separation methodology, alternative openings represent total job openings and are specific for Washington.

Appendix 6: Glossary of terms

Industries: A classification of business establishments based on similar production processes.

North American Industry Classification System (NAICS): North American Industry Classification System (NAICS) is the system used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing and publishing statistical data related to the U.S. business economy. NAICS was developed under the authority of the U.S. Office of Management and Budget.

Occupation: A job or profession, a category of jobs that are similar with respect to the work performed and the skills possessed by the workers.

Occupational projections: Industry projections converted to occupations, based on occupational/industry ratios.

Standard Occupational Codes (SOC): Standard Occupational Classification (SOC) is the system used by federal statistical agencies in classifying workers into occupational categories for the purpose of collecting, calculating or disseminating data. All workers are classified into their occupational definitions which are structured at four levels of aggregation. SOC was developed under the authority of the U.S. Office of Management and Budget.

Total occupational estimations and projections: Total occupational estimations and projections are calculated to describe employment in base years and future time periods.