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# **Supply and Demand:** Diagnosing Colorado's Skills and Attainment Gap

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*A special thanks to supporting partners  
who helped inform this work*



## About the Authors



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## Common Sense Institute

**Common Sense Institute** is a non-partisan research organization dedicated to the protection and promotion of Colorado's economy. CSI is at the forefront of important discussions concerning the future of free enterprise and aims to have an impact on the issues that matter most to Coloradans. CSI's mission is to examine the fiscal impacts of policies, initiatives, and proposed laws so that Coloradans are educated and informed on issues impacting their lives. CSI employs rigorous research techniques and dynamic modeling to evaluate the potential impact of these measures on the Colorado economy and individual opportunity.

## Teams & Fellows Statement

CSI is committed to independent, in-depth research that examines the impacts of policies, initiatives, and proposed laws so that Coloradans are educated and informed on issues impacting their lives. CSI's commitment to institutional independence is rooted in the individual independence of our researchers, economists, and fellows. At the core of CSI's mission is a belief in the power of the free enterprise system. Our work explores ideas that protect and promote jobs and the economy, and the CSI team and fellows take part in this pursuit with academic freedom. Our team's work is informed by data-driven research and evidence. The views and opinions of fellows do not reflect the institutional views of CSI. CSI operates independently of any political party and does not take positions.

## *Special Acknowledgment*

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## Introduction

Education and workforce alignment refers to the coordination and harmonization of educational programs and training with the needs of the labor market. It means ensuring the skills and knowledge imparted by educational institutions are in line with the requirements of employers and the job market.

Better alignment helps to reduce skill gaps, enhance employment opportunities, and improve economic well-being. Given the varied interests across students, educational institutions, and employers, improving alignment is a challenge.

Integrating education and workforce systems can better prepare individuals for the demands of the job market. Better information for prospective students and educational institutions about employer demands is also critical to improving alignment and improving Colorado's labor force.

While Colorado public school districts and higher education institutions have placed growing emphasis on Career and Technical Education programs over the past decade-plus, data suggest that much remains to be done before our state's education system is truly aligned with the needs of the job market.

*Integrating education and workforce systems can better prepare individuals for the demands of the job market.*

## Key Findings

In Colorado, there are reasons for both concern and celebration regarding education-to-workforce pathways, with serious implications for both jobseekers and employers. Colorado is rich with potential and substantial efforts are being made to transform that potential into real impact. Adapting an inflexible education system to better align with the rapidly evolving nature of the modern workforce, however, is no easy task. This report details the efforts underway, progress being made, and the areas of unmet need to ensure postsecondary education is well-aligned to Colorado's future workforce needs.

- By 2031, 73% of Colorado's jobs will require at least some postsecondary education, and currently 70.7% of Colorado adults currently qualify.<sup>1</sup> That number includes imported talent—people who attain higher education elsewhere and move to Colorado. **At present, only 66.5% of the state's adult population born in Colorado meets that standard—over 79,000 people short of 73%.**
- If Colorado's current native-born workforce were matched to employers' future demand, each of the 79,000 additional workers with post-secondary attainment would be earning an extra \$27,220 on average, totaling over \$2 billion more in wages. This amount of additional earnings would support over 25,000 more jobs, more than double total job growth in 2023. It would add almost \$3 billion to the state's GDP and produce an additional \$2 billion in income for all other workers.
- The Education-to-Workforce Alignment Tool is a new model developed by CSI to diagnose the higher education system's alignment with workforce needs. It measures the direction (oversupply or undersupply) and degree of misalignment between credentials obtained by Colorado higher education graduates and future workforce needs. As part of the statewide effort to improve education alignment, it compliments other data-driven tools that provide information for policy makers, institution leaders, and students.

- The Education-to-Workforce Alignment Tool shows that occupations, including production, life, physical, and social sciences, and transportation and material handling are projected to be overrepresented based on college degree attainment. This means there will likely not be enough jobs in need of that knowledge and skill base by 2031. Conversely, other occupation groups, including business and financial operations, computer and mathematics, and healthcare practitioners, are underrepresented in college output. This means there will be a shortage of people from Colorado higher education institutions to fill those open jobs by 2031.
- Due to a combination of public and private efforts, Colorado's education-to-employment alignment is trending in the right direction. The class of 2022 graduates is about 56% better aligned with future workforce needs than the 2021 supply (which includes earlier cohorts).
- Recommendations from a 2023 report issued by several Colorado businesses and organizations offers five recommendations to improve education-to-workforce alignment: measure outcomes and direct funding to education training programs that help graduates achieve sustainable careers, create regional talent-development goals and action plans overseen by a workforce intermediary, realign the pathways offered in schools with the needs of employers, streamline and incentivize employer participation in career-connected learning opportunities, and ensure education providers focus on the skills that students and employers need.

## Colorado Efforts to Align Education with Workforce

There is much to be acknowledged and commended about Colorado's attempts to better align its postsecondary education system with workforce demand from the employer's side. Many efforts are underway, some of which are already making a positive difference.

Last year, the Colorado Commission on Higher Education (CCHE) published its strategic plan, entitled *Building Skills for an Evolving Economy*. It details the problems for employers, who "struggle to find workers with the skills they need," and job seekers, who largely "require some form of postsecondary education."<sup>ii</sup> Closing the gap between these two groups requires systemic alignment to ensure students are on a trajectory toward in-demand, well-paying careers in areas that ease the talent shortages in some of Colorado's most essential career fields.

The plan aims to promote educational pathways that are economically viable and challenges the state's institutions of higher education to "guarantee that all education and training leads to a positive return on investment for every Coloradan."

CCHE also publishes an annual Return on Investment Report, which examines the value proposition of attaining a college education.<sup>iii</sup> Specifically, the report assesses the price, affordability, options, and resultant wage outcomes for collegegoers in Colorado.

These two reports provide important insights, including that:

- Based on 2022 data, Colorado has two job openings for every available worker.
- 91.4% of Colorado jobs sufficient to support a family of three require some form of postsecondary education.
- Resident undergraduate enrollment in our public institutions of higher education has declined by 19% since 2010–11.

CSI's Economic Mobility Fellow Tamra Ryan's report, titled *Colorado's Workforce Woes Should Spell Opportunity for Economic Mobility*, found that in early 2023, the labor market had gotten to the tightest point on record, as there were 2.7 jobs for every unemployed person at that time. The resulting loss to the Colorado economy was more than \$46 billion in potential GDP.<sup>iv</sup>

In response to these challenging dynamics, the Education to Employment Alliance—comprised of the Colorado Chamber of Commerce, Colorado Inclusive Economy, Colorado Succeeds, Colorado Technology Association, and Colorado Thrives—issued a report in October 2023. The report, *Maximizing Human Potential & Economic Mobility for Coloradans*, recommends five systematic ways to improve the state's workforce-development pipeline. Those recommendations are included at end of this report.

While Common Sense Institute has analyzed different data for this report, the theme of enhancing career-connected learning emerged just as strongly in our findings. Therefore, the recommendations in this report echo the call to action made by the Education to Employment Alliance.

In a further demonstration of priority, in 2019, through executive order by Governor Jared Polis, the State of Colorado created the Office of the Future of Work, housed within the Colorado Department of Labor & Employment. Its purpose is to ensure that "Coloradans are equipped with the necessary education, training, skills, and tools to fully participate in the labor force."<sup>v</sup> The approach of this office is primarily to expand apprenticeships—a learn-while-you-earn model that has proven effective, especially in skilled trade and technical fields.

However, while smart public policies are necessary to create the conditions for improved education-to-workforce pathways, it is incumbent on individual students to make sensible decisions about what areas of study, training, and jobs they pursue. Public policies which advance career-connected learning are only effective if opportunity-seekers are also making informed decisions about job and career choices.

To this end, the state of Colorado partnered with private company Luminance to create a user-friendly tool to help individuals better understand the importance of education and career alignment. This tool, ColoradoFutureJobs.com, provides data, trends, and insights geared toward helping people understand the future labor market and where some gaps might exist. Where there are known unmet talent needs there are career opportunities, and now students can use this resource to inform their education and training pathway.

Finally, in addition to the reports and resources mentioned above, the state legislature and governor have recently taken some definitive steps to improve education-to-workforce alignment. Recognizing that an understanding of some of the sectors in which workforce shortages are pronounced and their impacts on the state's economy and overall wellbeing is critical, the Colorado General Assembly passed HB23-1246: "Support In-demand Career Workforce."<sup>vi</sup> The bill funds apprenticeships in the building and construction trades through the state's college system and establishes grants to bolster the number of workers in the nursing field—two fields important to Colorado's current and future workforce needs.

The above makes clear that political, business, and education leaders are prioritizing this issue and working toward solutions. It is commendable and, in many ways, impressive to see this level of coordination across the state, but much work remains to be done. As detailed in this report, there remains a stark misalignment between what the education system is producing and what the workforce truly needs.

This alignment issue has collective implications. Our state's economic growth and competitiveness is inevitably constrained when employers struggle to find the talent they need. Likewise, individual residents' financial sustainability and sense of fulfillment will be impacted by how their educational decisions and investments are rewarded—or punished—by the job market.

## RELATED RESOURCES

- Colorado Department of Higher Education Strategic Plan | Building Skills for an Evolving Economy<sup>vii</sup>
- Colorado Department of Higher Education | Return on Investment Report<sup>viii</sup>
- Education to Employment Alliance | Maximizing Human Potential & Economic Mobility for Coloradans<sup>ix</sup>
- Colorado Department of Labor and Luminance | [coloradofuturejobs.com](https://coloradofuturejobs.com)<sup>x</sup>

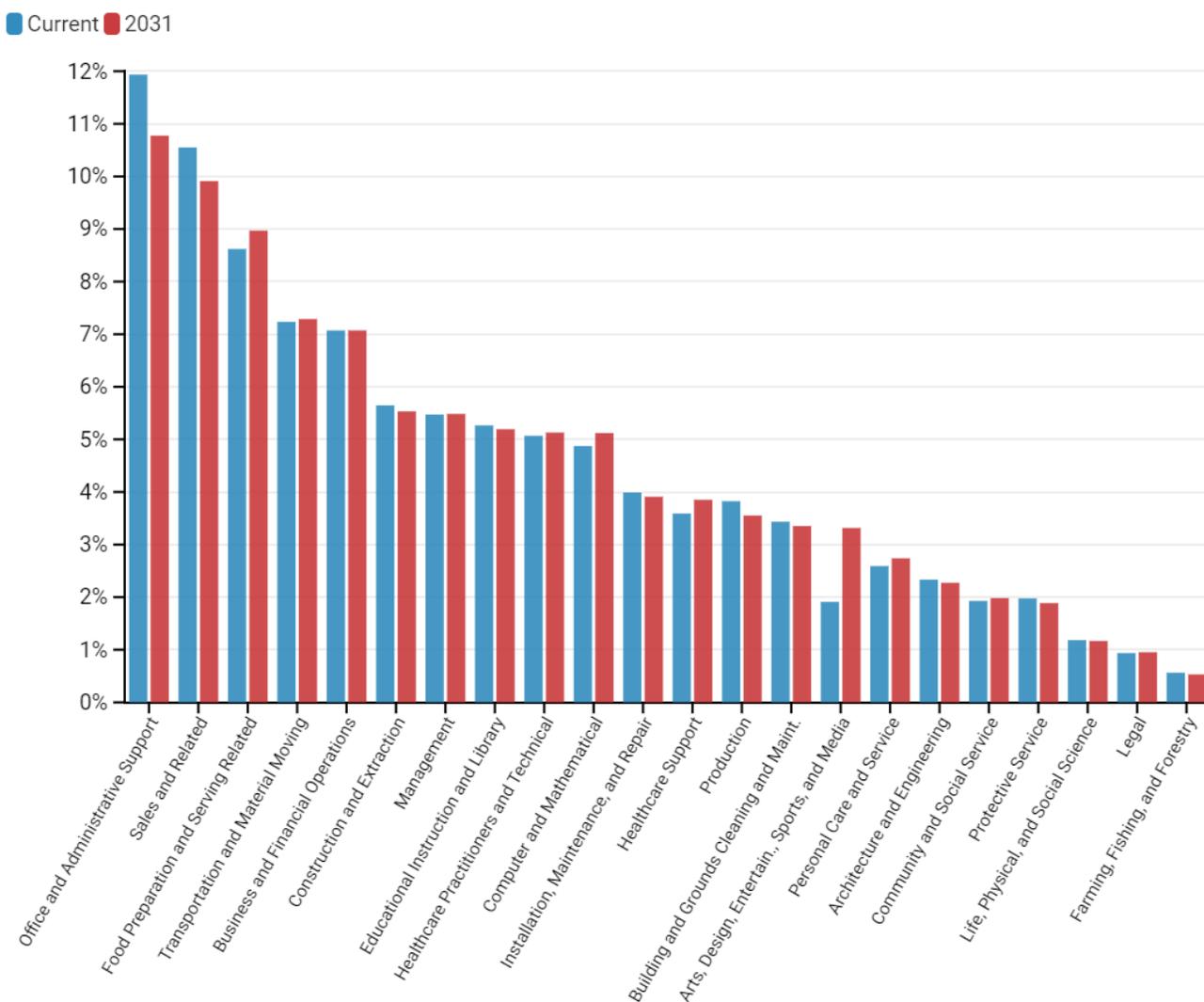
## Existing Data on Workforce Supply and Demand

Existing data paints a clear picture of Colorado's workforce now and in the future. To some extent, the state's supply of workers will have to change over the next decade to produce the best outcomes. Figure 1 shows how much each occupational employment group is projected to change to accommodate the economy's need in 2031.<sup>xi</sup> At a high level, the overall share of the aggregate occupational groups will look similar to what it looks like today.

Figure 1

### Share of All Colorado Occupations

Bars show each occupation's share of the state total. Blue bars show current shares and red bars show projected shares by 2031.

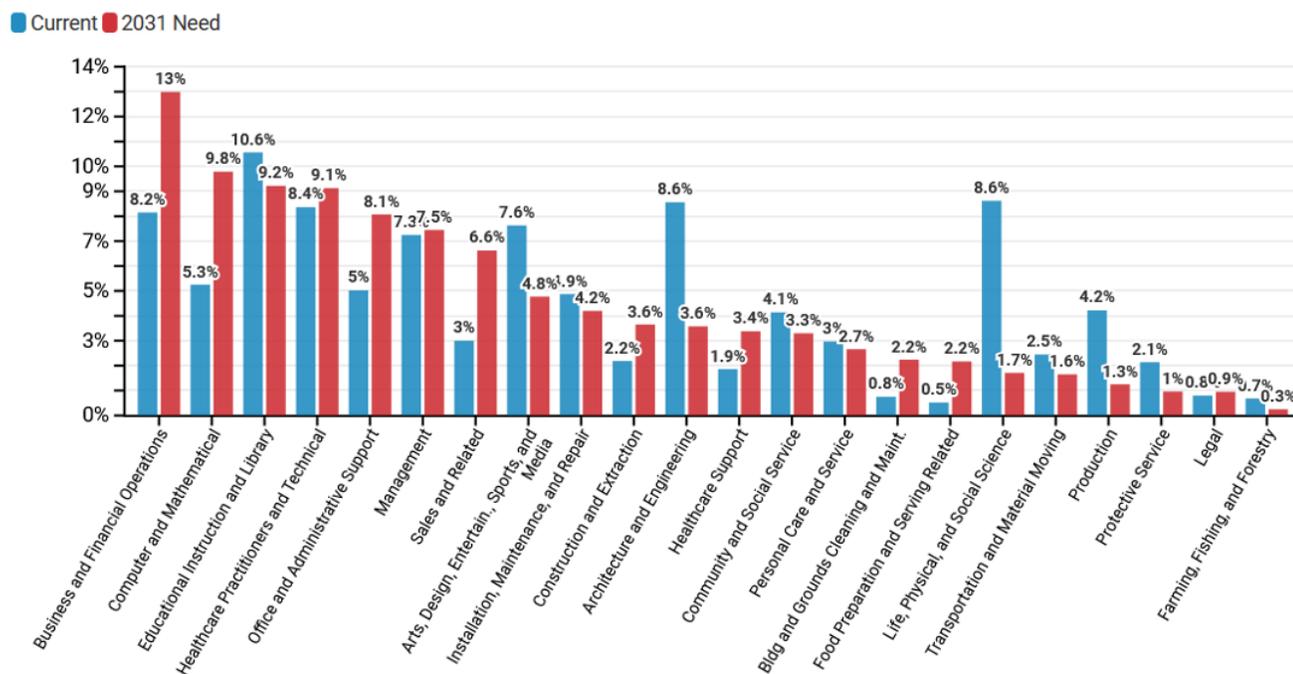


Across most of the state's recent history, structural change to Colorado's workforce has largely been driven by a growing supply of high-skill jobs and more demand for well-educated workers. This reflects both the rising importance of advanced skills and the growing popularity of higher education among high school graduates. The latest projections indicate that this process is ongoing: Georgetown University estimates that, whereas only 70.7% of Colorado adults currently have at least some postsecondary education, 73% of the state's jobs will require it in 2031.<sup>xiii</sup> Although few occupation groups are expected to change significantly in size by 2031, Figure 2 demonstrates that the composition of occupations that require post-secondary education will change more drastically. Business and Finance Operation occupations will see their share of occupations requiring post-secondary education grow from 8.2% to 13%. Computer and Mathematical occupations will increase from 5.3% to 9.8%. Whereas, life, physical and social sciences along with Architecture and Engineering will see their share decline. The reasons for changes with any one category are complex, but are driven by a combination of the growth in the number of actual jobs demanding those occupations, and changes within the level of education required by the occupation itself.

Figure 2

### Share of Colorado Occupations Requiring Post-secondary Credentials

Bars show each occupation's share of the state total number of occupations requiring post-secondary credentials. Blue bars show current shares and red bars show projected shares by 2031.



## Economic Impact of Misalignment

At present, only 66.5% of the Colorado-born adult population living in Colorado has at least some post-secondary education—over 79,000 people short of the 73% estimated need.<sup>xiii</sup> Both the estimates of college-educated Colorado workers over the age of 25 and Georgetown's estimate of future need represent those with the following categories of post-secondary education:

- Some college or associate's degree
- Bachelor's degree
- Graduate or professional degree

If those 79,000 workers gained some level of post-secondary attainment, matching employers' future demand, they would each be earning an additional \$27,220 per year, on average, generating a cumulative \$2 billion in additional wages. This would have produced the following economic benefits for the state in 2023, according to a simulation in the REMI Tax-PI model:

Figure 3

<b>Economic Benefits of 79,000 More College-educated Colorado Workers</b>	
<b>Additional Jobs</b>	25,630
<b>GDP</b>	\$2.851 billion
<b>Output</b>	\$4.902 billion
<b>Personal Income</b>	\$3.981 billion

Although these estimates of economic potential do not account for the costs of higher education, or any trade-off between the native and non-native working populations, they indicate a misalignment between Colorado's education system and the demands of its employers. This is unsurprising; Colorado demands one of the country's best-educated workforces, but its high school graduation rate is 46th in the country, and many of Colorado's highly educated students leave the state.<sup>xiv</sup>

## Measurement of Alignment

While forecasting future workforce needs is an inexact science at best, the estimates produced by Colorado Future Jobs provide an occupation demand scenario for 2031 from which we can derive estimates for how well current education outcomes align.

To measure alignment or misalignment between the educational supply of workers and the demands of the future labor market, CSI created the Education-to-Workforce Alignment Tool. This tool provides a summary level snapshot of the alignment between the credentials Coloradans are earning within the state and the demand for jobs that require post-secondary education. Underlying the model is publicly available data from sources including the post-secondary employment outcomes (PSEO) experimental dataset from the US Census, O\*NET, the REMI model, and a 2031 occupational forecast from ColoradoFutureJobs.com. A more descriptive model methodology along with detailed model results are included in the appendices.

## Alignment Scenarios

Figures 4 and 5 show summary results related to the alignment of the recent supply of working Colorado higher education graduates with the projected 2031 occupational need. This aggregates the likely occupational outcome of recent higher education graduates prior to 2022 and compares that to 2031 occupational need.

Figures 6 and 7 show summary results related to the alignment of the likely occupational outcomes of the class of 2022 higher education completions with the projected 2031 occupational need. This provides a summary look at the alignment of the most recent year of higher education completions.

## Alignment Results

Percentage difference between supply and demand – The bars in Figures 4 and 6 illustrate the degree to which the occupational supply and projected need correspond. Percentage difference is shown as either a positive value or a negative value, depending on whether the share of the occupational supply is larger or smaller than the occupational demand. Values close to 0 indicate good alignment; high positive and high negative values indicate misalignment.

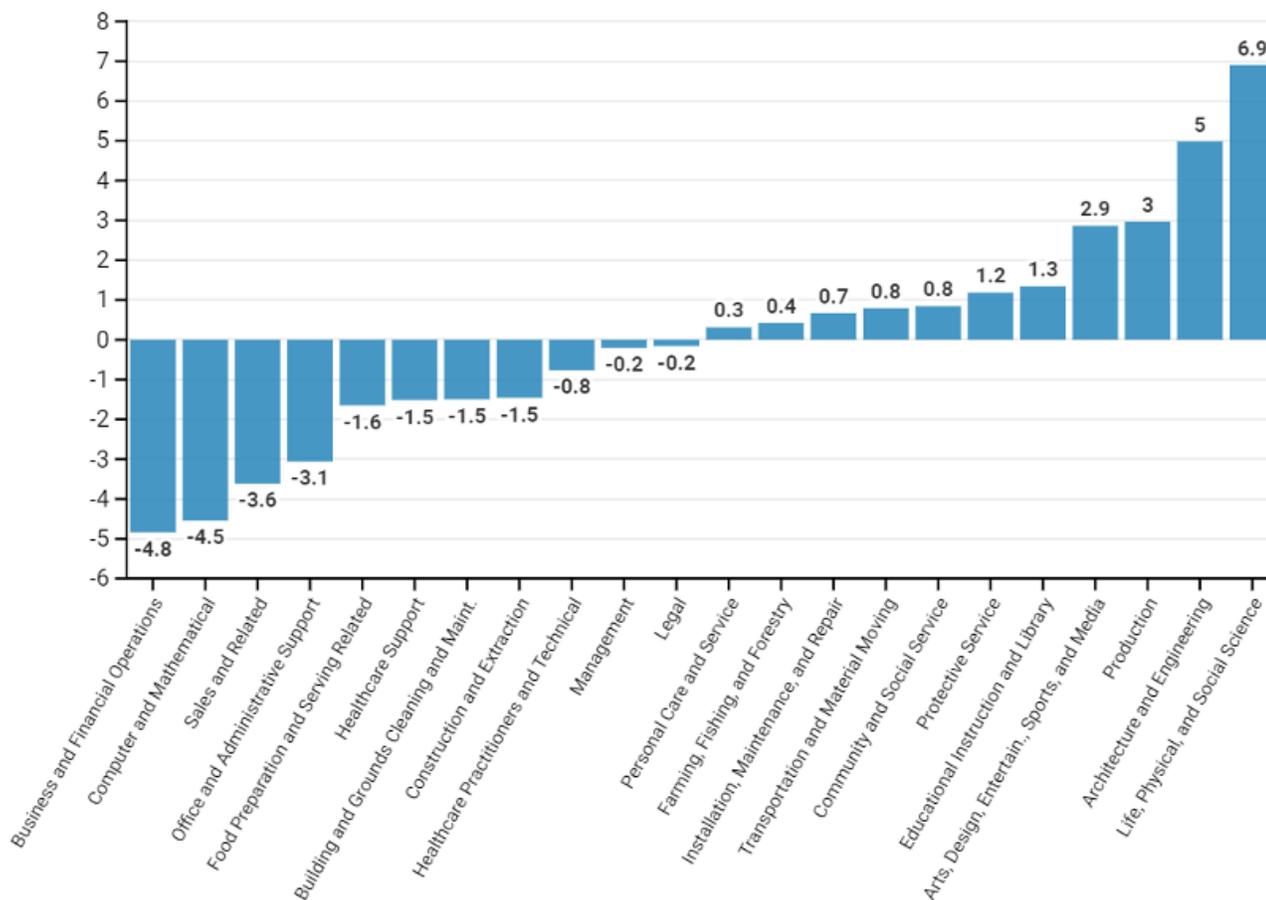
Alignment rating – The bars in Figures 5 and 7 show the relative alignment scale of each occupation. Higher values approaching 100% indicate greater alignment; lower values approaching 0% indicate worse alignment. Occupations that appear further to the left and right in Figures 4 and 6 will appear further to the right in Figures 5 and 7. Occupations that appear in the middle of Figures 4 and 6 will appear further to the left in Figures 5 and 7. The ranking order will not be exactly the same as appears in Figures 4 and 6, given the alignment percentage rating is also considering the relative size of each occupation. Certain occupations that have a lower percentage difference between supply and demand may also have a lower share of total occupations and therefore receive a lower alignment rating.

As shown in Figure 4, there are large excesses of recent college-educated workers in certain fields, including life, physical, and social sciences, production occupations, and farming, fishing, and forestry. Meanwhile, food preparation and serving occupations, building and grounds cleaning and maintenance, and sales and related occupations, among others, will face shortages of locally supplied workers.

Figure 4

### Misalignment of Existing Supply of Working Colorado Graduates with 2031 Occupational Need

Bars show the percentage-point difference between the share of estimated occupational outcomes of education completions prior to 2022 with the share of each occupation in 2031 projections. Bars to the right reflect greater over-supply, while bars to the left reflect greater under-supply.



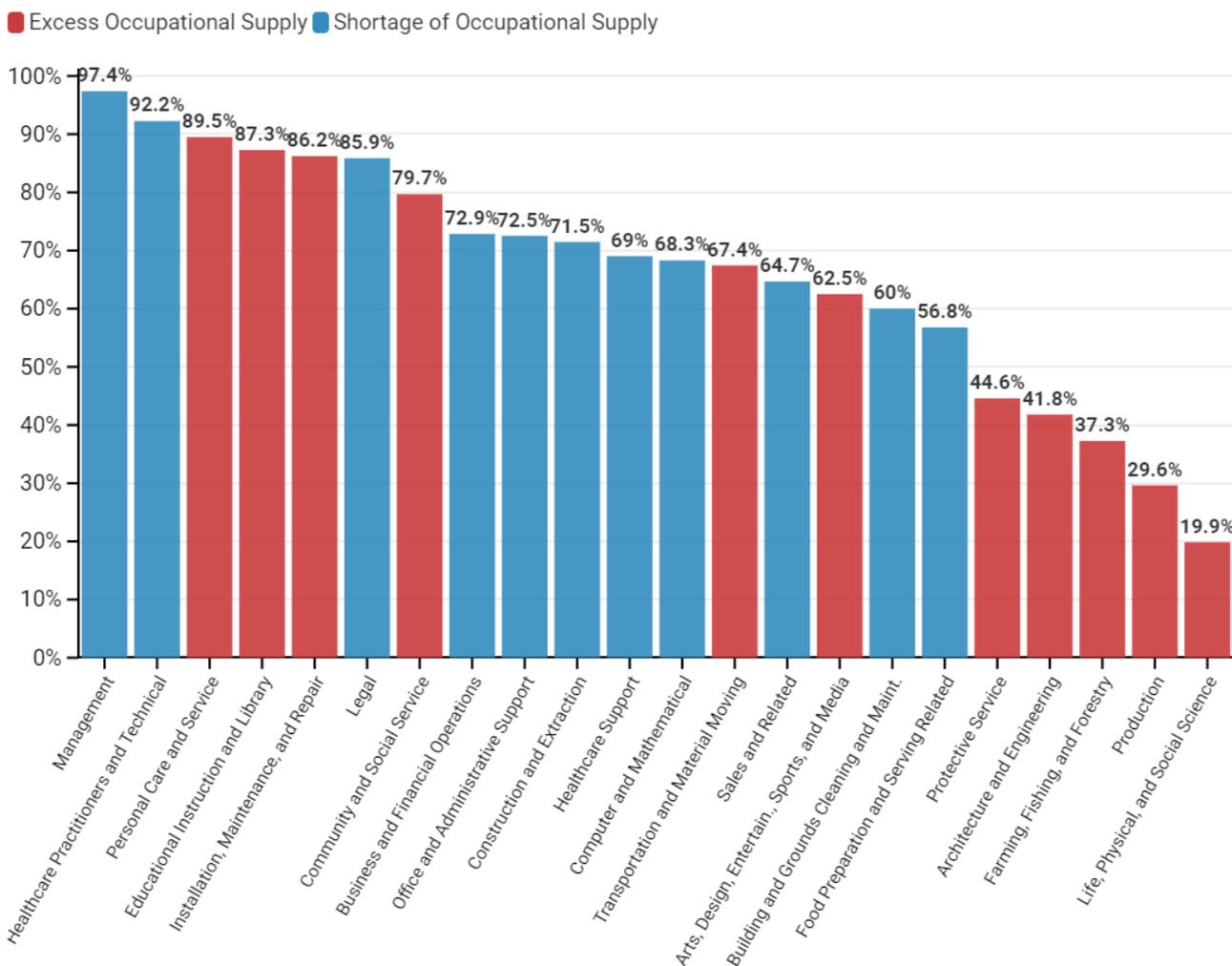
Source: CSI Modeling, ColoradoFutureJobs.com

As shown in Figure 5, the most misaligned occupation groups are production and life/physical/social science. Colorado schools produce graduates of programs associated with these fields at rates far greater than the job market's projected need. This insight is corroborated by some of the analysis featured on the ColoradoFutureJobs.com website, as there are zero detailed occupations within the broader production occupation category that are deemed to have insufficient completions for projected growth.

Figure 5

## Alignment of Existing Supply of Working Colorado Graduates with 2031 Occupational Demand

Each bar shows the degree to which the occupational outcomes of working Colorado graduates prior to 2022 align with the 2031 occupational demand.

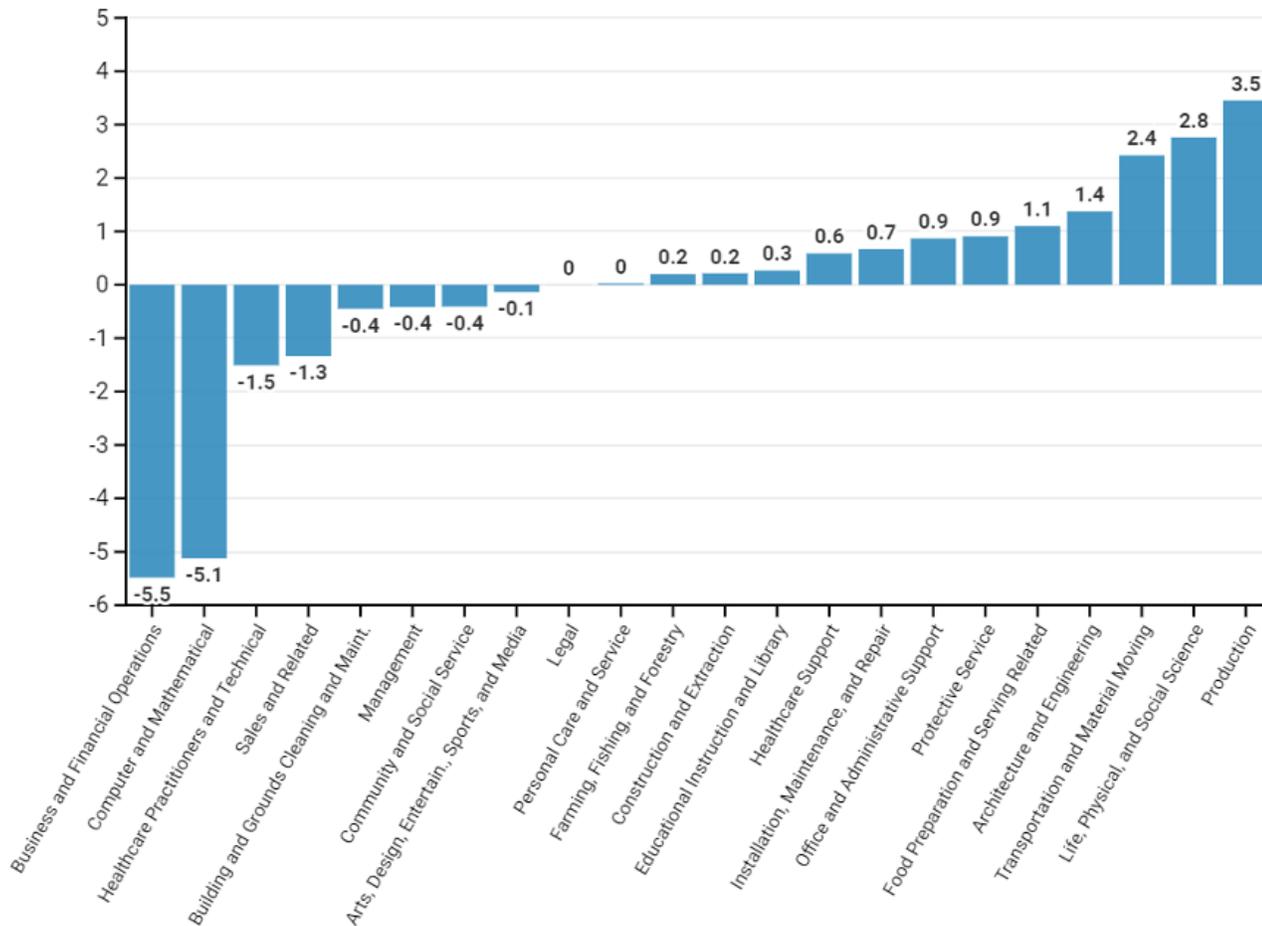


Source: CSI Modeling, ColoradoFutureJobs.com

Figure 6

## Misalignment of 2022 Colorado Higher Education Completions with 2031 Occupational Need

Bars show the percentage-point difference between the share of estimated occupational outcomes of the 2022 higher education completions with the share of each occupation in 2031 projections. Bars to the right reflect greater over-supply, while bars to the left reflect greater under-supply.

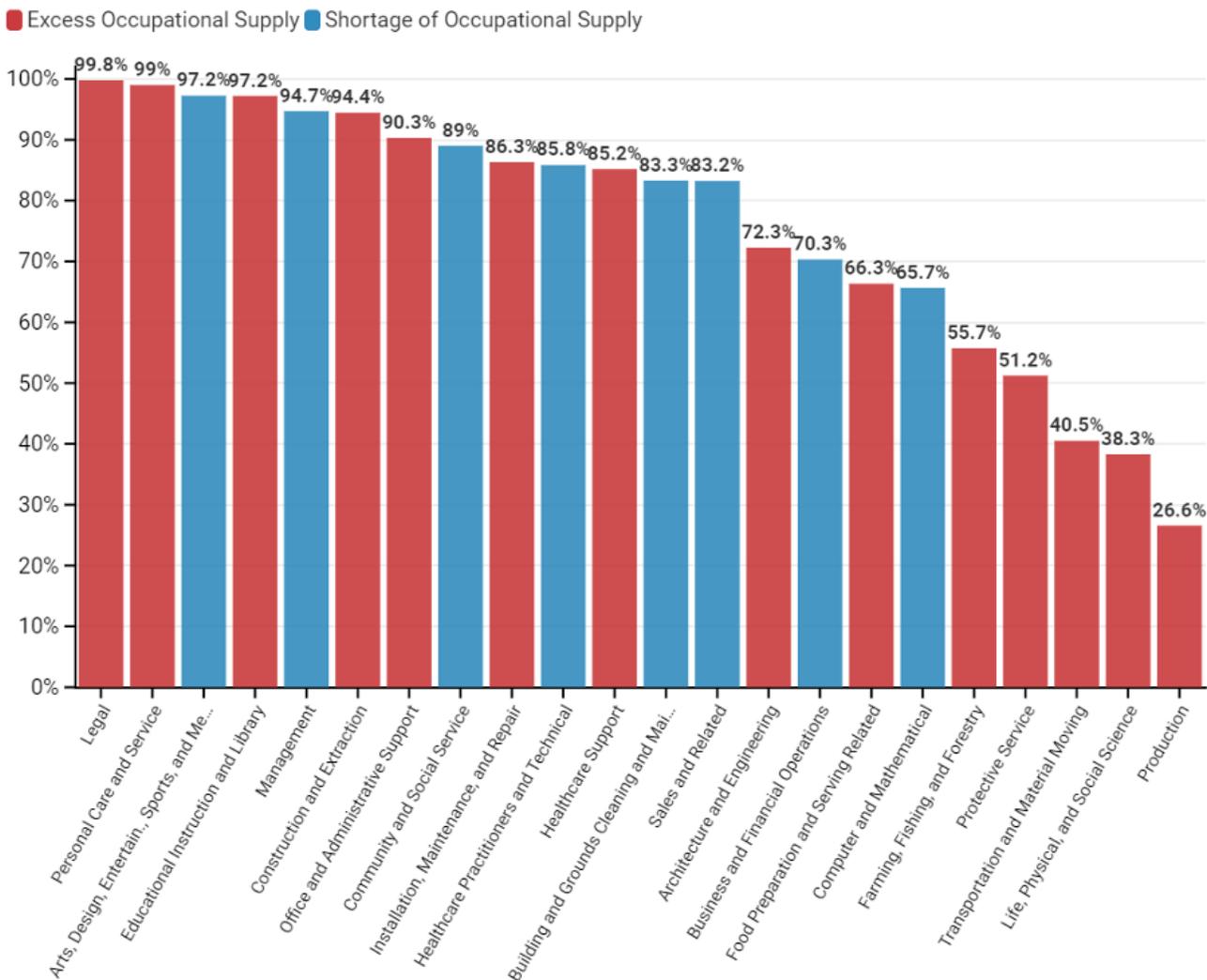


Source: CSI Modeling, ColoradoFutureJobs.com

Figure 7

## Alignment of 2022 Colorado Higher Education Completions with 2031 Occupational Demand

Each bar shows the degree to which the occupational outcomes of the 2022 higher education completions align with the 2031 occupational demand.



Source: CSI Modeling, ColoradoFutureJobs.com

Considering how dramatically the composition of the workforce needs to change over the next decade, are graduation patterns showing signs of adapting to this shifting reality? **Figure 7 shows the alignment of the cohort of 2022 graduates with projected occupational demand. Compared to the alignment of the workforce supply prior to 2022 shown in Figure 5, most recent higher education completions are about 56% better aligned with projections of occupations by 2031.** The 2022 class aligns better with future needs in 16 of 22 occupation groups. This suggests that either institutions, individuals, or a combination of the two are beginning to shift priorities to better match the needs of the labor market.

There is, however, a long way to go to achieve optimal alignment. Colorado schools are still producing large excesses of graduates qualified for production and life/physical/social science occupations and the glut of graduates qualified for transportation/material moving jobs is more pronounced now than it has been historically. Meanwhile, Colorado schools are still graduating a significant shortage of health practitioners (doctors, nurses, and the like), a group for which the state is projected to have a higher need in 2031 than for all but two other occupation categories.

## Recommendations

This study suggests the state could benefit from further economic gains with a higher postsecondary credential attainment rate. Furthermore, to better align education and future workforce needs, the state of Colorado should consider issuing funding that incentivizes institutions to provide high-quality programs, degrees, and credentials that best address critical areas of workforce demand. Further, the state should reward the institutions that perform best in this respect. Since the state has declared this matter an economic imperative, there should be bold and definitive action to directly confront the challenge; a performance-based funding model could be one such example.

Also, a key to better alignment is the accessibility of accurate information. To the greatest extent, students in both K–12 and higher education should be made aware of how educational pathways relate to workforce demand, earnings, and the potential for upward career mobility. State leaders, education practitioners, and employers should work together to create and disseminate this information everywhere in the most user-friendly formats available.

Some of our proposed solutions involve the utilization of workforce intermediaries, which are nonprofit organizations that act as brokers between employers and job seekers.<sup>xv</sup> They serve both customer groups to systematically address workforce needs, considering the needs of both employees and employers. These intermediaries often serve low-skill workers, the economically disadvantaged, and hard-to-employ job seekers, but there is no reason they cannot be applied more broadly to help all students navigate education decisions and smartly enter the labor market.

Because viable solutions must be embedded into the fabric of the education system and memorialized in public policy, the following recommendations are a solution set originally articulated in a 2023 report by the Education to Employment Alliance and are included below.

## 1. Measure outcomes and direct funding to education training programs that help graduates achieve sustainable careers

### CHALLENGES:

- Students have many more options for careers than ever before. Finding the right fit can be overwhelming for students, as well as for employers that seek to attract talent

### RECOMMENDATIONS:

- Create a record of longitudinal data and use it to provide insight and information about which programs produce graduates with the skills needed in critical industries and jobs
  - This record should include costs and outcomes, so students know their returns on investment
  - It should also include information across all types of education and training providers to compare different programs and pathways
- Data should be transparent and accessible
- Data should be stored in a single, data-neutral office under strong security and data governance structure to minimize risk and maximize data use
- Colorado should direct funding toward programs that the data demonstrate have outcomes aligned with state needs and that are most effective at serving learners (especially those that are underserved)

## 2. Create regional talent-development goals and action plans overseen by a workforce intermediary

### CHALLENGES:

- Business leaders want education leaders to produce more students with necessary skills to fill vital jobs; education leaders want more input from business leaders to define those skills, but there is not enough coordination
- There is insufficient knowledge within communities about the needs of employers
- Businesses and educators are not communicating enough to ensure that both sides are meeting their goals

**RECOMMENDATIONS:**

- Assign a quasi-governmental entity to organize regional summits where business, education, and government stakeholders discuss a plan of action to fill the gaps in the talent-development systems
- Appoint a workforce intermediary to identify key workforce gaps

### 3. Realign the pathways offered in schools with the needs of employers

**CHALLENGES:**

- An acute shortage of middle-skills workers exists—it is difficult to find workers with the proper training
- A decline in classes offered in K–12 schools to train students for high-demand sectors has occurred
- There has been a deterioration in the perceived value of being a trade member

**RECOMMENDATIONS:**

- Invest in local and regional hubs that connect K–12, postsecondary education, and businesses to build industry-aligned pathways beginning as early as 8th grade, and embed them throughout high school, postsecondary, and workforce systems
- Provide seed funding to school districts to build infrastructure to provide access to coursework and career-connected learning opportunities in high-demand pathways
- Work with business leaders to implement a culture change in schools that promotes the trades and other in-demand professions

### 4. Streamline and incentivize employer participation in career-connected learning opportunities

**CHALLENGES:**

- Small- and medium-sized businesses do not have the resources (human resources and finances) to host such learning experiences for students
- State laws limit the abilities of high-school-aged students to participate in learning experiences

**RECOMMENDATIONS:**

- Support employers in offering career-connected learning opportunities/learnand-earn models (internships and apprenticeships)
- Offer tax credits to small- and medium-sized businesses so they can host internships and apprenticeships
- Offer grants to nonprofits and associations to serve as intermediaries in helping train professionals
- Review and revise labor laws to allow younger students to have properly structured work-based learning experiences

## 5. Ensure education providers are focusing on the skills that students and employers need

**CHALLENGES:**

- Graduates are lacking the skills they need
- Graduates do not have the durable “soft” skills needed to succeed, such as communication, critical thinking, and problem-solving skills

**RECOMMENDATIONS:**

- Require the community college system to work with industry to adopt a Durable Skills Rubric or other framework
- Schools should opt in to a transfer network that recognizes skills rather than courses as the primary unit of credit
- Invest in Learner and Employment Record technology so students can articulate the skills they have accumulated

## Conclusion

Comparing the 2022 cohort of college graduates with earlier cohorts reveals that Colorado is progressing toward better education-to-workforce alignment in 16 of 22 occupation groups. Is this the result of public policies, the actions of private businesses, or the diligence of individuals making better educational investment decisions? It is a combination of all three factors. Policies that incentivize entry into in-demand educational tracts are important, as are efforts to ensure students understand which occupation categories provide the best future opportunities in terms of workforce need, compensation, and upward mobility. The private sector, for its part, must work with the K–12 system and institutions of higher learning to inform education and training alignment.

Achieving perfect education-to-workforce alignment by 2031 is not the singular key to a thriving state economy, nor is it probable. However, maximizing the number of Coloradans with relevant postsecondary achievement is vital for both the individual and collective good. The system relies on individuals choosing their education pathways, and not all will make those decisions and investments based on future workforce projections. That fact does not diminish the importance and necessity of sharing this information far, wide, and systematically to ensure all students can make informed decisions now that will impact their individual future, and that of Colorado's collective economic strength.

# Appendix A: Model Results Tables

<b>Comparison of Estimated Present Supply of College-educated Colorado Workers and Future Occupational Need</b>				
<b>Occupation group</b>	<b>SOC code</b>	<b>Estimated supply</b>	<b>2031 need</b>	<b>Surplus (percentage points)</b>
<b>Management Occupations</b>	11	7.25%	7.45%	-0.200455346
<b>Business and Financial Operations Occupations</b>	13	8.15%	12.99%	-4.838276574
<b>Computer and Mathematical Occupations</b>	15	5.25%	9.79%	-4.546404089
<b>Architecture and Engineering Occupations</b>	17	8.56%	3.58%	4.982505048
<b>Life, Physical, and Social Science Occupations</b>	19	8.62%	1.71%	6.906067716
<b>Community and Social Service Occupations</b>	21	4.14%	3.30%	0.841915145
<b>Legal Occupations</b>	23	0.80%	0.95%	-0.157069807
<b>Educational Instruction and Library Occupations</b>	25	10.56%	9.22%	1.344855979
<b>Arts, Design, Entertainment, Sports, and Media Occupations</b>	27	7.63%	4.77%	2.861653363
<b>Healthcare Practitioners and Technical Occupations</b>	29	8.36%	9.13%	-0.767308537
<b>Healthcare Support Occupations</b>	31	1.86%	3.38%	-1.514606317
<b>Protective Service Occupations</b>	33	2.14%	0.96%	1.186960943
<b>Food Preparation and Serving Related Occupations</b>	35	0.52%	2.17%	-1.648568846
<b>Building and Grounds Cleaning and Maintenance Occupations</b>	37	0.75%	2.24%	-1.494336145
<b>Personal Care and Service Occupations</b>	39	2.97%	2.66%	0.311743228
<b>Sales and Related Occupations</b>	41	3.00%	6.62%	-3.613131681
<b>Office and Administrative Support Occupations</b>	43	5.02%	8.07%	-3.058848331
<b>Farming, Fishing, and Forestry Occupations</b>	45	0.68%	0.25%	0.42474795
<b>Construction and Extraction Occupations</b>	47	2.19%	3.65%	-1.456495265
<b>Installation, Maintenance, and Repair Occupations</b>	49	4.87%	4.20%	0.671304061
<b>Production Occupations</b>	51	4.22%	1.25%	2.966790833
<b>Transportation and Material Moving Occupations</b>	53	2.45%	1.65%	0.79695667

<b>Projected 2023 Employment Outcomes of 2022 Graduating Classes</b> (Based on available data covering 72% of postsecondary graduates statewide)				
Occupation group	SOC	Count	2031 need	Surplus (percentage points)
Management Occupations	11	3823.130189	7.45%	-0.4165
Business and Financial Operations Occupations	13	4080.810122	12.99%	-5.4810
Computer and Mathematical Occupations	15	2540.14165	9.79%	-5.1227
Architecture and Engineering Occupations	17	2692.93159	3.58%	1.3731
Life, Physical, and Social Science Occupations	19	2432.232029	1.71%	2.7605
Community and Social Service Occupations	21	1574.51256	3.30%	-0.4073
Legal Occupations	23	519.9045944	0.95%	0.0021
Educational Instruction and Library Occupations	25	5157.021393	9.22%	0.2647
Arts, Design, Entertainment, Sports, and Media Occupations	27	2521.126245	4.77%	-0.1354
Healthcare Practitioners and Technical Occupations	29	4146.451965	9.13%	-1.5053
Healthcare Support Occupations	31	2155.948513	3.38%	0.5882
Protective Service Occupations	33	1013.477789	0.96%	0.9088
Food Preparation and Serving Related Occupations	35	1774.860486	2.17%	1.0988
Building and Grounds Cleaning and Maintenance Occupations	37	974.3180965	2.24%	-0.4495
Personal Care and Service Occupations	39	1461.894163	2.66%	0.0269
Sales and Related Occupations	41	2873.442924	6.62%	-1.3329
Office and Administrative Support Occupations	43	4862.783432	8.07%	0.8689
Farming, Fishing, and Forestry Occupations	45	246.2076119	0.25%	0.2004
Construction and Extraction Occupations	47	2101.586062	3.65%	0.2152
Installation, Maintenance, and Repair Occupations	49	2647.152907	4.20%	0.6661
Production Occupations	51	2556.69264	1.25%	3.4526
Transportation and Material Moving Occupations	53	2215.780232	1.65%	2.4243
Unemployed/NILF	none	14390.59281	-	-

# Appendix B: Education to Workforce Alignment Tool Methodology

## Occupational supply of Colorado graduates

The occupational supply of Colorado graduates are based upon a simple array of postsecondary education levels and two-digit SOC codes wherein employed graduates at eight different levels of educational attainment are sorted (in shares) according to their occupations of choice. That sorting is informed by data published by O\*NET which estimate the shares of U.S. workers in every occupation at every distinct level of educational attainment. Each of the values in the array is multiplied by observed levels of employment 1 year, 5 years, or 10 years after graduation from Colorado institutions among graduates of every degree type within several cohorts of graduates (PSEO); the resulting estimates are aggregated at the two-digit SOC-code level and presented as shares of their collective total.

### Relevant assumptions:

- Colorado's distribution of employed postsecondary credential-holders among SOC occupations is not substantially different from the United States' distribution of the same.
- Though the dataset includes information about only a group of schools that together enroll about 72% of Colorado's postsecondary students, PSEO data are representative of the whole collective of Colorado postsecondary institutions.
- The PSEO dataset does not misrepresent any individual cohort of graduates.
- Colorado graduates' employment preferences express themselves roughly the same way now and will in the future as they did among PSEO's graduation cohorts.

## Future occupational demand for graduates

The estimates of occupational shares of working graduates with every distinct level of educational attainment (described above) are converted to nominal employment levels according to estimates of each occupation's total Colorado employment level in 2021 (Colorado Future Jobs). Projections of the rates of employment growth that each occupation must exhibit to meet Colorado's "need" in 2031, also provided by Colorado Future Jobs, are applied to the employment estimates; the resulting values are aggregated at the two-digit SOC-code level and presented as shares of their collective total.

### Relevant assumptions:

- Colorado's distribution of employed postsecondary credential-holders among SOC occupations is not substantially different from the United States' distribution of the same.
- Colorado Future Jobs' estimates of present supply and future "need" remain accurate though they describe conditions from over two years ago.

## Occupational outcomes of Colorado graduates by subject of study

These estimates are derived from a series of evaluations of several pairs of the following matrices: [CIP (subject) code x credential level], [CIP code x NAICS (industry) code (including "none")], [SOC (occupation) code x NAICS code], and [SOC code x credential level]. These matrices were built by manipulating the following datasets, respectively: Colorado PSEO, Colorado PSEO, the REMI Tax-PI Colorado model baseline, and O\*NET Education, Training, and Experience. The logic of the process can be summarized as follows: PSEO data describe the concentrations of every degree type by subject of study and which industries Colorado graduates enter after graduating with degrees in their chosen subjects, REMI's Tax-PI model estimates the distributions of workers in each industry across occupation types, and O\*NET data reflect each occupation's postsecondary education requirements and demand for workers without postsecondary certifications. Combined, these make it possible to determine a graduate's likelihood of entering each type of occupation (or none at all) based upon his/her subject of study and level of accreditation.

### Relevant assumptions:

- Colorado's distribution of employed postsecondary credential-holders among SOC occupations is not substantially different from the United States' distribution of the same.
- Though the dataset includes information about only a group of schools that together enroll about 72% of Colorado's postsecondary students, PSEO data are representative of the whole collective of Colorado postsecondary institutions.
- The PSEO dataset does not misrepresent any individual cohort of graduates.
- Colorado graduates' employment preferences express themselves roughly the same way now as they did among PSEO's graduation cohorts.
- Colorado Future Jobs' estimates of present occupational supply remain accurate though they describe conditions from over two years ago.

# Appendix C: List of Occupations (SOC)

## 11-0000 Management Occupations

- 11-0000 Management Occupations
- 11-1000 Top Executives
  - 11-1010 Chief Executives
    - 11-1011 Chief Executives
  - 11-1020 General and Operations Managers
    - 11-1021 General and Operations Managers
  - 11-1030 Legislators
    - 11-1031 Legislators
- 11-2000 Advertising, Marketing, Promotions, Public Relations, and Sales Managers
  - 11-2010 Advertising and Promotions Managers
    - 11-2011 Advertising and Promotions Managers
  - 11-2020 Marketing and Sales Managers
    - 11-2021 Marketing Managers
    - 11-2022 Sales Managers
  - 11-2030 Public Relations and Fundraising Managers
    - 11-2032 Public Relations Managers
    - 11-2033 Fundraising Managers
- 11-3000 Operations Specialties Managers
  - 11-3010 Administrative Services and Facilities Managers
    - 11-3012 Administrative Services Managers
    - 11-3013 Facilities Managers
  - 11-3020 Computer and Information Systems Managers
    - 11-3021 Computer and Information Systems Managers
  - 11-3030 Financial Managers
    - 11-3031 Financial Managers
  - 11-3050 Industrial Production Managers
    - 11-3051 Industrial Production Managers
  - 11-3060 Purchasing Managers
    - 11-3061 Purchasing Managers
  - 11-3070 Transportation, Storage, and Distribution Managers
    - 11-3071 Transportation, Storage, and Distribution Managers
  - 11-3110 Compensation and Benefits Managers
    - 11-3111 Compensation and Benefits Managers
  - 11-3120 Human Resources Managers

- 11-3121 Human Resources Managers
  - 11-3130 Training and Development Managers
    - 11-3131 Training and Development Managers
- 11-9000 Other Management Occupations
  - 11-9010 Farmers, Ranchers, and Other Agricultural Managers
    - 11-9013 Farmers, Ranchers, and Other Agricultural Managers
  - 11-9020 Construction Managers
    - 11-9021 Construction Managers
  - 11-9030 Education and Childcare Administrators
    - 11-9031 Education and Childcare Administrators, Preschool and Daycare
    - 11-9032 Education Administrators, Kindergarten through Secondary
    - 11-9033 Education Administrators, Postsecondary
    - 11-9039 Education Administrators, All Other
  - 11-9040 Architectural and Engineering Managers
    - 11-9041 Architectural and Engineering Managers
  - 11-9050 Food Service Managers
    - 11-9051 Food Service Managers
  - 11-9070 Entertainment and Recreation Managers
    - 11-9071 Gambling Managers
    - 11-9072 Entertainment and Recreation Managers, Except Gambling
  - 11-9080 Lodging Managers
    - 11-9081 Lodging Managers
  - 11-9110 Medical and Health Services Managers
    - 11-9111 Medical and Health Services Managers
  - 11-9120 Natural Sciences Managers
    - 11-9121 Natural Sciences Managers
  - 11-9130 Postmasters and Mail Superintendents
    - 11-9131 Postmasters and Mail Superintendents
  - 11-9140 Property, Real Estate, and Community Association Managers
    - 11-9141 Property, Real Estate, and Community Association Managers
  - 11-9150 Social and Community Service Managers
    - 11-9151 Social and Community Service Managers
  - 11-9160 Emergency Management Directors
    - 11-9161 Emergency Management Directors
  - 11-9170 Personal Service Managers
    - 11-9171 Funeral Home Managers
    - 11-9179 Personal Service Managers, All Other
  - 11-9190 Miscellaneous Managers
    - 11-9199 Managers, All Other

## 13-0000 Business and Financial Operations Occupations

- 13-0000 Business and Financial Operations Occupations
- 13-1000 Business Operations Specialists
  - 13-1010 Agents and Business Managers of Artists, Performers, and Athletes
    - 13-1011 Agents and Business Managers of Artists, Performers, and Athletes
  - 13-1020 Buyers and Purchasing Agents
    - 13-1020 Buyers and Purchasing Agents
  - 13-1030 Claims Adjusters, Appraisers, Examiners, and Investigators
    - 13-1031 Claims Adjusters, Examiners, and Investigators
    - 13-1032 Insurance Appraisers, Auto Damage
  - 13-1040 Compliance Officers
    - 13-1041 Compliance Officers
  - 13-1050 Cost Estimators
    - 13-1051 Cost Estimators
  - 13-1070 Human Resources Workers
    - 13-1071 Human Resources Specialists
    - 13-1074 Farm Labor Contractors
    - 13-1075 Labor Relations Specialists
  - 13-1080 Logisticians and Project Management Specialists
    - 13-1081 Logisticians
    - 13-1082 Project Management Specialists
  - 13-1110 Management Analysts
    - 13-1111 Management Analysts
  - 13-1120 Meeting, Convention, and Event Planners
    - 13-1121 Meeting, Convention, and Event Planners
  - 13-1130 Fundraisers
    - 13-1131 Fundraisers
  - 13-1140 Compensation, Benefits, and Job Analysis Specialists
    - 13-1141 Compensation, Benefits, and Job Analysis Specialists
  - 13-1150 Training and Development Specialists
    - 13-1151 Training and Development Specialists
  - 13-1160 Market Research Analysts and Marketing Specialists
    - 13-1161 Market Research Analysts and Marketing Specialists
  - 13-1190 Miscellaneous Business Operations Specialists
    - 13-1199 Business Operations Specialists, All Other
- 13-2000 Financial Specialists
  - 13-2010 Accountants and Auditors
    - 13-2011 Accountants and Auditors

- 13-2020 Property Appraisers and Assessors
  - 13-2020 Property Appraisers and Assessors
- 13-2030 Budget Analysts
  - 13-2031 Budget Analysts
- 13-2040 Credit Analysts
  - 13-2041 Credit Analysts
- 13-2050 Financial Analysts and Advisors
  - 13-2051 Financial and Investment Analysts
  - 13-2052 Personal Financial Advisors
  - 13-2053 Insurance Underwriters
  - 13-2054 Financial Risk Specialists
- 13-2060 Financial Examiners
  - 13-2061 Financial Examiners
- 13-2070 Credit Counselors and Loan Officers
  - 13-2071 Credit Counselors
  - 13-2072 Loan Officers
- 13-2080 Tax Examiners, Collectors and Preparers, and Revenue Agents
  - 13-2081 Tax Examiners and Collectors, and Revenue Agents
  - 13-2082 Tax Preparers
- 13-2090 Miscellaneous Financial Specialists
  - 13-2099 Financial Specialists, All Other

## 15-0000 Computer and Mathematical Occupations

- 15-0000 Computer and Mathematical Occupations
- 15-1200 Computer Occupations
  - 15-1210 Computer and Information Analysts
    - 15-1211 Computer Systems Analysts
    - 15-1212 Information Security Analysts
  - 15-1220 Computer and Information Research Scientists
    - 15-1221 Computer and Information Research Scientists
  - 15-1230 Computer Support Specialists
    - 15-1231 Computer Network Support Specialists
    - 15-1232 Computer User Support Specialists
  - 15-1240 Database and Network Administrators and Architects
    - 15-1241 Computer Network Architects
    - 15-1242 Database Administrators
    - 15-1243 Database Architects
    - 15-1244 Network and Computer Systems Administrators

- 15-1250 Software and Web Developers, Programmers, and Testers
  - 15-1251 Computer Programmers
  - 15-1252 Software Developers
  - 15-1253 Software Quality Assurance Analysts and Testers
  - 15-1254 Web Developers
  - 15-1255 Web and Digital Interface Designers
- 15-1290 Miscellaneous Computer Occupations
  - 15-1299 Computer Occupations, All Other
- 15-2000 Mathematical Science Occupations
  - 15-2010 Actuaries
    - 15-2011 Actuaries
  - 15-2020 Mathematicians
    - 15-2021 Mathematicians
  - 15-2030 Operations Research Analysts
    - 15-2031 Operations Research Analysts
  - 15-2040 Statisticians
    - 15-2041 Statisticians
  - 15-2050 Data Scientists
    - 15-2051 Data Scientists
  - 15-2090 Miscellaneous Mathematical Science Occupations
    - 15-2099 Mathematical Science Occupations, All Other

## 17-0000 Architecture and Engineering Occupations

- 17-0000 Architecture and Engineering Occupations
- 17-1000 Architects, Surveyors, and Cartographers
  - 17-1010 Architects, Except Naval
    - 17-1011 Architects, Except Landscape and Naval
    - 17-1012 Landscape Architects
  - 17-1020 Surveyors, Cartographers, and Photogrammetrists
    - 17-1021 Cartographers and Photogrammetrists
    - 17-1022 Surveyors
- 17-2000 Engineers
  - 17-2010 Aerospace Engineers
    - 17-2011 Aerospace Engineers
  - 17-2020 Agricultural Engineers
    - 17-2021 Agricultural Engineers
  - 17-2030 Bioengineers and Biomedical Engineers
    - 17-2031 Bioengineers and Biomedical Engineers

- 17-2040 Chemical Engineers
  - 17-2041 Chemical Engineers
- 17-2050 Civil Engineers
  - 17-2051 Civil Engineers
- 17-2060 Computer Hardware Engineers
  - 17-2061 Computer Hardware Engineers
- 17-2070 Electrical and Electronics Engineers
  - 17-2071 Electrical Engineers
  - 17-2072 Electronics Engineers, Except Computer
- 17-2080 Environmental Engineers
  - 17-2081 Environmental Engineers
- 17-2110 Industrial Engineers, Including Health and Safety
  - 17-2111 Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
  - 17-2112 Industrial Engineers
- 17-2120 Marine Engineers and Naval Architects
  - 17-2121 Marine Engineers and Naval Architects
- 17-2130 Materials Engineers
  - 17-2131 Materials Engineers
- 17-2140 Mechanical Engineers
  - 17-2141 Mechanical Engineers
- 17-2150 Mining and Geological Engineers, Including Mining Safety Engineers
  - 17-2151 Mining and Geological Engineers, Including Mining Safety Engineers
- 17-2160 Nuclear Engineers
  - 17-2161 Nuclear Engineers
- 17-2170 Petroleum Engineers
  - 17-2171 Petroleum Engineers
- 17-2190 Miscellaneous Engineers
  - 17-2199 Engineers, All Other
- 17-3000 Drafters, Engineering Technicians, and Mapping Technicians
  - 17-3010 Drafters
    - 17-3011 Architectural and Civil Drafters
    - 17-3012 Electrical and Electronics Drafters
    - 17-3013 Mechanical Drafters
    - 17-3019 Drafters, All Other
  - 17-3020 Engineering Technologists and Technicians, Except Drafters
    - 17-3021 Aerospace Engineering and Operations Technologists and Technicians
    - 17-3022 Civil Engineering Technologists and Technicians
    - 17-3023 Electrical and Electronic Engineering Technologists and Technicians

- 17-3024 Electro-Mechanical and Mechatronics Technologists and Technicians
- 17-3025 Environmental Engineering Technologists and Technicians
- 17-3026 Industrial Engineering Technologists and Technicians
- 17-3027 Mechanical Engineering Technologists and Technicians
- 17-3028 Calibration Technologists and Technicians
- 17-3029 Engineering Technologists and Technicians, Except Drafters, All Other
- 17-3030 Surveying and Mapping Technicians
  - 17-3031 Surveying and Mapping Technicians

## 19-0000 - Life, Physical, and Social Science Occupations

- 19-0000 Life, Physical, and Social Science Occupations
- 19-1000 Life Scientists
  - 19-1010 Agricultural and Food Scientists
    - 19-1011 Animal Scientists
    - 19-1012 Food Scientists and Technologists
    - 19-1013 Soil and Plant Scientists
  - 19-1020 Biological Scientists
    - 19-1021 Biochemists and Biophysicists
    - 19-1022 Microbiologists
    - 19-1023 Zoologists and Wildlife Biologists
    - 19-1029 Biological Scientists, All Other
  - 19-1030 Conservation Scientists and Foresters
    - 19-1031 Conservation Scientists
    - 19-1032 Foresters
  - 19-1040 Medical Scientists
    - 19-1041 Epidemiologists
    - 19-1042 Medical Scientists, Except Epidemiologists
  - 19-1090 Miscellaneous Life Scientists
    - 19-1099 Life Scientists, All Other
- 19-2000 Physical Scientists
  - 19-2010 Astronomers and Physicists
    - 19-2011 Astronomers
    - 19-2012 Physicists
  - 19-2020 Atmospheric and Space Scientists
    - 19-2021 Atmospheric and Space Scientists
  - 19-2030 Chemists and Materials Scientists
    - 19-2031 Chemists
    - 19-2032 Materials Scientists

- 19-2040 Environmental Scientists and Geoscientists
  - 19-2041 Environmental Scientists and Specialists, Including Health
  - 19-2042 Geoscientists, Except Hydrologists and Geographers
  - 19-2043 Hydrologists
- 19-2090 Miscellaneous Physical Scientists
  - 19-2099 Physical Scientists, All Other
- 19-3000 Social Scientists and Related Workers
  - 19-3010 Economists
    - 19-3011 Economists
  - 19-3020 Survey Researchers
    - 19-3022 Survey Researchers
  - 19-3030 Psychologists
    - 19-3032 Industrial-Organizational Psychologists
    - 19-3033 Clinical and Counseling Psychologists
    - 19-3034 School Psychologists
    - 19-3039 Psychologists, All Other
  - 19-3040 Sociologists
    - 19-3041 Sociologists
  - 19-3050 Urban and Regional Planners
    - 19-3051 Urban and Regional Planners
  - 19-3090 Miscellaneous Social Scientists and Related Workers
    - 19-3091 Anthropologists and Archeologists
    - 19-3092 Geographers
    - 19-3093 Historians
    - 19-3094 Political Scientists
    - 19-3099 Social Scientists and Related Workers, All Other
- 19-4000 Life, Physical, and Social Science Technicians
  - 19-4010 Agricultural and Food Science Technicians
    - 19-4012 Agricultural Technicians
    - 19-4013 Food Science Technicians
  - 19-4020 Biological Technicians
    - 19-4021 Biological Technicians
  - 19-4030 Chemical Technicians
    - 19-4031 Chemical Technicians
  - 19-4040 Environmental Science and Geoscience Technicians
    - 19-4042 Environmental Science and Protection Technicians, Including Health
    - 19-4043 Geological Technicians, Except Hydrologic Technicians
    - 19-4044 Hydrologic Technicians
  - 19-4050 Nuclear Technicians

- 19-4051 Nuclear Technicians
  - 19-4060 Social Science Research Assistants
    - 19-4061 Social Science Research Assistants
  - 19-4070 Forest and Conservation Technicians
    - 19-4071 Forest and Conservation Technicians
  - 19-4090 Miscellaneous Life, Physical, and Social Science Technicians
    - 19-4092 Forensic Science Technicians
    - 19-4099 Life, Physical, and Social Science Technicians, All Other
- 19-5000 Occupational Health and Safety Specialists and Technicians
  - 19-5010 Occupational Health and Safety Specialists and Technicians
    - 19-5011 Occupational Health and Safety Specialists
    - 19-5012 Occupational Health and Safety Technicians

## 21-0000 Community and Social Service Occupations

- 21-0000 Community and Social Service Occupations
- 21-1000 Counselors, Social Workers, and Other Community and Social Service Specialists
  - 21-1010 Counselors
    - 21-1012 Educational, Guidance, and Career Counselors and Advisors
    - 21-1013 Marriage and Family Therapists
    - 21-1015 Rehabilitation Counselors
    - 21-1018 Substance Abuse, Behavioral Disorder, and Mental Health Counselors
    - 21-1019 Counselors, All Other
  - 21-1020 Social Workers
    - 21-1021 Child, Family, and School Social Workers
    - 21-1022 Healthcare Social Workers
    - 21-1023 Mental Health and Substance Abuse Social Workers
    - 21-1029 Social Workers, All Other
  - 21-1090 Miscellaneous Community and Social Service Specialists
    - 21-1091 Health Education Specialists
    - 21-1092 Probation Officers and Correctional Treatment Specialists
    - 21-1093 Social and Human Service Assistants
    - 21-1094 Community Health Workers
    - 21-1099 Community and Social Service Specialists, All Other
- 21-2000 Religious Workers
  - 21-2010 Clergy
    - 21-2011 Clergy
  - 21-2020 Directors, Religious Activities and Education
    - 21-2021 Directors, Religious Activities and Education

- 21-2090 Miscellaneous Religious Workers
  - 21-2099 Religious Workers, All Other

## 23-0000 Legal Occupations

- 23-0000 Legal Occupations
- 23-1000 Lawyers, Judges, and Related Workers
  - 23-1010 Lawyers and Judicial Law Clerks
    - 23-1011 Lawyers
    - 23-1012 Judicial Law Clerks
  - 23-1020 Judges, Magistrates, and Other Judicial Workers
    - 23-1021 Administrative Law Judges, Adjudicators, and Hearing Officers
    - 23-1022 Arbitrators, Mediators, and Conciliators
    - 23-1023 Judges, Magistrate Judges, and Magistrates
- 23-2000 Legal Support Workers
  - 23-2010 Paralegals and Legal Assistants
    - 23-2011 Paralegals and Legal Assistants
  - 23-2090 Miscellaneous Legal Support Workers
    - 23-2093 Title Examiners, Abstractors, and Searchers
    - 23-2099 Legal Support Workers, All Other

## 25-0000 Educational Instruction and Library Occupations

- 25-0000 Educational Instruction and Library Occupations
- 25-1000 Postsecondary Teachers
  - 25-1010 Business Teachers, Postsecondary
    - 25-1011 Business Teachers, Postsecondary
  - 25-1020 Math and Computer Science Teachers, Postsecondary
    - 25-1021 Computer Science Teachers, Postsecondary
    - 25-1022 Mathematical Science Teachers, Postsecondary
  - 25-1030 Engineering and Architecture Teachers, Postsecondary
    - 25-1031 Architecture Teachers, Postsecondary
    - 25-1032 Engineering Teachers, Postsecondary
  - 25-1040 Life Sciences Teachers, Postsecondary
    - 25-1041 Agricultural Sciences Teachers, Postsecondary
    - 25-1042 Biological Science Teachers, Postsecondary
    - 25-1043 Forestry and Conservation Science Teachers, Postsecondary
  - 25-1050 Physical Sciences Teachers, Postsecondary
    - 25-1051 Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary

- 25-1052 Chemistry Teachers, Postsecondary
  - 25-1053 Environmental Science Teachers, Postsecondary
  - 25-1054 Physics Teachers, Postsecondary
- 25-1060 Social Sciences Teachers, Postsecondary
  - 25-1061 Anthropology and Archeology Teachers, Postsecondary
  - 25-1062 Area, Ethnic, and Cultural Studies Teachers, Postsecondary
  - 25-1063 Economics Teachers, Postsecondary
  - 25-1064 Geography Teachers, Postsecondary
  - 25-1065 Political Science Teachers, Postsecondary
  - 25-1066 Psychology Teachers, Postsecondary
  - 25-1067 Sociology Teachers, Postsecondary
  - 25-1069 Social Sciences Teachers, Postsecondary, All Other
- 25-1070 Health Teachers, Postsecondary
  - 25-1071 Health Specialties Teachers, Postsecondary
  - 25-1072 Nursing Instructors and Teachers, Postsecondary
- 25-1080 Education and Library Science Teachers, Postsecondary
  - 25-1081 Education Teachers, Postsecondary
  - 25-1082 Library Science Teachers, Postsecondary
- 25-1110 Law, Criminal Justice, and Social Work Teachers, Postsecondary
  - 25-1111 Criminal Justice and Law Enforcement Teachers, Postsecondary
  - 25-1112 Law Teachers, Postsecondary
  - 25-1113 Social Work Teachers, Postsecondary
- 25-1120 Arts, Communications, History, and Humanities Teachers, Postsecondary
  - 25-1121 Art, Drama, and Music Teachers, Postsecondary
  - 25-1122 Communications Teachers, Postsecondary
  - 25-1123 English Language and Literature Teachers, Postsecondary
  - 25-1124 Foreign Language and Literature Teachers, Postsecondary
  - 25-1125 History Teachers, Postsecondary
  - 25-1126 Philosophy and Religion Teachers, Postsecondary
- 25-1190 Miscellaneous Postsecondary Teachers
  - 25-1192 Family and Consumer Sciences Teachers, Postsecondary
  - 25-1193 Recreation and Fitness Studies Teachers, Postsecondary
  - 25-1194 Career/Technical Education Teachers, Postsecondary
  - 25-1199 Postsecondary Teachers, All Other
- 25-2000 Preschool, Elementary, Middle, Secondary, and Special Education Teachers
  - 25-2010 Preschool and Kindergarten Teachers
    - 25-2011 Preschool Teachers, Except Special Education
    - 25-2012 Kindergarten Teachers, Except Special Education
  - 25-2020 Elementary and Middle School Teachers

- 25-2021 Elementary School Teachers, Except Special Education
    - 25-2022 Middle School Teachers, Except Special and Career/Technical Education
    - 25-2023 Career/Technical Education Teachers, Middle School
  - 25-2030 Secondary School Teachers
    - 25-2031 Secondary School Teachers, Except Special and Career/Technical Education
    - 25-2032 Career/Technical Education Teachers, Secondary School
  - 25-2050 Special Education Teachers
    - 25-2051 Special Education Teachers, Preschool
    - 25-2052 Special Education Teachers, Kindergarten and Elementary School
    - 25-2057 Special Education Teachers, Middle School
    - 25-2058 Special Education Teachers, Secondary School
    - 25-2059 Special Education Teachers, All Other
- 25-3000 Other Teachers and Instructors
  - 25-3010 Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors
    - 25-3011 Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors
  - 25-3020 Self-Enrichment Teachers
    - 25-3021 Self-Enrichment Teachers
  - 25-3030 Substitute Teachers, Short-Term
    - 25-3031 Substitute Teachers, Short-Term
  - 25-3040 Tutors
    - 25-3041 Tutors
  - 25-3090 Miscellaneous Teachers and Instructors
    - 25-3099 Teachers and Instructors, All Other
- 25-4000 Librarians, Curators, and Archivists
  - 25-4010 Archivists, Curators, and Museum Technicians
    - 25-4011 Archivists
    - 25-4012 Curators
    - 25-4013 Museum Technicians and Conservators
  - 25-4020 Librarians and Media Collections Specialists
    - 25-4022 Librarians and Media Collections Specialists
  - 25-4030 Library Technicians
    - 25-4031 Library Technicians
- 25-9000 Other Educational Instruction and Library Occupations
  - 25-9020 Farm and Home Management Educators
    - 25-9021 Farm and Home Management Educators

- 25-9030 Instructional Coordinators
  - 25-9031 Instructional Coordinators
- 25-9040 Teaching Assistants
  - 25-9044 Teaching Assistants, Postsecondary
  - 25-9045 Teaching Assistants, Except Postsecondary
- 25-9090 Miscellaneous Educational Instruction and Library Workers
  - 25-9099 Educational Instruction and Library Workers, All Other

## 27-0000 Arts, Design, Entertainment, Sports, and Media Occupations

- 27-0000 Arts, Design, Entertainment, Sports, and Media Occupations
- 27-1000 Art and Design Workers
  - 27-1010 Artists and Related Workers
    - 27-1011 Art Directors
    - 27-1012 Craft Artists
    - 27-1013 Fine Artists, Including Painters, Sculptors, and Illustrators
    - 27-1014 Special Effects Artists and Animators
    - 27-1019 Artists and Related Workers, All Other
  - 27-1020 Designers
    - 27-1021 Commercial and Industrial Designers
    - 27-1022 Fashion Designers
    - 27-1023 Floral Designers
    - 27-1024 Graphic Designers
    - 27-1025 Interior Designers
    - 27-1026 Merchandise Displayers and Window Trimmers
    - 27-1027 Set and Exhibit Designers
    - 27-1029 Designers, All Other
- 27-2000 Entertainers and Performers, Sports and Related Workers
  - 27-2010 Actors, Producers, and Directors
    - 27-2011 Actors
    - 27-2012 Producers and Directors
  - 27-2020 Athletes, Coaches, Umpires, and Related Workers
    - 27-2021 Athletes and Sports Competitors
    - 27-2022 Coaches and Scouts
    - 27-2023 Umpires, Referees, and Other Sports Officials
  - 27-2030 Dancers and Choreographers
    - 27-2031 Dancers
    - 27-2032 Choreographers

- 27-2040 Musicians, Singers, and Related Workers
  - 27-2041 Music Directors and Composers
  - 27-2042 Musicians and Singers
- 27-2090 Miscellaneous Entertainers and Performers, Sports and Related Workers
  - 27-2091 Disc Jockeys, Except Radio
  - 27-2099 Entertainers and Performers, Sports and Related Workers, All Other
- 27-3000 Media and Communication Workers
  - 27-3010 Broadcast Announcers and Radio Disc Jockeys
    - 27-3011 Broadcast Announcers and Radio Disc Jockeys
  - 27-3020 News Analysts, Reporters and Journalists
    - 27-3023 News Analysts, Reporters, and Journalists
  - 27-3030 Public Relations Specialists
    - 27-3031 Public Relations Specialists
  - 27-3040 Writers and Editors
    - 27-3041 Editors
    - 27-3042 Technical Writers
    - 27-3043 Writers and Authors
  - 27-3090 Miscellaneous Media and Communication Workers
    - 27-3091 Interpreters and Translators
    - 27-3092 Court Reporters and Simultaneous Captioners
    - 27-3099 Media and Communication Workers, All Other
- 27-4000 Media and Communication Equipment Workers
  - 27-4010 Broadcast, Sound, and Lighting Technicians
    - 27-4011 Audio and Video Technicians
    - 27-4012 Broadcast Technicians
    - 27-4014 Sound Engineering Technicians
    - 27-4015 Lighting Technicians
  - 27-4020 Photographers
    - 27-4021 Photographers
  - 27-4030 Television, Video, and Film Camera Operators and Editors
    - 27-4031 Camera Operators, Television, Video, and Film
    - 27-4032 Film and Video Editors
  - 27-4090 Miscellaneous Media and Communication Equipment Workers
    - 27-4099 Media and Communication Equipment Workers, All Other

## 29-0000 Healthcare Practitioners and Technical Occupations

- 29-0000 Healthcare Practitioners and Technical Occupations
- 29-1000 Healthcare Diagnosing or Treating Practitioners
  - 29-1010 Chiropractors
    - 29-1011 Chiropractors
  - 29-1020 Dentists
    - 29-1021 Dentists, General
    - 29-1022 Oral and Maxillofacial Surgeons
    - 29-1023 Orthodontists
    - 29-1024 Prosthodontists
    - 29-1029 Dentists, All Other Specialists
  - 29-1030 Dietitians and Nutritionists
    - 29-1031 Dietitians and Nutritionists
  - 29-1040 Optometrists
    - 29-1041 Optometrists
  - 29-1050 Pharmacists
    - 29-1051 Pharmacists
  - 29-1070 Physician Assistants
    - 29-1071 Physician Assistants
  - 29-1080 Podiatrists
    - 29-1081 Podiatrists
  - 29-1120 Therapists
    - 29-1122 Occupational Therapists
    - 29-1123 Physical Therapists
    - 29-1124 Radiation Therapists
    - 29-1125 Recreational Therapists
    - 29-1126 Respiratory Therapists
    - 29-1127 Speech-Language Pathologists
    - 29-1128 Exercise Physiologists
    - 29-1129 Therapists, All Other
  - 29-1130 Veterinarians
    - 29-1131 Veterinarians
  - 29-1140 Registered Nurses
    - 29-1141 Registered Nurses
  - 29-1150 Nurse Anesthetists
    - 29-1151 Nurse Anesthetists
  - 29-1160 Nurse Midwives
    - 29-1161 Nurse Midwives

- 29-1170 Nurse Practitioners
  - 29-1171 Nurse Practitioners
- 29-1180 Audiologists
  - 29-1181 Audiologists
- 29-1210 Physicians
  - 29-1211 Anesthesiologists
  - 29-1212 Cardiologists
  - 29-1213 Dermatologists
  - 29-1214 Emergency Medicine Physicians
  - 29-1215 Family Medicine Physicians
  - 29-1216 General Internal Medicine Physicians
  - 29-1217 Neurologists
  - 29-1218 Obstetricians and Gynecologists
  - 29-1221 Pediatricians, General
  - 29-1222 Physicians, Pathologists
  - 29-1223 Psychiatrists
  - 29-1224 Radiologists
  - 29-1229 Physicians, All Other
- 29-1240 Surgeons
  - 29-1241 Ophthalmologists, Except Pediatric
  - 29-1242 Orthopedic Surgeons, Except Pediatric
  - 29-1243 Pediatric Surgeons
  - 29-1249 Surgeons, All Other
- 29-1290 Miscellaneous Healthcare Diagnosing or Treating Practitioners
  - 29-1291 Acupuncturists
  - 29-1292 Dental Hygienists
  - 29-1299 Healthcare Diagnosing or Treating Practitioners, All Other
- 29-2000 Health Technologists and Technicians
  - 29-2010 Clinical Laboratory Technologists and Technicians
    - 29-2010 Clinical Laboratory Technologists and Technicians
  - 29-2030 Diagnostic Related Technologists and Technicians
    - 29-2031 Cardiovascular Technologists and Technicians
    - 29-2032 Diagnostic Medical Sonographers
    - 29-2033 Nuclear Medicine Technologists
    - 29-2034 Radiologic Technologists and Technicians
    - 29-2035 Magnetic Resonance Imaging Technologists
    - 29-2036 Medical Dosimetrists
  - 29-2040 Emergency Medical Technicians and Paramedics
    - 29-2042 Emergency Medical Technicians

- 29-2043 Paramedics
  - 29-2050 Health Practitioner Support Technologists and Technicians
    - 29-2051 Dietetic Technicians
    - 29-2052 Pharmacy Technicians
    - 29-2053 Psychiatric Technicians
    - 29-2055 Surgical Technologists
    - 29-2056 Veterinary Technologists and Technicians
    - 29-2057 Ophthalmic Medical Technicians
  - 29-2060 Licensed Practical and Licensed Vocational Nurses
    - 29-2061 Licensed Practical and Licensed Vocational Nurses
  - 29-2070 Medical Records Specialists
    - 29-2072 Medical Records Specialists
  - 29-2080 Opticians, Dispensing
    - 29-2081 Opticians, Dispensing
  - 29-2090 Miscellaneous Health Technologists and Technicians
    - 29-2091 Orthotists and Prosthetists
    - 29-2092 Hearing Aid Specialists
    - 29-2099 Health Technologists and Technicians, All Other
- 29-9000 Other Healthcare Practitioners and Technical Occupations
  - 29-9020 Health Information Technologists and Medical Registrars
  - 29-9021 Health Information Technologists and Medical Registrars
- 29-9090 Miscellaneous Health Practitioners and Technical Workers
  - 29-9091 Athletic Trainers
  - 29-9092 Genetic Counselors
  - 29-9093 Surgical Assistants
  - 29-9099 Healthcare Practitioners and Technical Workers, All Other

## 31-0000 Healthcare Support Occupations

- 31-0000 Healthcare Support Occupations
- 31-1100 Home Health and Personal Care Aides; and Nursing Assistants, Orderlies, and Psychiatric Aides
  - 31-1120 Home Health and Personal Care Aides
    - 31-1120 Home Health and Personal Care Aides
  - 31-1130 Nursing Assistants, Orderlies, and Psychiatric Aides
    - 31-1131 Nursing Assistants
    - 31-1132 Orderlies
    - 31-1133 Psychiatric Aides

- 31-2000 Occupational Therapy and Physical Therapist Assistants and Aides
  - o 31-2010 Occupational Therapy Assistants and Aides
    - 31-2011 Occupational Therapy Assistants
    - 31-2012 Occupational Therapy Aides
  - o 31-2020 Physical Therapist Assistants and Aides
    - 31-2021 Physical Therapist Assistants
    - 31-2022 Physical Therapist Aides
- 31-9000 Other Healthcare Support Occupations
  - o 31-9010 Massage Therapists
    - 31-9011 Massage Therapists
  - o 31-9090 Miscellaneous Healthcare Support Occupations
    - 31-9091 Dental Assistants
    - 31-9092 Medical Assistants
    - 31-9093 Medical Equipment Preparers
    - 31-9094 Medical Transcriptionists
    - 31-9095 Pharmacy Aides
    - 31-9096 Veterinary Assistants and Laboratory Animal Caretakers
    - 31-9097 Phlebotomists
    - 31-9099 Healthcare Support Workers, All Other

## 33-0000 Protective Service Occupations

- 33-0000 Protective Service Occupations
- 33-1000 Supervisors of Protective Service Workers
  - o 33-1010 First-Line Supervisors of Law Enforcement Workers
    - 33-1011 First-Line Supervisors of Correctional Officers
    - 33-1012 First-Line Supervisors of Police and Detectives
  - o 33-1020 First-Line Supervisors of Firefighting and Prevention Workers
    - 33-1021 First-Line Supervisors of Firefighting and Prevention Workers
  - o 33-1090 Miscellaneous First-Line Supervisors, Protective Service Workers
    - 33-1091 First-Line Supervisors of Security Workers
    - 33-1099 First-Line Supervisors of Protective Service Workers, All Other
- 33-2000 Firefighting and Prevention Workers
  - o 33-2010 Firefighters
    - 33-2011 Firefighters
  - o 33-2020 Fire Inspectors
    - 33-2021 Fire Inspectors and Investigators
    - 33-2022 Forest Fire Inspectors and Prevention Specialists
- 33-3000 Law Enforcement Workers

- 33-3010 Bailiffs, Correctional Officers, and Jailers
  - 33-3011 Bailiffs
  - 33-3012 Correctional Officers and Jailers
- 33-3020 Detectives and Criminal Investigators
  - 33-3021 Detectives and Criminal Investigators
- 33-3030 Fish and Game Wardens
  - 33-3031 Fish and Game Wardens
- 33-3040 Parking Enforcement Workers
  - 33-3041 Parking Enforcement Workers
- 33-3050 Police Officers
  - 33-3051 Police and Sheriff's Patrol Officers
  - 33-3052 Transit and Railroad Police
- 33-9000 Other Protective Service Workers
  - 33-9010 Animal Control Workers
    - 33-9011 Animal Control Workers
  - 33-9020 Private Detectives and Investigators
    - 33-9021 Private Detectives and Investigators
  - 33-9030 Security Guards and Gambling Surveillance Officers
    - 33-9031 Gambling Surveillance Officers and Gambling Investigators
    - 33-9032 Security Guards
  - 33-9090 Miscellaneous Protective Service Workers
    - 33-9091 Crossing Guards and Flaggers
    - 33-9092 Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers
    - 33-9093 Transportation Security Screeners
    - 33-9094 School Bus Monitors
    - 33-9099 Protective Service Workers, All Other

## 35-0000 Food Preparation and Serving Related Occupations

- 35-0000 Food Preparation and Serving Related Occupations
- 35-1000 Supervisors of Food Preparation and Serving Workers
  - 35-1010 Supervisors of Food Preparation and Serving Workers
    - 35-1011 Chefs and Head Cooks
    - 35-1012 First-Line Supervisors of Food Preparation and Serving Workers
- 35-2000 Cooks and Food Preparation Workers
  - 35-2010 Cooks
    - 35-2011 Cooks, Fast Food
    - 35-2012 Cooks, Institution and Cafeteria

- 35-2013 Cooks, Private Household
    - 35-2014 Cooks, Restaurant
    - 35-2015 Cooks, Short Order
    - 35-2019 Cooks, All Other
  - 35-2020 Food Preparation Workers
    - 35-2021 Food Preparation Workers
- 35-3000 Food and Beverage Serving Workers
  - 35-3010 Bartenders
    - 35-3011 Bartenders
  - 35-3020 Fast Food and Counter Workers
    - 35-3023 Fast Food and Counter Workers
  - 35-3030 Waiters and Waitresses
    - 35-3031 Waiters and Waitresses
  - 35-3040 Food Servers, Nonrestaurant
    - 35-3041 Food Servers, Nonrestaurant
- 35-9000 Other Food Preparation and Serving Related Workers
  - 35-9010 Dining Room and Cafeteria Attendants and Bartender Helpers
    - 35-9011 Dining Room and Cafeteria Attendants and Bartender Helpers
  - 35-9020 Dishwashers
    - 35-9021 Dishwashers
  - 35-9030 Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop
    - 35-9031 Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop
  - 35-9090 Miscellaneous Food Preparation and Serving Related Workers
    - 35-9099 Food Preparation and Serving Related Workers, All Other

## 37-0000 Building and Grounds Cleaning and Maintenance Occupations

- 37-0000 Building and Grounds Cleaning and Maintenance Occupations
- 37-1000 Supervisors of Building and Grounds Cleaning and Maintenance Workers
  - 37-1010 First-Line Supervisors of Building and Grounds Cleaning and Maintenance Workers
    - 37-1011 First-Line Supervisors of Housekeeping and Janitorial Workers
    - 37-1012 First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers
- 37-2000 Building Cleaning and Pest Control Workers
  - 37-2010 Building Cleaning Workers
    - 37-2011 Janitors and Cleaners, Except Maids and Housekeeping Cleaners
    - 37-2012 Maids and Housekeeping Cleaners

- 37-2019 Building Cleaning Workers, All Other
  - 37-2020 Pest Control Workers
    - 37-2021 Pest Control Workers
- 37-3000 Grounds Maintenance Workers
  - 37-3010 Grounds Maintenance Workers
    - 37-3011 Landscaping and Groundskeeping Workers
    - 37-3012 Pesticide Handlers, Sprayers, and Applicators, Vegetation
    - 37-3013 Tree Trimmers and Pruners
    - 37-3019 Grounds Maintenance Workers, All Other

## 39-0000 Personal Care and Service Occupations

- 39-0000 Personal Care and Service Occupations
- 39-1000 Supervisors of Personal Care and Service Workers
  - 39-1010 First-Line Supervisors of Entertainment and Recreation Workers
    - 39-1013 First-Line Supervisors of Gambling Services Workers
    - 39-1014 First-Line Supervisors of Entertainment and Recreation Workers, Except Gambling Services
  - 39-1020 First-Line Supervisors of Personal Service Workers
    - 39-1022 First-Line Supervisors of Personal Service Workers
- 39-2000 Animal Care and Service Workers
  - 39-2010 Animal Trainers
    - 39-2011 Animal Trainers
  - 39-2020 Animal Caretakers
    - 39-2021 Animal Caretakers
- 39-3000 Entertainment Attendants and Related Workers
  - 39-3010 Gambling Services Workers
    - 39-3011 Gambling Dealers
    - 39-3012 Gambling and Sports Book Writers and Runners
    - 39-3019 Gambling Service Workers, All Other
  - 39-3020 Motion Picture Projectionists
    - 39-3021 Motion Picture Projectionists
  - 39-3030 Ushers, Lobby Attendants, and Ticket Takers
    - 39-3031 Ushers, Lobby Attendants, and Ticket Takers
  - 39-3090 Miscellaneous Entertainment Attendants and Related Workers
    - 39-3091 Amusement and Recreation Attendants
    - 39-3092 Costume Attendants
    - 39-3093 Locker Room, Coatroom, and Dressing Room Attendants
    - 39-3099 Entertainment Attendants and Related Workers, All Other

- 39-4000 Funeral Service Workers
  - 39-4010 Embalmers and Crematory Operators
    - 39-4011 Embalmers
    - 39-4012 Crematory Operators
  - 39-4020 Funeral Attendants
    - 39-4021 Funeral Attendants
  - 39-4030 Morticians, Undertakers, and Funeral Arrangers
    - 39-4031 Morticians, Undertakers, and Funeral Arrangers
- 39-5000 Personal Appearance Workers
  - 39-5010 Barbers, Hairdressers, Hairstylists and Cosmetologists
    - 39-5011 Barbers
    - 39-5012 Hairdressers, Hairstylists, and Cosmetologists
  - 39-5090 Miscellaneous Personal Appearance Workers
    - 39-5091 Makeup Artists, Theatrical and Performance
    - 39-5092 Manicurists and Pedicurists
    - 39-5093 Shampooers
    - 39-5094 Skincare Specialists
- 39-6000 Baggage Porters, Bellhops, and Concierges
  - 39-6010 Baggage Porters, Bellhops, and Concierges
    - 39-6011 Baggage Porters and Bellhops
    - 39-6012 Concierges
- 39-7000 Tour and Travel Guides
  - 39-7010 Tour and Travel Guides
    - 39-7010 Tour and Travel Guides
- 39-9000 Other Personal Care and Service Workers
  - 39-9010 Childcare Workers
    - 39-9011 Childcare Workers
  - 39-9030 Recreation and Fitness Workers
    - 39-9031 Exercise Trainers and Group Fitness Instructors
    - 39-9032 Recreation Workers
  - 39-9040 Residential Advisors
    - 39-9041 Residential Advisors
  - 39-9090 Miscellaneous Personal Care and Service Workers
    - 39-9099 Personal Care and Service Workers, All Other

## 41-0000 Sales and Related Occupations

- 41-0000 Sales and Related Occupations
- 41-1000 Supervisors of Sales Workers
  - 41-1010 First-Line Supervisors of Sales Workers
    - 41-1011 First-Line Supervisors of Retail Sales Workers
    - 41-1012 First-Line Supervisors of Non-Retail Sales Workers
- 41-2000 Retail Sales Workers
  - 41-2010 Cashiers
    - 41-2011 Cashiers
    - 41-2012 Gambling Change Persons and Booth Cashiers
  - 41-2020 Counter and Rental Clerks and Parts Salespersons
    - 41-2021 Counter and Rental Clerks
    - 41-2022 Parts Salespersons
  - 41-2030 Retail Salespersons
    - 41-2031 Retail Salespersons
- 41-3000 Sales Representatives, Services
  - 41-3010 Advertising Sales Agents
    - 41-3011 Advertising Sales Agents
  - 41-3020 Insurance Sales Agents
    - 41-3021 Insurance Sales Agents
  - 41-3030 Securities, Commodities, and Financial Services Sales Agents
    - 41-3031 Securities, Commodities, and Financial Services Sales Agents
  - 41-3040 Travel Agents
    - 41-3041 Travel Agents
  - 41-3090 Miscellaneous Sales Representatives, Services
    - 41-3091 Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel
- 41-4000 Sales Representatives, Wholesale and Manufacturing
  - 41-4010 Sales Representatives, Wholesale and Manufacturing
    - 41-4011 Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products
    - 41-4012 Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products
- 41-9000 Other Sales and Related Workers
  - 41-9010 Models, Demonstrators, and Product Promoters
    - 41-9011 Demonstrators and Product Promoters
    - 41-9012 Models
  - 41-9020 Real Estate Brokers and Sales Agents

- 41-9021 Real Estate Brokers
  - 41-9022 Real Estate Sales Agents
- 41-9030 Sales Engineers
  - 41-9031 Sales Engineers
- 41-9040 Telemarketers
  - 41-9041 Telemarketers
- 41-9090 Miscellaneous Sales and Related Workers
  - 41-9091 Door-to-Door Sales Workers, News and Street Vendors, and Related Workers
  - 41-9099 Sales and Related Workers, All Other

## 43-0000 Office and Administrative Support Occupations

- 43-0000 Office and Administrative Support Occupations
- 43-1000 Supervisors of Office and Administrative Support Workers
  - 43-1010 First-Line Supervisors of Office and Administrative Support Workers
    - 43-1011 First-Line Supervisors of Office and Administrative Support Workers
- 43-2000 Communications Equipment Operators
  - 43-2010 Switchboard Operators, Including Answering Service
    - 43-2011 Switchboard Operators, Including Answering Service
  - 43-2020 Telephone Operators
    - 43-2021 Telephone Operators
  - 43-2090 Miscellaneous Communications Equipment Operators
    - 43-2099 Communications Equipment Operators, All Other
- 43-3000 Financial Clerks
  - 43-3010 Bill and Account Collectors
    - 43-3011 Bill and Account Collectors
  - 43-3020 Billing and Posting Clerks
    - 43-3021 Billing and Posting Clerks
  - 43-3030 Bookkeeping, Accounting, and Auditing Clerks
    - 43-3031 Bookkeeping, Accounting, and Auditing Clerks
  - 43-3040 Gambling Cage Workers
    - 43-3041 Gambling Cage Workers
  - 43-3050 Payroll and Timekeeping Clerks
    - 43-3051 Payroll and Timekeeping Clerks
  - 43-3060 Procurement Clerks
    - 43-3061 Procurement Clerks
  - 43-3070 Tellers
    - 43-3071 Tellers
  - 43-3090 Miscellaneous Financial Clerks
    - 43-3099 Financial Clerks, All Other

- 43-4000 Information and Record Clerks
  - 43-4010 Brokerage Clerks
    - 43-4011 Brokerage Clerks
  - 43-4020 Correspondence Clerks
    - 43-4021 Correspondence Clerks
  - 43-4030 Court, Municipal, and License Clerks
    - 43-4031 Court, Municipal, and License Clerks
  - 43-4040 Credit Authorizers, Checkers, and Clerks
    - 43-4041 Credit Authorizers, Checkers, and Clerks
  - 43-4050 Customer Service Representatives
    - 43-4051 Customer Service Representatives
  - 43-4060 Eligibility Interviewers, Government Programs
    - 43-4061 Eligibility Interviewers, Government Programs
  - 43-4070 File Clerks
    - 43-4071 File Clerks
  - 43-4080 Hotel, Motel, and Resort Desk Clerks
    - 43-4081 Hotel, Motel, and Resort Desk Clerks
  - 43-4110 Interviewers, Except Eligibility and Loan
    - 43-4111 Interviewers, Except Eligibility and Loan
  - 43-4120 Library Assistants, Clerical
    - 43-4121 Library Assistants, Clerical
  - 43-4130 Loan Interviewers and Clerks
    - 43-4131 Loan Interviewers and Clerks
  - 43-4140 New Accounts Clerks
    - 43-4141 New Accounts Clerks
  - 43-4150 Order Clerks
    - 43-4151 Order Clerks
  - 43-4160 Human Resources Assistants, Except Payroll and Timekeeping
    - 43-4161 Human Resources Assistants, Except Payroll and Timekeeping
  - 43-4170 Receptionists and Information Clerks
    - 43-4171 Receptionists and Information Clerks
  - 43-4180 Reservation and Transportation Ticket Agents and Travel Clerks
    - 43-4181 Reservation and Transportation Ticket Agents and Travel Clerks
  - 43-4190 Miscellaneous Information and Record Clerks
    - 43-4199 Information and Record Clerks, All Other
- 43-5000 Material Recording, Scheduling, Dispatching, and Distributing Workers
  - 43-5010 Cargo and Freight Agents
    - 43-5011 Cargo and Freight Agents
  - 43-5020 Couriers and Messengers
    - 43-5021 Couriers and Messengers

- 43-5030 Dispatchers
  - 43-5031 Public Safety Telecommunicators
  - 43-5032 Dispatchers, Except Police, Fire, and Ambulance
- 43-5040 Meter Readers, Utilities
  - 43-5041 Meter Readers, Utilities
- 43-5050 Postal Service Workers
  - 43-5051 Postal Service Clerks
  - 43-5052 Postal Service Mail Carriers
  - 43-5053 Postal Service Mail Sorters, Processors, and Processing Machine Operators
- 43-5060 Production, Planning, and Expediting Clerks
  - 43-5061 Production, Planning, and Expediting Clerks
- 43-5070 Shipping, Receiving, and Inventory Clerks
  - 43-5071 Shipping, Receiving, and Inventory Clerks
- 43-5110 Weighers, Measurers, Checkers, and Samplers, Recordkeeping
  - 43-5111 Weighers, Measurers, Checkers, and Samplers, Recordkeeping
- 43-6000 Secretaries and Administrative Assistants
  - 43-6010 Secretaries and Administrative Assistants
    - 43-6011 Executive Secretaries and Executive Administrative Assistants
    - 43-6012 Legal Secretaries and Administrative Assistants
    - 43-6013 Medical Secretaries and Administrative Assistants
    - 43-6014 Secretaries and Administrative Assistants, Except Legal, Medical, and Executive
- 43-9000 Other Office and Administrative Support Workers
  - 43-9020 Data Entry and Information Processing Workers
    - 43-9021 Data Entry Keyers
    - 43-9022 Word Processors and Typists
  - 43-9030 Desktop Publishers
    - 43-9031 Desktop Publishers
  - 43-9040 Insurance Claims and Policy Processing Clerks
    - 43-9041 Insurance Claims and Policy Processing Clerks
  - 43-9050 Mail Clerks and Mail Machine Operators, Except Postal Service
    - 43-9051 Mail Clerks and Mail Machine Operators, Except Postal Service
  - 43-9060 Office Clerks, General
    - 43-9061 Office Clerks, General
  - 43-9070 Office Machine Operators, Except Computer
    - 43-9071 Office Machine Operators, Except Computer
  - 43-9080 Proofreaders and Copy Markers
    - 43-9081 Proofreaders and Copy Markers
  - 43-9110 Statistical Assistants

- 43-9111 Statistical Assistants
- 43-9190 Miscellaneous Office and Administrative Support Workers
  - 43-9199 Office and Administrative Support Workers, All Other

## 45-0000 Farming, Fishing, and Forestry Occupations

- 45-0000 Farming, Fishing, and Forestry Occupations
- 45-1000 Supervisors of Farming, Fishing, and Forestry Workers
  - 45-1010 First-Line Supervisors of Farming, Fishing, and Forestry Workers
    - 45-1011 First-Line Supervisors of Farming, Fishing, and Forestry Workers
- 45-2000 Agricultural Workers
  - 45-2010 Agricultural Inspectors
    - 45-2011 Agricultural Inspectors
  - 45-2020 Animal Breeders
    - 45-2021 Animal Breeders
  - 45-2040 Graders and Sorters, Agricultural Products
    - 45-2041 Graders and Sorters, Agricultural Products
  - 45-2090 Miscellaneous Agricultural Workers
    - 45-2091 Agricultural Equipment Operators
    - 45-2092 Farmworkers and Laborers, Crop, Nursery, and Greenhouse
    - 45-2093 Farmworkers, Farm, Ranch, and Aquacultural Animals
    - 45-2099 Agricultural Workers, All Other
- 45-3000 Fishing and Hunting Workers
  - 45-3030 Fishing and Hunting Workers
    - 45-3031 Fishing and Hunting Workers
- 45-4000 Forest, Conservation, and Logging Workers
  - 45-4010 Forest and Conservation Workers
    - 45-4011 Forest and Conservation Workers
  - 45-4020 Logging Workers
    - 45-4021 Fallers
    - 45-4022 Logging Equipment Operators
    - 45-4023 Log Graders and Scalers
    - 45-4029 Logging Workers, All Other

## 47-0000 Construction and Extraction Occupations

- 47-0000 Construction and Extraction Occupations
- 47-1000 Supervisors of Construction and Extraction Workers
  - 47-1010 First-Line Supervisors of Construction Trades and Extraction Workers
    - 47-1011 First-Line Supervisors of Construction Trades and Extraction Workers

- 47-2000 Construction Trades Workers
  - 47-2010 Boilermakers
    - 47-2011 Boilermakers
  - 47-2020 Brickmasons, Blockmasons, and Stonemasons
    - 47-2021 Brickmasons and Blockmasons
    - 47-2022 Stonemasons
  - 47-2030 Carpenters
    - 47-2031 Carpenters
  - 47-2040 Carpet, Floor, and Tile Installers and Finishers
    - 47-2041 Carpet Installers
    - 47-2042 Floor Layers, Except Carpet, Wood, and Hard Tiles
    - 47-2043 Floor Sanders and Finishers
    - 47-2044 Tile and Stone Setters
  - 47-2050 Cement Masons, Concrete Finishers, and Terrazzo Workers
    - 47-2051 Cement Masons and Concrete Finishers
    - 47-2053 Terrazzo Workers and Finishers
  - 47-2060 Construction Laborers
    - 47-2061 Construction Laborers
  - 47-2070 Construction Equipment Operators
    - 47-2071 Paving, Surfacing, and Tamping Equipment Operators
    - 47-2072 Pile Driver Operators
    - 47-2073 Operating Engineers and Other Construction Equipment Operators
  - 47-2080 Drywall Installers, Ceiling Tile Installers, and Tapers
    - 47-2081 Drywall and Ceiling Tile Installers
    - 47-2082 Tapers
  - 47-2110 Electricians
    - 47-2111 Electricians
  - 47-2120 Glaziers
    - 47-2121 Glaziers
  - 47-2130 Insulation Workers
    - 47-2131 Insulation Workers, Floor, Ceiling, and Wall
    - 47-2132 Insulation Workers, Mechanical
  - 47-2140 Painters and Paperhangers
    - 47-2141 Painters, Construction and Maintenance
    - 47-2142 Paperhangers
  - 47-2150 Pipelayers, Plumbers, Pipefitters, and Steamfitters
    - 47-2151 Pipelayers
    - 47-2152 Plumbers, Pipefitters, and Steamfitters
  - 47-2160 Plasterers and Stucco Masons
    - 47-2161 Plasterers and Stucco Masons

- 47-2170 Reinforcing Iron and Rebar Workers
  - 47-2171 Reinforcing Iron and Rebar Workers
- 47-2180 Roofers
  - 47-2181 Roofers
- 47-2210 Sheet Metal Workers
  - 47-2211 Sheet Metal Workers
- 47-2220 Structural Iron and Steel Workers
  - 47-2221 Structural Iron and Steel Workers
- 47-2230 Solar Photovoltaic Installers
  - 47-2231 Solar Photovoltaic Installers
- 47-3000 Helpers, Construction Trades
  - 47-3010 Helpers, Construction Trades
    - 47-3011 Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters
    - 47-3012 Helpers--Carpenters
    - 47-3013 Helpers--Electricians
    - 47-3014 Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons
    - 47-3015 Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters
    - 47-3016 Helpers--Roofers
    - 47-3019 Helpers, Construction Trades, All Other
- 47-4000 Other Construction and Related Workers
  - 47-4010 Construction and Building Inspectors
    - 47-4011 Construction and Building Inspectors
  - 47-4020 Elevator and Escalator Installers and Repairers
    - 47-4021 Elevator and Escalator Installers and Repairers
  - 47-4030 Fence Erectors
    - 47-4031 Fence Erectors
  - 47-4040 Hazardous Materials Removal Workers
    - 47-4041 Hazardous Materials Removal Workers
  - 47-4050 Highway Maintenance Workers
    - 47-4051 Highway Maintenance Workers
  - 47-4060 Rail-Track Laying and Maintenance Equipment Operators
    - 47-4061 Rail-Track Laying and Maintenance Equipment Operators
  - 47-4070 Septic Tank Servicers and Sewer Pipe Cleaners
    - 47-4071 Septic Tank Servicers and Sewer Pipe Cleaners
  - 47-4090 Miscellaneous Construction and Related Workers
    - 47-4090 Miscellaneous Construction and Related Workers
- 47-5000 Extraction Workers

- 47-5010 Derrick, Rotary Drill, and Service Unit Operators, Oil and Gas
  - 47-5011 Derrick Operators, Oil and Gas
  - 47-5012 Rotary Drill Operators, Oil and Gas
  - 47-5013 Service Unit Operators, Oil and Gas
- 47-5020 Surface Mining Machine Operators and Earth Drillers
  - 47-5022 Excavating and Loading Machine and Dragline Operators, Surface Mining
  - 47-5023 Earth Drillers, Except Oil and Gas
- 47-5030 Explosives Workers, Ordnance Handling Experts, and Blasters
  - 47-5032 Explosives Workers, Ordnance Handling Experts, and Blasters
- 47-5040 Underground Mining Machine Operators
  - 47-5041 Continuous Mining Machine Operators
  - 47-5043 Roof Bolters, Mining
  - 47-5044 Loading and Moving Machine Operators, Underground Mining
  - 47-5049 Underground Mining Machine Operators, All Other
- 47-5050 Rock Splitters, Quarry
  - 47-5051 Rock Splitters, Quarry
- 47-5070 Roustabouts, Oil and Gas
  - 47-5071 Roustabouts, Oil and Gas
- 47-5080 Helpers--Extraction Workers
  - 47-5081 Helpers--Extraction Workers
- 47-5090 Miscellaneous Extraction Workers
  - 47-5099 Extraction Workers, All Other

## 49-0000 Installation, Maintenance, and Repair Occupations

- 49-0000 Installation, Maintenance, and Repair Occupations
- 49-1000 Supervisors of Installation, Maintenance, and Repair Workers
  - 49-1010 First-Line Supervisors of Mechanics, Installers, and Repairers
    - 49-1011 First-Line Supervisors of Mechanics, Installers, and Repairers
- 49-2000 Electrical and Electronic Equipment Mechanics, Installers, and Repairers
  - 49-2010 Computer, Automated Teller, and Office Machine Repairers
    - 49-2011 Computer, Automated Teller, and Office Machine Repairers
  - 49-2020 Radio and Telecommunications Equipment Installers and Repairers
    - 49-2021 Radio, Cellular, and Tower Equipment Installers and Repairers
    - 49-2022 Telecommunications Equipment Installers and Repairers, Except Line Installers
  - 49-2090 Miscellaneous Electrical and Electronic Equipment Mechanics, Installers, and Repairers
    - 49-2091 Avionics Technicians

- 49-2092 Electric Motor, Power Tool, and Related Repairers
  - 49-2093 Electrical and Electronics Installers and Repairers, Transportation Equipment
  - 49-2094 Electrical and Electronics Repairers, Commercial and Industrial Equipment
  - 49-2095 Electrical and Electronics Repairers, Powerhouse, Substation, and Relay
  - 49-2096 Electronic Equipment Installers and Repairers, Motor Vehicles
  - 49-2097 Audiovisual Equipment Installers and Repairers
  - 49-2098 Security and Fire Alarm Systems Installers
- 49-3000 Vehicle and Mobile Equipment Mechanics, Installers, and Repairers
  - 49-3010 Aircraft Mechanics and Service Technicians
    - 49-3011 Aircraft Mechanics and Service Technicians
  - 49-3020 Automotive Technicians and Repairers
    - 49-3021 Automotive Body and Related Repairers
    - 49-3022 Automotive Glass Installers and Repairers
    - 49-3023 Automotive Service Technicians and Mechanics
  - 49-3030 Bus and Truck Mechanics and Diesel Engine Specialists
    - 49-3031 Bus and Truck Mechanics and Diesel Engine Specialists
  - 49-3040 Heavy Vehicle and Mobile Equipment Service Technicians and Mechanics
    - 49-3041 Farm Equipment Mechanics and Service Technicians
    - 49-3042 Mobile Heavy Equipment Mechanics, Except Engines
    - 49-3043 Rail Car Repairers
  - 49-3050 Small Engine Mechanics
    - 49-3051 Motorboat Mechanics and Service Technicians
    - 49-3052 Motorcycle Mechanics
    - 49-3053 Outdoor Power Equipment and Other Small Engine Mechanics
  - 49-3090 Miscellaneous Vehicle and Mobile Equipment Mechanics, Installers, and Repairers
    - 49-3091 Bicycle Repairers
    - 49-3092 Recreational Vehicle Service Technicians
    - 49-3093 Tire Repairers and Changers
- 49-9000 Other Installation, Maintenance, and Repair Occupations
  - 49-9010 Control and Valve Installers and Repairers
    - 49-9011 Mechanical Door Repairers
    - 49-9012 Control and Valve Installers and Repairers, Except Mechanical Door
  - 49-9020 Heating, Air Conditioning, and Refrigeration Mechanics and Installers
    - 49-9021 Heating, Air Conditioning, and Refrigeration Mechanics and Installers
  - 49-9030 Home Appliance Repairers
    - 49-9031 Home Appliance Repairers

- 49-9040 Industrial Machinery Installation, Repair, and Maintenance Workers
  - 49-9041 Industrial Machinery Mechanics
  - 49-9043 Maintenance Workers, Machinery
  - 49-9044 Millwrights
  - 49-9045 Refractory Materials Repairers, Except Brickmasons
- 49-9050 Line Installers and Repairers
  - 49-9051 Electrical Power-Line Installers and Repairers
  - 49-9052 Telecommunications Line Installers and Repairers
- 49-9060 Precision Instrument and Equipment Repairers
  - 49-9061 Camera and Photographic Equipment Repairers
  - 49-9062 Medical Equipment Repairers
  - 49-9063 Musical Instrument Repairers and Tuners
  - 49-9064 Watch and Clock Repairers
  - 49-9069 Precision Instrument and Equipment Repairers, All Other
- 49-9070 Maintenance and Repair Workers, General
  - 49-9071 Maintenance and Repair Workers, General
- 49-9080 Wind Turbine Service Technicians
  - 49-9081 Wind Turbine Service Technicians
- 49-9090 Miscellaneous Installation, Maintenance, and Repair Workers
  - 49-9091 Coin, Vending, and Amusement Machine Servicers and Repairers
  - 49-9092 Commercial Divers
  - 49-9094 Locksmiths and Safe Repairers
  - 49-9095 Manufactured Building and Mobile Home Installers
  - 49-9096 Riggers
  - 49-9097 Signal and Track Switch Repairers
  - 49-9098 Helpers--Installation, Maintenance, and Repair Workers
  - 49-9099 Installation, Maintenance, and Repair Workers, All Other

## 51-0000 Production Occupations

- 51-0000 Production Occupations
- 51-1000 Supervisors of Production Workers
  - 51-1010 First-Line Supervisors of Production and Operating Workers
    - 51-1011 First-Line Supervisors of Production and Operating Workers
- 51-2000 Assemblers and Fabricators
  - 51-2010 Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
    - 51-2011 Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
  - 51-2020 Electrical, Electronics, and Electromechanical Assemblers
    - 51-2021 Coil Winders, Tapers, and Finishers
    - 51-2028 Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers

- 51-2030 Engine and Other Machine Assemblers
  - 51-2031 Engine and Other Machine Assemblers
- 51-2040 Structural Metal Fabricators and Fitters
  - 51-2041 Structural Metal Fabricators and Fitters
- 51-2050 Fiberglass Laminators and Fabricators
  - 51-2051 Fiberglass Laminators and Fabricators
- 51-2060 Timing Device Assemblers and Adjusters
  - 51-2061 Timing Device Assemblers and Adjusters
- 51-2090 Miscellaneous Assemblers and Fabricators
  - 51-2090 Miscellaneous Assemblers and Fabricators
- 51-3000 Food Processing Workers
  - 51-3010 Bakers
    - 51-3011 Bakers
  - 51-3020 Butchers and Other Meat, Poultry, and Fish Processing Workers
    - 51-3021 Butchers and Meat Cutters
    - 51-3022 Meat, Poultry, and Fish Cutters and Trimmers
    - 51-3023 Slaughterers and Meat Packers
  - 51-3090 Miscellaneous Food Processing Workers
    - 51-3091 Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders
    - 51-3092 Food Batchmakers
    - 51-3093 Food Cooking Machine Operators and Tenders
    - 51-3099 Food Processing Workers, All Other
- 51-4000 Metal Workers and Plastic Workers
  - 51-4020 Forming Machine Setters, Operators, and Tenders, Metal and Plastic
    - 51-4021 Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic
    - 51-4022 Forging Machine Setters, Operators, and Tenders, Metal and Plastic
    - 51-4023 Rolling Machine Setters, Operators, and Tenders, Metal and Plastic
  - 51-4030 Machine Tool Cutting Setters, Operators, and Tenders, Metal and Plastic
    - 51-4031 Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic
    - 51-4032 Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic
    - 51-4033 Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic
    - 51-4034 Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic
    - 51-4035 Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic

- 51-4040 Machinists
  - 51-4041 Machinists
- 51-4050 Metal Furnace Operators, Tenders, Pourers, and Casters
  - 51-4051 Metal-Refining Furnace Operators and Tenders
  - 51-4052 Pourers and Casters, Metal
- 51-4060 Model Makers and Patternmakers, Metal and Plastic
  - 51-4061 Model Makers, Metal and Plastic
  - 51-4062 Patternmakers, Metal and Plastic
- 51-4070 Molders and Molding Machine Setters, Operators, and Tenders, Metal and Plastic
  - 51-4071 Foundry Mold and Coremakers
  - 51-4072 Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic
- 51-4080 Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic
  - 51-4081 Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic
- 51-4110 Tool and Die Makers
  - 51-4111 Tool and Die Makers
- 51-4120 Welding, Soldering, and Brazing Workers
  - 51-4121 Welders, Cutters, Solderers, and Brazers
  - 51-4122 Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders
- 51-4190 Miscellaneous Metal Workers and Plastic Workers
  - 51-4191 Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic
  - 51-4192 Layout Workers, Metal and Plastic
  - 51-4193 Plating Machine Setters, Operators, and Tenders, Metal and Plastic
  - 51-4194 Tool Grinders, Filers, and Sharpeners
  - 51-4199 Metal Workers and Plastic Workers, All Other
- 51-5100 Printing Workers
  - 51-5110 Printing Workers
    - 51-5111 Prepress Technicians and Workers
    - 51-5112 Printing Press Operators
    - 51-5113 Print Binding and Finishing Workers
- 51-6000 Textile, Apparel, and Furnishings Workers
  - 51-6010 Laundry and Dry-Cleaning Workers
    - 51-6011 Laundry and Dry-Cleaning Workers
  - 51-6020 Pressers, Textile, Garment, and Related Materials
    - 51-6021 Pressers, Textile, Garment, and Related Materials

- 51-6030 Sewing Machine Operators
  - 51-6031 Sewing Machine Operators
- 51-6040 Shoe and Leather Workers
  - 51-6041 Shoe and Leather Workers and Repairers
  - 51-6042 Shoe Machine Operators and Tenders
- 51-6050 Tailors, Dressmakers, and Sewers
  - 51-6051 Sewers, Hand
  - 51-6052 Tailors, Dressmakers, and Custom Sewers
- 51-6060 Textile Machine Setters, Operators, and Tenders
  - 51-6061 Textile Bleaching and Dyeing Machine Operators and Tenders
  - 51-6062 Textile Cutting Machine Setters, Operators, and Tenders
  - 51-6063 Textile Knitting and Weaving Machine Setters, Operators, and Tenders
  - 51-6064 Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders
- 51-6090 Miscellaneous Textile, Apparel, and Furnishings Workers
  - 51-6091 Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers
  - 51-6092 Fabric and Apparel Patternmakers
  - 51-6093 Upholsterers
  - 51-6099 Textile, Apparel, and Furnishings Workers, All Other
- 51-7000 Woodworkers
  - 51-7010 Cabinetmakers and Bench Carpenters
    - 51-7011 Cabinetmakers and Bench Carpenters
  - 51-7020 Furniture Finishers
    - 51-7021 Furniture Finishers
  - 51-7030 Model Makers and Patternmakers, Wood
    - 51-7031 Model Makers, Wood
    - 51-7032 Patternmakers, Wood
  - 51-7040 Woodworking Machine Setters, Operators, and Tenders
    - 51-7041 Sawing Machine Setters, Operators, and Tenders, Wood
    - 51-7042 Woodworking Machine Setters, Operators, and Tenders, Except Sawing
  - 51-7090 Miscellaneous Woodworkers
    - 51-7099 Woodworkers, All Other
- 51-8000 Plant and System Operators
  - 51-8010 Power Plant Operators, Distributors, and Dispatchers
    - 51-8011 Nuclear Power Reactor Operators
    - 51-8012 Power Distributors and Dispatchers

- 51-8013 Power Plant Operators
- 51-8020 Stationary Engineers and Boiler Operators
  - 51-8021 Stationary Engineers and Boiler Operators
- 51-8030 Water and Wastewater Treatment Plant and System Operators
  - 51-8031 Water and Wastewater Treatment Plant and System Operators
- 51-8090 Miscellaneous Plant and System Operators
  - 51-8091 Chemical Plant and System Operators
  - 51-8092 Gas Plant Operators
  - 51-8093 Petroleum Pump System Operators, Refinery Operators, and Gaugers
  - 51-8099 Plant and System Operators, All Other
- 51-9000 Other Production Occupations
  - 51-9010 Chemical Processing Machine Setters, Operators, and Tenders
    - 51-9011 Chemical Equipment Operators and Tenders
    - 51-9012 Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders
  - 51-9020 Crushing, Grinding, Polishing, Mixing, and Blending Workers
    - 51-9021 Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders
    - 51-9022 Grinding and Polishing Workers, Hand
    - 51-9023 Mixing and Blending Machine Setters, Operators, and Tenders
  - 51-9030 Cutting Workers
    - 51-9031 Cutters and Trimmers, Hand
    - 51-9032 Cutting and Slicing Machine Setters, Operators, and Tenders
  - 51-9040 Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders
    - 51-9041 Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders
  - 51-9050 Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders
    - 51-9051 Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders
  - 51-9060 Inspectors, Testers, Sorters, Samplers, and Weighers
    - 51-9061 Inspectors, Testers, Sorters, Samplers, and Weighers
  - 51-9070 Jewelers and Precious Stone and Metal Workers
    - 51-9071 Jewelers and Precious Stone and Metal Workers
  - 51-9080 Dental and Ophthalmic Laboratory Technicians and Medical Appliance Technicians
    - 51-9081 Dental Laboratory Technicians
    - 51-9082 Medical Appliance Technicians
    - 51-9083 Ophthalmic Laboratory Technicians
  - 51-9110 Packaging and Filling Machine Operators and Tenders
    - 51-9111 Packaging and Filling Machine Operators and Tenders

- 51-9120 Painting Workers
  - 51-9123 Painting, Coating, and Decorating Workers
  - 51-9124 Coating, Painting, and Spraying Machine Setters, Operators, and Tenders
- 51-9140 Semiconductor Processing Technicians
  - 51-9141 Semiconductor Processing Technicians
- 51-9150 Photographic Process Workers and Processing Machine Operators
  - 51-9151 Photographic Process Workers and Processing Machine Operators
- 51-9160 Computer Numerically Controlled Tool Operators and Programmers
  - 51-9161 Computer Numerically Controlled Tool Operators
  - 51-9162 Computer Numerically Controlled Tool Programmers
- 51-9190 Miscellaneous Production Workers
  - 51-9191 Adhesive Bonding Machine Operators and Tenders
  - 51-9192 Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders
  - 51-9193 Cooling and Freezing Equipment Operators and Tenders
  - 51-9194 Etchers and Engravers
  - 51-9195 Molders, Shapers, and Casters, Except Metal and Plastic
  - 51-9196 Paper Goods Machine Setters, Operators, and Tenders
  - 51-9197 Tire Builders
  - 51-9198 Helpers--Production Workers
  - 51-9199 Production Workers, All Other

## 53-0000 Transportation and Material Moving Occupations

- 53-0000 Transportation and Material Moving Occupations
- 53-1000 Supervisors of Transportation and Material Moving Workers
  - 53-1040 First-Line Supervisors of Transportation and Material Moving Workers
    - 53-1041 Aircraft Cargo Handling Supervisors
    - 53-1047 First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors
- 53-2000 Air Transportation Workers
  - 53-2010 Aircraft Pilots and Flight Engineers
    - 53-2011 Airline Pilots, Copilots, and Flight Engineers
    - 53-2012 Commercial Pilots
  - 53-2020 Air Traffic Controllers and Airfield Operations Specialists
    - 53-2021 Air Traffic Controllers
    - 53-2022 Airfield Operations Specialists
  - 53-2030 Flight Attendants
    - 53-2031 Flight Attendants

- 53-3000 Motor Vehicle Operators
  - 53-3010 Ambulance Drivers and Attendants, Except Emergency Medical Technicians
    - 53-3011 Ambulance Drivers and Attendants, Except Emergency Medical Technicians
  - 53-3030 Driver/Sales Workers and Truck Drivers
    - 53-3031 Driver/Sales Workers
    - 53-3032 Heavy and Tractor-Trailer Truck Drivers
    - 53-3033 Light Truck Drivers
  - 53-3050 Passenger Vehicle Drivers
    - 53-3051 Bus Drivers, School
    - 53-3052 Bus Drivers, Transit and Intercity
    - 53-3053 Shuttle Drivers and Chauffeurs
    - 53-3054 Taxi Drivers
  - 53-3090 Miscellaneous Motor Vehicle Operators
    - 53-3099 Motor Vehicle Operators, All Other
- 53-4000 Rail Transportation Workers
  - 53-4010 Locomotive Engineers and Operators
    - 53-4011 Locomotive Engineers
    - 53-4013 Rail Yard Engineers, Dinkey Operators, and Hostlers
  - 53-4020 Railroad Brake, Signal, and Switch Operators and Locomotive Firers
    - 53-4022 Railroad Brake, Signal, and Switch Operators and Locomotive Firers
  - 53-4030 Railroad Conductors and Yardmasters
    - 53-4031 Railroad Conductors and Yardmasters
  - 53-4040 Subway and Streetcar Operators
    - 53-4041 Subway and Streetcar Operators
  - 53-4090 Miscellaneous Rail Transportation Workers
    - 53-4099 Rail Transportation Workers, All Other
- 53-5000 Water Transportation Workers
  - 53-5010 Sailors and Marine Oilers
    - 53-5011 Sailors and Marine Oilers
  - 53-5020 Ship and Boat Captains and Operators
    - 53-5021 Captains, Mates, and Pilots of Water Vessels
    - 53-5022 Motorboat Operators
  - 53-5030 Ship Engineers
    - 53-5031 Ship Engineers
- 53-6000 Other Transportation Workers
  - 53-6010 Bridge and Lock Tenders
    - 53-6011 Bridge and Lock Tenders
  - 53-6020 Parking Attendants
    - 53-6021 Parking Attendants

- 53-6030 Transportation Service Attendants
  - 53-6031 Automotive and Watercraft Service Attendants
  - 53-6032 Aircraft Service Attendants
- 53-6040 Traffic Technicians
  - 53-6041 Traffic Technicians
- 53-6050 Transportation Inspectors
  - 53-6051 Transportation Inspectors
- 53-6060 Passenger Attendants
  - 53-6061 Passenger Attendants
- 53-6090 Miscellaneous Transportation Workers
  - 53-6099 Transportation Workers, All Other
- 53-7000 Material Moving Workers
  - 53-7010 Conveyor Operators and Tenders
    - 53-7011 Conveyor Operators and Tenders
  - 53-7020 Crane and Tower Operators
    - 53-7021 Crane and Tower Operators
  - 53-7030 Dredge Operators
    - 53-7031 Dredge Operators
  - 53-7040 Hoist and Winch Operators
    - 53-7041 Hoist and Winch Operators
  - 53-7050 Industrial Truck and Tractor Operators
    - 53-7051 Industrial Truck and Tractor Operators
  - 53-7060 Laborers and Material Movers
    - 53-7061 Cleaners of Vehicles and Equipment
    - 53-7062 Laborers and Freight, Stock, and Material Movers, Hand
    - 53-7063 Machine Feeders and Offbearers
    - 53-7064 Packers and Packagers, Hand
    - 53-7065 Stockers and Order Fillers
  - 53-7070 Pumping Station Operators
    - 53-7071 Gas Compressor and Gas Pumping Station Operators
    - 53-7072 Pump Operators, Except Wellhead Pumpers
    - 53-7073 Wellhead Pumpers
  - 53-7080 Refuse and Recyclable Material Collectors
    - 53-7081 Refuse and Recyclable Material Collectors
  - 53-7120 Tank Car, Truck, and Ship Loaders
    - 53-7121 Tank Car, Truck, and Ship Loaders
  - 53-7190 Miscellaneous Material Moving Workers
    - 53-7199 Material Moving Workers, All Other

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