



Matching yourself with

by Henry T. Kasper

When you were young, you might have known exactly what you wanted to do when you grew up. Today, you might not be so sure.

The older you get, the more you discover that choosing a career is a complex, multistep process. It requires learning about yourself and the occupations you are considering so that you can make an informed decision. Assessing your interests, work preferences, and abilities and recognizing your strengths help you to find a suitable career direction—one that could lead to your “dream job.”

Still, making a single career decision does not necessarily commit you for life. People change careers for a variety of reasons. Sometimes, the reasons are external: downsizings, layoffs, or changes in technology or business practices may force workers to consider alternatives. Other times, the reasons are personal, such as developing new interests or different expectations.

But whether you pursue 1 career or 10, you’ll want to choose wisely. The information and table in this article are tools for matching your personal skills with the char-

acteristics of nearly 300 occupations. Suggested sources for continuing your career research are included at the end of the article.

Skills assessment

Assessing your abilities should be among the first things you do in planning a career. Self-assessment helps you to identify your strengths and weaknesses. By creating a personal inventory, you can learn a lot about yourself and, thus, about your possible career preferences.

Although it is valuable to know what skills you will bring to a job, it is also important to know what basic skills employers expect from you. These core skills are also identified in this section.

Assess yourself

Self-assessment exercises help you to pinpoint not only your skills but your values, interests, and personality—and how all of these fit the lifestyle you desire. After all, career satisfaction depends, in large part, on the successful meshing of aptitudes with attitudes.

Skills. Think about your skills in relation to careers that interest you. Do you have a flair for math? Or does math make your temper flare? Different occupations require different abilities, so you need to identify your

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Wouldn't it be great if you could order a career like you order an entrée in a restaurant? Unfortunately, it's not that simple. But using self-assessment tools, such as the table provided in this article, can whet your appetite for planning a career.



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skills—both strong and weak.

Also consider how much time is required to gain new or advanced skills. You may need a little (or a lot) more training to boost your proficiency in some areas. Examining your skill levels as they relate to careers may help you refine your choices.

Values, interests, and personality. Values should be considered when planning your career to ensure that you do not dislike your work. For example, someone who is opposed to gambling would not be happy working in a gaming occupation.

Something else to consider is what interests you. Do you enjoy working outside or would you prefer working in an office? By matching your interests and work preferences to occupational requirements, you are more likely to find a career field that suits you.

In addition, assess your personality to determine how it fits into your career plans. If you are sociable, for example, you might want to find a career that allows you to interact with the public.

Lifestyle. You may not be able to anticipate your lifestyle several years into the future. But you probably have some idea of what you want, or don't want, it to be. Do you hope to determine your own schedule, or would you prefer working predictable hours? Are you eager to earn

a regular paycheck, or are you open to the possibility of a temporary earnings shortage or surplus?

Many jobs today offer flexible work schedules, and some occupations lend themselves to hours outside the "standard" workweek of 9 a.m. to 5 p.m., Monday through Friday. Other occupations offer opportunities for part-time or seasonal work. Service occupations, for example, often require workers to be available for holidays, split schedules, weekends, overtime, or "on call" work. For some workers, these nonstandard schedules provide flexibility in balancing work and family or other challenges.

Core skills

Specific jobs often require specific skills. But there are several core competencies that all workers should bring to a job. These fundamental skills cut across occupational titles and are critical to nearly every job.

Core skills help workers to perform required tasks and provide them with a foundation to succeed. Successful workers usually have at least basic arithmetic and communication skills, problem-solving ability, consideration and respect for others, and a willingness to learn.

Arithmetic and communication skills. Nearly all jobs require workers to do simple arithmetic, follow oral



and written instructions, and interact with their supervisors and peers.

Workers should be able to add, subtract, multiply, and divide and to read, write, listen, and speak.

Problem-solving ability.

Most jobs require workers to have some ability to analyze problems and find workable solutions. Often,

this ability requires common sense; in many cases,

it involves the kinds of skills you can learn by taking math and science courses.

Consideration and respect. Workers should display professionalism, politeness, and courtesy on the job. Respecting others and gaining others' respect are essential for becoming part of a team, a common requirement in today's workplace.

Willingness to learn. Successful workers accomplish tasks efficiently and productively. Workers should be willing to learn new techniques and procedures, to apply skills in new contexts, and to anticipate and adapt to changes on the job.

Using the table

Every occupation in our economy has specific tasks and traits. Some occupations involve using mechanical skills in hazardous conditions; others require workers to be artistic in an office environment. The accompanying table identifies the usual combination of personal skills needed and job characteristics found in each of 270 occupations.

Specifically, the table rates each of 7 personal skills and 5 job characteristics by its possible importance in an occupation. These skills and characteristics are defined in this section.

Personal skills

Occupations are classified based on how frequently skills are used and by what level of skill is usually needed. The ratings in the table are averages, based on tasks that are most commonly performed by the majority of workers in each occupation. Because the ratings are generalized, however, they cannot account for specialties within an

occupation that require more or less of a given skill. Most occupations offer some exceptions.

For example, a high level of math skills is not required for some computer programmers, such as those who work on user interfaces, but high-level math skills are required for most computer programmers—including some who prepare physics simulations that require calculus. Based on the level of skills that most of these workers need, mathematics ability is rated as essential for computer programmers. In another example, managerial skills are rated as being of basic importance for construction and building inspectors, who are primarily independent but sometimes must advise other workers.

The skills rated in the table—artistic, communication, interpersonal, managerial, mathematical, mechanical, and scientific skills—are described here.

Artistic skills. Occupations that require artistic skills tap workers' sense of what is beautiful or well designed. The level of creativity needed may depend on how structured an occupation is. Workers in occupations that identify art as being somewhat important use artistic creativity occasionally or use artistic originality within precise guidelines. Highly artistic occupations are most likely to require a great deal of independent composition, production, or performance.

Communication skills. As mentioned previously, nearly all workers need communication skills. But the table shows which occupations require more complex levels of English language comprehension.

Comprehension includes the ability to understand and communicate oral and written instructions, thoughts, and plans. Occupations in which basic communication skills are needed involve speaking and writing clearly, reading, and giving descriptions or instructions. Occupations in which communication skills are somewhat important require persuasive communication, the use of technical jargon, or writing reports or other documents. Occupations that require the highest level of communication skills use vocabulary appropriate for complicated subjects, explain complicated subjects orally and in writing, and include communication as a primary component of the work.

Interpersonal skills. Interpersonal skills refer to workers' ability to interact effectively with other people and to be persuasive. The level of interpersonal skills required in each occupation is based on workers' frequency of contact with the public, other employees, or clients. Beyond dealing with people courteously, workers in oc-

occupations that place some importance on interpersonal skills need an ability to sell products, ideas, or services in a convincing manner. Occupations in which interpersonal skills are of high importance might draw on the ability to analyze and solve workplace conflicts.

Managerial skills. Managerial skills include the ability to organize, direct, and instruct other workers. Many occupations do not require managing others. But in occupations in which these skills are of some importance, workers should be able to motivate and inspire individuals or teams. When managerial skills are essential in an occupation, workers must be able to guide others and to accept responsibility for others' work and actions.

Mathematics skills. Mathematics skills refer to more advanced ability than the core math skills required in nearly all jobs. The ratings show either the frequency or complexity of the skill required. Occupations in which basic math is needed require that workers be comfortable using numbers and performing arithmetic; some workers in the occupation might use a higher level of skills—for example, to draft a budget—but these skills are not essential across the occupation. In occupations in which math skills are somewhat important, quick calculations and number analysis are often required; these occupations might also involve a working knowledge of complex mathematical theorems, such as algebra, geometry, or statistics. High-level importance is indicated when many workers use algebra, geometry, or statistics frequently or when mathematical decisionmaking is a primary responsibility of most workers; these occupations might also require study of both linear algebra or calculus and advanced statistics.

Different types of jobs within the same occupation often require varying levels or frequency of mathematics skill. The table shows the skills that most workers need.

Mechanical skills. Mechanical skills include a broad

range of abilities, such as installation, maintenance, troubleshooting, and quality control analysis. Occupations in which these skills are somewhat important might require basic mechanical ability, such as an understanding of the relationship between moving parts. Higher level mechanical skills may require knowledge of operations, as well as an ability to diagnose and repair failures of equipment, machines, or systems.

Science skills. When basic science skills are often needed in an occupation, workers must have an ability to apply some scientific theories and to communicate about science at a basic level. When science skills are deemed somewhat important in an occupation, workers need a theoretical

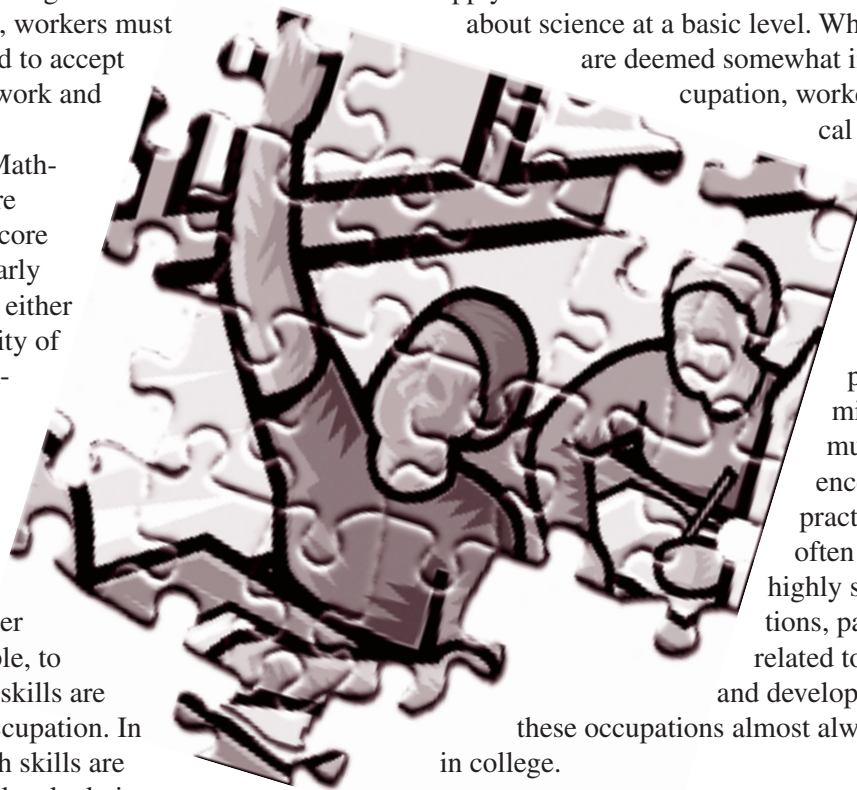
knowledge of the principles of life, physical, or computer sciences, including biology, ecology, chemistry, and physics; or, they might need to communicate with science experts. In-depth practical knowledge often is required in highly scientific occupations, particularly in those related to scientific research and development; workers in

these occupations almost always study science in college.

Job characteristics

Five job characteristics are analyzed based on how likely they are to affect jobs in an occupation. The ratings for job characteristics, like the ratings for personal skills, are shown in the table as averages. Because the ratings are generalized, they cannot account for specialties within an occupation that have more or less of a given characteristic. There are exceptions in most occupations.

For example, outdoor work is rated as being somewhat probable for civil engineers, who spend most of their time in the office but must also visit outdoor construction sites. In another example, the rating of improbable for physical demands on lodging managers does not



mean that these workers are never in situations that are physically demanding.

The table identifies whether occupations are economically sensitive, geographically concentrated, and physically demanding and whether they involve hazardous working conditions and outdoor work.

Economically sensitive. Most occupations, to some extent, follow economic trends, but some are more affected than others by economic upturns and downturns. Occupations are rated in the table by how closely they have, in the past, prospered or suffered along with the economy.

Geographically concentrated. This characteristic indicates the proportion of jobs in each occupation that are concentrated in specific areas of the United States. Occupations that are dispersed throughout the Nation are not geographically concentrated; those occupations that are limited to a few States or regions are highly concentrated.

Hazardous conditions. Occupations that have hazardous conditions require workers to adhere to safety procedures, wear protective clothing, or use special equipment to avoid injury on the job. An occupation in which workers often encounter hazardous conditions may have minor risks, such as exposure to noxious chemicals or contaminated air. Some highly hazardous conditions in

an occupation may be potentially life-threatening, such as working near dangerous machinery.

Outdoor work. Occupations that involve outdoor work require workers to be outside, sometimes no matter what the weather. An occupation that is identified as having some outdoor work is primarily office based. But even in occupations in which workers spend a significant amount of time outdoors, workers often do some tasks in an office.

Physically demanding. The frequency and likelihood of physical demands vary by occupation. Somewhat physically demanding occupations may require workers to stand for long periods. Highly physically demanding occupations may involve lifting heavy objects or doing repetitive tasks—including kneeling, crouching, crawling, or more exertive activities—throughout the workday.

Methodology and limitations

The information in the accompanying table is based on analysis of two widely respected sources of occupational information. Like any analysis, however, the results have limitations. The methods, and limits, of the study are the focus of this section.

Methodology

Two sources were used to match personal skills and job characteristics to individual occupations. The primary source was the *Occupational Outlook Handbook (OOH)*, a biennial publication from the Bureau of Labor Statistics (BLS). A secondary source—used largely to confirm results from the *OOH*-based analysis—was the U.S. Department of Labor-sponsored Occupational Information Network, or O*NET, database.

OOH analysis. Information in the table is based chiefly on BLS economists' occupational analyses in the *OOH*. Several BLS economists reviewed information relevant to their particular area of expertise. The final results reflect numerous consultations with the *OOH* and its staff.

In most instances, matching personal skills and job characteristics to an occupation was straightforward. When the result was less clear, however, the analysis included a review of the skills and characteristics dominant in the industry or industries in which an occupation's employment is most concentrated. Still, industries today are diverse, and an occupation in one industry may have





requirements that differ from those in another.

O*NET analysis. The O*NET database rates a comprehensive set of characteristics according to their importance, level, and frequency or extent in 974 occupations. O*NET descriptors include knowledge, skills, abilities, tasks, work activities, work context, experience levels required, job interests, and work values and needs. (Each O*NET occupational title is based on the 2000 Standard Occupational Classification System. So, with some analysis, O*NET information can be linked to the occupations shown here.)

The O*NET database regularly updates information on skill requirements and occupational characteristics. Like the *OOH*, the O*NET database serves jobseekers, students, businesses, and human resource professionals to help them make informed employment and training decisions.

Limitations

There are limitations to self-assessment exercises in general and to this article in particular. Some of these limitations are discussed below.

General limitations. No matter how meticulous you are about planning a career, things beyond your control might force you to alter your decisions. And these alterations may require you to reassess your goals—perhaps more than once.

In addition, thorough self-assessment doesn't mean that you have enough information to make a career decision. Especially when considering inconclusive results of self-assessment exercises, do not be too quick to dismiss occupations that seem appealing except for some job characteristics. Jobs vary by employer, industry, location, and other factors. Continue to research the occupations that interest you. Then, you will be better able to make an informed choice. Career research also should include activities, such as informational interviewing, internships, volunteering, and job shadowing. (These activities are discussed in more detail in the "Opportunities" section on page 8.)

Specific limitations. Any source of career information has drawbacks; therefore, multiple resources should be considered when exploring and planning a career. In this article, current career information is gathered from the *OOH* and the O*NET database. O*NET data collection is replacing existing ratings—ratings that were developed by occupational analysts—with updated ones that

are based on worker surveys. The O*NET database is updated at a rate of about 200 occupations annually, but it will take at least 3 years to fully complete research on the more than 900 occupations in the database. Thus, availability of information collected on rapidly emerging or evolving occupations may be affected by the research schedule.

Finally, analyses for occupations in the table contain assumptions and generalizations. Personal skills and job characteristics are based on the norm for a large proportion of workers in an occupation, but job specialization in the same occupation may require different levels of skill or training.

Continuing your career search

Consider this article a starting point for further research in choosing a career. After using the table to focus your career interests, start gathering information about specific occupations. The following resources and opportunities can help you refine your choices even more.

Resources

Public libraries and the Internet have a wealth of information available about careers and career planning. Sources of information include books, periodicals, and research publications on topics ranging from occupations and industries to employment and earnings; many of these also are available from career counselors and trade associations. Suggestions for some of these resources are provided below.

Occupational Outlook Handbook (OOH). The *OOH*, as mentioned previously, describes the duties, working conditions, training and education usually needed, earnings, and projected job prospects for nearly 300 occupations. This and other BLS publications are often available in libraries, career centers, and employment offices. The *OOH* is also available online at www.bls.gov/oco/home.htm.

O*NET system. Discussed previously, the Occupational Information Network, or the O*NET system, is

a comprehensive database of worker and occupational characteristics. As the successor to the Dictionary of Occupational Titles (DOT), the O*NET database contains information about knowledge, skills, abilities, interests, and general work activities. It also has an interest assessment tool. To search and explore information on occupations within the O*NET database, visit O*NET OnLine at online.onetcenter.org. For O*NET-related products, such as career exploration tools, visit www.onetcenter.org. For testing and assessment guides, see www.onetcenter.org/guides.html.

School counseling offices and One-Stop Career Centers. Career counselors can help you to evaluate your character traits and skills—and, based on the results, direct you toward potentially satisfying careers. The best counselors know what skills are needed in a broad variety of occupations, how much workers in them earn, and what employers seek in applicants. Federally funded One-Stop Career Centers and other employment and

career services offices maintain listings of current job openings and pair jobseekers with employers. To find a One-Stop Career Center near you, call toll-free, 1 (877) US2-JOBS (872-5627), or click the Service Locator tab on the CareerOneStop Web portal, www.careeronestop.org.

Professional associations and trade unions. Associations and unions represent various industries and occupations, and many of these organizations provide information about employment, training, earnings, and

certification requirements in their field. Trade unions sometimes work with employers to administer training programs and recruit candidates for specific jobs. Access the O*NET database online at www.onetcenter.org. To find a center near you, call toll-free, 1 (877) US2-JOBS (872-5627).

Opportunities

In addition to making information available, many employment offices and career centers provide listings of job vacancies locally.

They also may offer access to America's Job Bank (www.ajb.org), an electronic job bank containing postings from States and businesses nationwide, and to State websites that include labor market information and job listings. One-Stop Career Centers also offer a wide variety of services to help jobseekers network and gain experience prior to finding a job. Some of these opportunities are described below.

Informational interviews. Informational interviews are a career-

research and networking tool for jobseekers who are interested in a particular occupation or industry. These interviews involve talking with people who are working in that job or field to gain a better understanding of what it's really like—and to build a network of contacts. To learn more about informational interviews, see "Informational interviewing: Get the inside scoop on careers" in the summer 2002 *Occupational Outlook Quarterly*; the article is available online at www.bls.gov/opub/ooq/2002/summer/art03.pdf.



Internships and volunteering. Internship and volunteer opportunities offer a hands-on way to learn about occupations. An internship, either paid or unpaid, is temporary work that can help students to explore a career field and, in many cases, to position themselves for a job offer with the host employer. (See “Get an internship, land a job” in the Grab bag, elsewhere in this issue of the *Quarterly*.) Volunteering, like interning, also opens doors to career choices by allowing prospective workers to become part of an organization and decide whether the

work is right for them.

Job shadowing. Another form of experiential learning about careers is job shadowing. As job shadows, students observe workers performing the routine tasks of their jobs. Students have a chance to see for themselves what an occupation is like and to get more information by asking questions. (See “Free materials shed light on job shadowing” in the Grab bag, elsewhere in this issue of the *Quarterly*; also see “Job Shadowing: Career Sampling for Students” in the summer 1998 *Quarterly*.)



Symbols in the "Matching" table

The table on the following pages provides information about personal skills and job characteristics for occupations covered in the *Occupational Outlook Handbook*. Below is a guide to interpreting the symbols found there.

Key for personal skills:

- -- essential or high-skill level
- ◉ -- somewhat essential or moderate-skill level
- -- basic-level skill
- nonessential skill

Key for job characteristics:

- -- highly probable
- ◉ -- somewhat probable
- -- no more or less probable than improbable
- improbable



| | Personal skills | | | | | | | Job characteristics | | | | |
|--|-----------------|---------------|---------------|------------|-------------|------------|---------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Management, business, and financial operations occupations | | | | | | | | | | | | |
| Management occupations | | | | | | | | | | | | |
| Administrative services managers | ○ | ● | ● | ● | ⊙ | | | ○ | | | | |
| Advertising, marketing, promotions, public relations, and sales managers | ● | ● | ● | ● | ● | ⊙ | | ● | | | | |
| Computer and information systems managers | | ● | ● | ● | ● | ● | ● | ● | | | | |
| Construction managers | ○ | ● | ● | ● | ● | ● | ⊙ | ● | | ⊙ | ● | ○ |
| Education administrators | | ● | ● | ● | ⊙ | | ○ | | | | | |
| Engineering and natural sciences managers | | ● | ● | ● | ● | ● | ● | ⊙ | | | | |
| Farmers, ranchers, and agricultural managers | | ● | ● | ● | ⊙ | ● | ⊙ | ○ | ● | ⊙ | ● | ⊙ |
| Financial managers | | ● | ● | ● | ● | | ○ | ⊙ | | | | |
| Food service managers | ⊙ | ● | ● | ● | ⊙ | ⊙ | ○ | ⊙ | | | | ○ |
| Funeral directors | ○ | ● | ● | ⊙ | ⊙ | ○ | ○ | | | | | ○ |
| Human resources, training, and labor relations managers and specialists | | ● | ● | ● | ○ | | | ○ | | | | |
| Industrial production managers | | ● | ● | ● | ● | ○ | ⊙ | ○ | | ⊙ | | ○ |
| Lodging managers | ○ | ● | ● | ● | ⊙ | ○ | | ○ | | | | |
| Medical and health services managers | | ● | ● | ● | ⊙ | ⊙ | ⊙ | | | | | |
| Property, real estate, and community association managers | ○ | ● | ● | ● | ○ | ○ | | ○ | | | ○ | |
| Purchasing managers, buyers, and purchasing agents | | ● | ● | ● | ⊙ | | ○ | ○ | | | | |
| Top executives | ○ | ● | ● | ● | ● | | ⊙ | ○ | | | | |
| Business and financial operations occupations | | | | | | | | | | | | |
| Accountants and auditors | | ○ | ○ | ⊙ | ● | | | ○ | | | | |
| Budget analysts | | ○ | ○ | ○ | ● | | | | | | | |
| Claims adjusters, appraisers, examiners, and investigators | | ⊙ | ○ | ⊙ | ⊙ | ⊙ | ○ | | | | ⊙ | |
| Cost estimators | | ○ | ○ | ○ | ● | ○ | | ⊙ | | | ⊙ | |
| Financial analysts and personal financial advisors | | ● | ● | ○ | ● | | ○ | ● | | | | |



| | Personal skills | | | | | | | Job characteristics | | | | |
|---|-----------------|---------------|---------------|------------|-------------|------------|---------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Insurance underwriters | | ○ | ○ | ○ | ● | | | | | | | |
| Loan counselors and officers | | ⊙ | ● | ○ | ⊙ | | | ⊙ | | | | |
| Management analysts | | ● | ⊙ | ○ | ● | | | ○ | | | | |
| Tax examiners, collectors, and revenue agents | | ○ | ○ | ○ | ● | | | | | | | |
| Professional and related occupations | | | | | | | | | | | | |
| Computer and mathematical occupations | | | | | | | | | | | | |
| Actuaries | | ○ | ○ | ○ | ● | | ⊙ | | | | | |
| Computer programmers | | ⊙ | ○ | ○ | ● | ⊙ | ● | ○ | | | | |
| Computer software engineers | | ⊙ | ⊙ | ⊙ | ● | ● | ● | ○ | | | | |
| Computer support specialists and systems administrators | | ⊙ | ⊙ | ○ | ⊙ | ● | ⊙ | ○ | | | | |
| Computer systems analysts, database administrators, and computer scientists | | ⊙ | ○ | ○ | ● | | ● | ○ | | | | |
| Mathematicians | | ○ | ○ | ○ | ● | | ⊙ | | | | | |
| Operations research analysts | | ○ | ○ | ○ | ● | | ⊙ | ○ | | | | |
| Statisticians | | ○ | ○ | ○ | ● | | ⊙ | | | | | |
| Architects, surveyors, and cartographers | | | | | | | | | | | | |
| Architects, except landscape and naval | ● | ⊙ | ⊙ | ⊙ | ● | ● | ⊙ | ⊙ | | | ⊙ | ○ |
| Landscape architects | ● | ⊙ | ⊙ | ⊙ | ⊙ | ● | ⊙ | ⊙ | | | ● | ○ |
| Surveyors, cartographers, photogrammetrists, and surveying technicians | ⊙ | ⊙ | ⊙ | ○ | ⊙ | ⊙ | ⊙ | ⊙ | | | ⊙ | ⊙ |
| Engineers | | | | | | | | | | | | |
| Aerospace engineers | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ⊙ | ⊙ | | | |
| Agricultural engineers | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | ⊙ | | | |
| Biomedical engineers | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | | | |
| Chemical engineers | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | ○ | | |
| Civil engineers | ⊙ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | | ⊙ | |
| Computer hardware engineers | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ⊙ | | | | |
| Electrical and electronics engineers, except computer | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | | | |
| Environmental engineers | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | | | | ○ | |



| | Personal skills | | | | | | | Job characteristics | | | | |
|--|-----------------|---------------|---------------|------------|-------------|------------|---------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Industrial engineers, including health and safety | ⊙ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | | ○ | |
| Materials engineers | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | | | |
| Mechanical engineers | ⊙ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | ○ | | |
| Mining and geological engineers, including mining safety engineers | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ⊙ | ● | ⊙ | ● | ○ |
| Nuclear engineers | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | ⊙ | ○ | | |
| Petroleum engineers | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | ● | ○ | ● | |
| Drafters and engineering technicians | | | | | | | | | | | | |
| Drafters | ● | ⊙ | ○ | | ⊙ | ● | ○ | ⊙ | | | | |
| Engineering technicians | ○ | ⊙ | ○ | | ● | ● | ● | ○ | | ○ | ○ | ○ |
| Life scientists | | | | | | | | | | | | |
| Agricultural and food scientists | | ⊙ | ○ | ⊙ | ● | ● | ● | | | ○ | ⊙ | ○ |
| Biological scientists | | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | ○ | ⊙ | ○ |
| Medical scientists | | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | ○ | | |
| Conservation scientists and foresters | | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | ● | ○ | ● | ⊙ |
| Physical scientists | | | | | | | | | | | | |
| Atmospheric scientists | | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | | ⊙ | |
| Chemists and materials scientists | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ⊙ | | ○ | | |
| Environmental scientists and geoscientists | ○ | ⊙ | ○ | ⊙ | ● | ● | ● | ○ | | | ● | ○ |
| Physicists and astronomers | ○ | ⊙ | ○ | ○ | ● | ● | ● | ○ | ○ | | ○ | |
| Social scientists and related occupations | | | | | | | | | | | | |
| Economists | | ⊙ | ○ | ⊙ | ● | | | | | | | |
| Market and survey researchers | | ● | ● | ○ | ● | | | ⊙ | | | | |
| Psychologists | | ● | ● | ○ | ⊙ | | ⊙ | | | | | |
| Urban and regional planners | ⊙ | ⊙ | ⊙ | ⊙ | ● | ○ | ○ | ○ | | | ○ | |
| Social scientists, other | | ⊙ | ⊙ | ○ | ⊙ | ○ | ○ | | | | | |
| Science technicians | ○ | ⊙ | ○ | | ● | ● | ● | ⊙ | | ○ | ○ | ○ |



| | Personal skills | | | | | | | Job characteristics | | | | |
|---|-----------------|---------------|---------------|------------|-------------|------------|---------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Community and social service occupations | | | | | | | | | | | | |
| Clergy | ○ | ● | ● | ● | ○ | | | | | | | ○ |
| Counselors | | ● | ● | ○ | ○ | | ○ | | | | | |
| Probation officers and correctional treatment specialists | | ⊙ | ⊙ | ○ | ○ | ○ | ○ | | | ● | | |
| Social and human service assistants | | ⊙ | ● | | | | ○ | | | | | |
| Social workers | | ● | ● | ○ | ○ | | ○ | | | | | |
| Legal occupations | | | | | | | | | | | | |
| Court reporters | | ⊙ | ○ | | | ● | | | | | | ○ |
| Judges, magistrates, and other judicial workers | | ● | ○ | ○ | ○ | | ○ | | | | | |
| Lawyers | | ● | ● | ● | ○ | | ○ | | ⊙ | | | |
| Paralegals and legal assistants | | ● | ● | ○ | ○ | | ○ | | ⊙ | | | |
| Education, training, library, and museum occupations | | | | | | | | | | | | |
| Archivists, curators, and museum technicians | ● | ⊙ | ○ | ○ | ⊙ | ● | ● | | ⊙ | | | ○ |
| Instructional coordinators | ○ | ● | ● | ⊙ | ⊙ | ⊙ | ⊙ | | | | | |
| Librarians | ○ | ● | ⊙ | ● | ○ | ⊙ | ○ | | | | | |
| Library technicians | ○ | ⊙ | ○ | ○ | ○ | ⊙ | ○ | | | | | ○ |
| Teacher assistants | ⊙ | ● | ● | ⊙ | ○ | | ⊙ | | | | | |
| Teachers—adult literacy and remedial and self-enrichment education | ⊙ | ● | ● | ● | ⊙ | | ⊙ | | | | | |
| Teachers—postsecondary | ⊙ | ● | ● | ● | ● | | ⊙ | | | | | |
| Teachers—preschool, kindergarten, elementary, middle, and secondary | ⊙ | ● | ● | ● | ⊙ | ○ | ⊙ | | | | | |
| Teachers—special education | ⊙ | ● | ● | ● | ⊙ | ○ | ⊙ | | | | | |
| Art and design occupations | | | | | | | | | | | | |
| Artists and related workers | ● | ○ | ○ | ○ | ○ | ⊙ | ○ | | ⊙ | | ○ | ○ |
| Designers | ● | ⊙ | ⊙ | ● | ○ | ● | ○ | | ⊙ | | | |
| Entertainers and performers, sports and related occupations | | | | | | | | | | | | |
| Actors, producers and directors | ● | ● | ● | ⊙ | | ⊙ | ○ | | ○ | ● | ○ | ● |
| Athletes, coaches, umpires, and related workers | ⊙ | ⊙ | ⊙ | ● | | ○ | ○ | | | ○ | ● | ● |



| | Personal skills | | | | | | | Job characteristics | | | | |
|--|-----------------|---------------|---------------|------------|-------------|------------|---------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Dancers and choreographers | ● | ⊙ | ⊙ | ⊙ | | | ○ | ○ | ● | | | ● |
| Musicians, singers, and related workers | ● | ⊙ | ⊙ | ○ | | ○ | ○ | | ○ | | | ○ |
| Media and communication-related occupations | | | | | | | | | | | | |
| Announcers | ⊙ | ● | ● | | ○ | ○ | | | ○ | | ○ | |
| Broadcast and sound engineering technicians and radio operators | | ○ | ⊙ | | ⊙ | ● | ⊙ | | ○ | | ○ | |
| Interpreters and translators | ● | ● | ○ | | | | | | | | | |
| News analysts, reporters, and correspondents | ⊙ | ● | ● | ○ | ○ | ○ | ⊙ | | | | ⊙ | |
| Photographers | ● | ○ | ○ | ○ | ○ | ● | ○ | ⊙ | | | ⊙ | ⊙ |
| Public relations specialists | ⊙ | ● | ● | ○ | ○ | | | | ⊙ | | | |
| Television, video, and motion picture camera operators and editors | ● | ○ | ○ | ○ | ○ | ● | ○ | | ● | | ⊙ | ⊙ |
| Writers and editors | ● | ● | ● | ○ | ○ | | ○ | | | | | |
| Health diagnosing and treating practitioners | | | | | | | | | | | | |
| Audiologists | | ● | ⊙ | ● | ⊙ | ○ | ● | | | | | |
| Chiropractors | | ● | ⊙ | ● | ⊙ | ○ | ● | | | | | ○ |
| Dentists | ○ | ● | ● | ● | ⊙ | ● | ● | | | ⊙ | | ○ |
| Dietitians and nutritionists | | ● | ● | ○ | ⊙ | ○ | ● | | | | | |
| Occupational therapists | | ● | ● | ⊙ | ⊙ | ⊙ | ⊙ | | | ⊙ | | ○ |
| Optometrists | ○ | ● | ⊙ | ● | ⊙ | ⊙ | ● | | | ⊙ | | |
| Pharmacists | | ● | ⊙ | ⊙ | ● | ○ | ● | | | | | ○ |
| Physical therapists | | ● | ● | ○ | ⊙ | ○ | ● | | | ⊙ | | ● |
| Physician assistants | | ● | ● | ○ | ● | ⊙ | ● | | | ⊙ | | ⊙ |
| Physicians and surgeons | ⊙ | ● | ● | ● | ⊙ | ● | ● | | | ⊙ | | ⊙ |
| Podiatrists | ○ | ● | ● | ● | ⊙ | ⊙ | ● | | | | | |
| Recreational therapists | ● | ● | ● | ○ | ○ | ○ | ○ | | | | ● | ⊙ |
| Registered nurses | | ● | ● | ⊙ | ● | ● | ● | | | ⊙ | | ⊙ |
| Respiratory therapists | | ● | ● | ○ | ● | ● | ● | | | ⊙ | | ○ |
| Speech-language pathologists | ○ | ● | ● | ○ | ● | ○ | ● | | | | | |
| Veterinarians | ○ | ● | ● | ● | ● | ● | ● | | | ● | ○ | ● |



| | Personal skills | | | | | | | Job characteristics | | | | |
|--|-----------------|---------------|---------------|------------|-------------|------------|---------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Health technologists and technicians | | | | | | | | | | | | |
| Cardiovascular technologists and technicians | | ⊙ | ○ | ○ | ● | ● | ● | | | | | ○ |
| Clinical laboratory technologists and technicians | | ⊙ | ○ | ○ | ● | ● | ● | | | ○ | | ○ |
| Dental hygienists | | ⊙ | ⊙ | ○ | ⊙ | ● | ⊙ | | | ⊙ | | ○ |
| Diagnostic medical sonographers | | ⊙ | ○ | ○ | ● | ● | ● | | | | | |
| Emergency medical technicians and paramedics | | ● | ● | ● | ○ | ● | ● | | | ● | ● | ● |
| Licensed practical and licensed vocational nurses | | ⊙ | ● | ○ | ○ | ● | ● | | | ⊙ | | ⊙ |
| Medical records and health information technicians | | ⊙ | ○ | ○ | ⊙ | | ⊙ | | | | | |
| Nuclear medicine technologists | | ⊙ | ○ | ○ | ● | ● | ● | | | ⊙ | | |
| Occupational health and safety specialists and technicians | | ⊙ | ○ | ⊙ | ⊙ | ⊙ | ⊙ | | | ⊙ | ○ | ⊙ |
| Opticians, dispensing | ⊙ | ⊙ | ⊙ | ○ | ⊙ | ⊙ | ○ | ○ | | | | ○ |
| Pharmacy technicians | | ⊙ | ⊙ | ○ | ⊙ | ⊙ | ⊙ | | | | | ○ |
| Radiologic technologists and technicians | | ⊙ | ⊙ | ○ | ● | ● | ⊙ | | | ⊙ | | ⊙ |
| Surgical technologists | | ⊙ | ⊙ | ○ | ● | ● | ● | | | ⊙ | | ⊙ |
| Veterinary technologists and technicians | | ⊙ | ⊙ | ⊙ | ⊙ | ● | ⊙ | ○ | | ● | ○ | ● |
| Service occupations | | | | | | | | | | | | |
| Healthcare support occupations | | | | | | | | | | | | |
| Dental assistants | | ⊙ | ⊙ | ○ | ○ | ● | ⊙ | | | ⊙ | | ⊙ |
| Medical assistants | | ⊙ | ⊙ | ○ | ⊙ | ● | ● | | | ⊙ | | ⊙ |
| Medical transcriptionists | | ● | ○ | ○ | ○ | ○ | ● | | | | | |
| Nursing, psychiatric, and home health aides | | ⊙ | ⊙ | ○ | ○ | ⊙ | ○ | | | ● | | ● |
| Occupational therapist assistants and aides | | ⊙ | ● | ○ | ○ | ● | ⊙ | | | ⊙ | | ⊙ |
| Pharmacy aides | | ⊙ | ⊙ | ○ | ○ | | ○ | | | | | ○ |
| Physical therapist assistants and aides | | ⊙ | ⊙ | ○ | ○ | ⊙ | ⊙ | | | ⊙ | | ● |
| Protective service occupations | | | | | | | | | | | | |
| Correctional officers | | ⊙ | ○ | ○ | ○ | ○ | | | | ● | | ⊙ |
| Fire fighting occupations | | ● | ○ | ○ | ○ | ● | ○ | | | ● | ● | ● |



| | Personal skills | | | | | | | Job characteristics | | | | |
|--|-----------------|---------------|---------------|------------|-------------|------------|---------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Police and detectives | | ● | ○ | ⊙ | ○ | ● | ○ | | | ● | ● | ● |
| Private detectives and investigators | | ● | ○ | ⊙ | ○ | ● | ○ | | | ○ | ⊙ | ○ |
| Security guards and gaming surveillance officers | | ○ | ○ | ○ | | ○ | | ○ | | ● | ⊙ | ○ |
| Food preparation and serving related occupations | | | | | | | | | | | | |
| Chefs, cooks, and food preparation workers | ● | ⊙ | ⊙ | ● | ○ | ⊙ | ○ | ● | | ○ | | ⊙ |
| Food and beverage serving and related workers | ○ | ⊙ | ● | | ○ | | | ● | | | ○ | ● |
| Building and grounds cleaning and maintenance occupations | | | | | | | | | | | | |
| Building cleaning workers | ○ | ○ | | | ○ | ● | | ○ | | ○ | | ● |
| Grounds maintenance workers | ⊙ | ○ | | | ○ | ● | ○ | ○ | | ⊙ | ● | ● |
| Pest control workers | | ○ | | | ○ | ● | ○ | | ⊙ | ● | ○ | ● |
| Personal care and service occupations | | | | | | | | | | | | |
| Animal care and service workers | | ○ | ○ | | ○ | ⊙ | ○ | ⊙ | | ● | ⊙ | ● |
| Barbers, cosmetologists, and other personal appearance workers | ● | ⊙ | ○ | | ○ | ⊙ | ○ | ⊙ | | ○ | | ○ |
| Child care workers | ○ | ⊙ | ● | ○ | ○ | ○ | | | | | ○ | ⊙ |
| Flight attendants | | ● | ● | ○ | ○ | ○ | | ● | ⊙ | ○ | | ● |
| Gaming services occupations | ○ | ⊙ | ● | ● | ○ | ○ | | ⊙ | ● | | | ● |
| Personal and home care aides | | ⊙ | ● | ○ | ○ | | ○ | | | ⊙ | | ● |
| Recreation and fitness workers | ○ | ● | ● | ○ | ○ | ○ | ○ | ⊙ | | | ⊙ | ● |
| Sales and related occupations | | | | | | | | | | | | |
| Advertising sales agents | ⊙ | ● | ● | | ○ | | | ● | | | | |
| Cashiers | | ○ | ⊙ | | ⊙ | | | ⊙ | | | | ● |
| Counter and rental clerks | | ○ | ⊙ | | ⊙ | | | ⊙ | | | | ⊙ |
| Demonstrators, product promoters, and models | ● | ● | ● | | ○ | ○ | | ⊙ | | | | ⊙ |
| Insurance sales agents | | ● | ● | | ⊙ | | | ⊙ | | | | |
| Real estate brokers and sales agents | ○ | ● | ● | ⊙ | ⊙ | | | ⊙ | | | ○ | |
| Retail salespersons | ○ | ⊙ | ● | | ○ | | | ⊙ | | | | |
| Sales engineers | ○ | ● | ● | | ⊙ | ○ | ⊙ | ● | | | | |
| Sales representatives, wholesale and manufacturing | ○ | ● | ● | | ⊙ | | ○ | ● | | | | |



| | Personal skills | | | | | | | Job characteristics | | | | |
|--|-----------------|---------------|---------------|------------|-------------|------------|---------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Sales worker supervisors | ○ | ● | ● | ● | ⊙ | ○ | ○ | ⊙ | | | | |
| Securities, commodities, and financial services sales agents | | ● | ● | ● | ● | | | ● | ● | | | |
| Travel agents | | ⊙ | ● | | ○ | | | ● | | | | |
| Office and administrative support occupations | | | | | | | | | | | | |
| Communications equipment operators | | ⊙ | ⊙ | | ⊙ | ⊙ | ○ | ⊙ | | | | |
| Computer operators | | ○ | | | ○ | ⊙ | ○ | ⊙ | | | | |
| Customer service representatives | | ● | ● | | ⊙ | | ○ | ○ | | | | |
| Data entry and information processing workers | | ○ | ○ | | ○ | ⊙ | | ● | | | | |
| Desktop publishers | ● | ○ | ○ | | ○ | ⊙ | ○ | ○ | | | | |
| Financial clerks | | ○ | ○ | | ● | | | ○ | | | | |
| Bill and account collectors | | ○ | ● | | ● | | | ⊙ | | | | |
| Billing and posting clerks and machine operators | | ○ | ○ | | ○ | ○ | | ○ | | | | |
| Bookkeeping, accounting, and auditing clerks | | ○ | ○ | | ● | | | ○ | | | | |
| Gaming cage workers | | ○ | ○ | | ⊙ | | | ⊙ | ● | | | |
| Payroll and timekeeping clerks | | ○ | ○ | | ⊙ | | | ○ | | | | |
| Procurement clerks | | ○ | ○ | | ⊙ | | | ○ | | | | |
| Tellers | | ⊙ | ● | | ● | | | ○ | | | | |
| Information and record clerks | | ⊙ | ○ | | ⊙ | | | ○ | | | | |
| Brokerage clerks | | ○ | ○ | | ⊙ | | | ○ | ● | | | |
| Credit authorizers, checkers, and clerks | | ⊙ | ○ | ○ | ⊙ | | | ⊙ | | | | |
| File clerks | | ○ | ○ | | ○ | | | | | | | |
| Hotel, motel, and resort desk clerks | ○ | ⊙ | ● | ○ | ○ | | | ● | | | | ⊙ |
| Human resources assistants, except payroll and timekeeping | | ○ | ○ | | ⊙ | | | ○ | | | | |
| Interviewers | | ● | ⊙ | ⊙ | ○ | | ○ | ○ | | | | |
| Library assistants, clerical | | ○ | ○ | | ○ | ⊙ | ○ | | | | | |
| Order clerks | | ○ | ○ | | ⊙ | | | ⊙ | | | | |
| Receptionists and information clerks | | ● | ● | | ⊙ | ⊙ | | ○ | | | | |



| | Personal skills | | | | | | Job characteristics | | | | | |
|---|-----------------|---------------|---------------|------------|-------------|------------|---------------------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Reservation and transportation ticket agents and travel clerks | | ○ | ● | | ⊙ | | | ● | | | | |
| Material recording, scheduling, dispatching, and distributing occupations | | ○ | ○ | | ○ | ○ | | ○ | | | | |
| Cargo and freight agents | | ○ | ○ | ○ | ⊙ | | ○ | ○ | ⊙ | | ⊙ | ○ |
| Couriers and messengers | | ○ | ○ | | ○ | ○ | | ⊙ | | ⊙ | ⊙ | ○ |
| Dispatchers | | ⊙ | ○ | ⊙ | ○ | | | | | | | |
| Meter readers, utilities | | ○ | | | ⊙ | ○ | | | | | ⊙ | ○ |
| Production, planning, and expediting clerks | | ⊙ | ○ | ○ | ⊙ | | ○ | ○ | | | | |
| Shipping, receiving, and traffic clerks | | ○ | ○ | | ○ | ⊙ | | ○ | | | | |
| Stock clerks and order fillers | | ○ | ○ | | ○ | ○ | | ○ | | | | ⊙ |
| Weighers, measurers, checkers, and samplers, recordkeeping | | ○ | ○ | | ⊙ | ⊙ | ⊙ | ○ | | | | ○ |
| Office and administrative support worker supervisors and managers | | ● | ● | ● | ⊙ | ○ | | ○ | | | | |
| Office clerks, general | | ○ | ⊙ | | ○ | | | ⊙ | | | | |
| Postal service workers | | ○ | ○ | ○ | ○ | ○ | | | | | ● | ● |
| Secretaries and administrative assistants | ○ | ● | ● | ○ | ○ | | | ○ | | | | |
| Farming, fishing, and forestry occupations | | | | | | | | | | | | |
| Agricultural workers | | ○ | ○ | ○ | ○ | ● | ○ | | ● | ⊙ | ● | ● |
| Fishers and fishing vessel operators | | ⊙ | ○ | ○ | ○ | ● | ○ | | ● | ● | ● | ● |
| Forest, conservation, and logging workers | | ○ | ○ | ○ | ○ | ● | ○ | ○ | ● | ● | ● | ● |
| Construction trades and related workers | | | | | | | | | | | | |
| Boilermakers | ○ | ○ | ○ | | ○ | ● | ○ | ● | ⊙ | ● | | ● |
| Brickmasons, blockmasons, and stonemasons | ⊙ | ○ | ○ | | ○ | ● | ○ | ● | | ○ | ⊙ | ● |
| Carpenters | ⊙ | ○ | ○ | | ⊙ | ● | ○ | ● | | ● | ⊙ | ● |
| Carpet, floor, and tile installers and finishers | ⊙ | ○ | ○ | | ○ | ● | ○ | ● | | ○ | ⊙ | ● |
| Cement masons, concrete finishers, segmental pavers, and terrazzo workers | ⊙ | ○ | ○ | | ○ | ● | ○ | ● | | ○ | ⊙ | ● |
| Construction and building inspectors | | ○ | ○ | ○ | ○ | ● | ⊙ | ○ | | ○ | ⊙ | ○ |
| Construction equipment operators | | ○ | ○ | | ○ | ● | ○ | ● | | ● | ● | ● |



| | Personal skills | | | | | | | Job characteristics | | | | |
|---|-----------------|---------------|---------------|------------|-------------|------------|---------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Construction laborers | ○ | ○ | ○ | | ○ | ● | ○ | ● | | ● | ⊙ | ● |
| Drywall installers, ceiling tile installers, and tapers | ○ | ○ | ○ | | ○ | ● | ○ | ● | | ○ | ○ | ● |
| Electricians | | ○ | ○ | | ⊙ | ● | ⊙ | ● | | ● | ○ | ⊙ |
| Elevator installers and repairers | | ○ | ○ | | ○ | ● | ○ | ● | | ● | ○ | ● |
| Glaziers | ⊙ | ○ | ○ | | ○ | ● | ○ | ● | | ○ | ● | ● |
| Hazardous materials removal workers | | ○ | ○ | | ○ | ● | ● | | | ● | ● | ● |
| Insulation workers | | ○ | ○ | | ○ | ● | ○ | ● | | ○ | ○ | ● |
| Painters and paperhangers | ⊙ | ○ | ○ | | ○ | ● | ○ | ● | | ○ | ● | ● |
| Pipelayers, plumbers, pipefitters, and steamfitters | | ○ | ○ | | ○ | ● | ⊙ | ● | | ○ | ○ | ● |
| Plasterers and stucco masons | ○ | ○ | ○ | | ○ | ● | ○ | ● | | ○ | ● | ● |
| Roofers | ○ | ○ | ○ | | ○ | ● | ○ | ○ | | ● | ● | ● |
| Sheet metal workers | ○ | ○ | ○ | | ○ | ● | ○ | ● | | ● | | ● |
| Structural and reinforcing iron and metal workers | ○ | ○ | ○ | | ○ | ● | ○ | ● | | ● | ● | ● |
| Installation, maintenance, and repair occupations | | | | | | | | | | | | |
| Electrical and electronic equipment mechanics, installers, and repairers | | | | | | | | | | | | |
| Computer, automated teller, and office machine repairers | | ○ | ○ | | ○ | ● | ○ | | | | ○ | ○ |
| Electrical and electronics installers and repairers | | ○ | ○ | | ⊙ | ● | ○ | | | ⊙ | | ○ |
| Electronic home entertainment equipment installers and repairers | ⊙ | ○ | ○ | | ⊙ | ● | ○ | ● | | | | ⊙ |
| Radio and telecommunications equipment installers and repairers | | ○ | ○ | | ⊙ | ● | ⊙ | ○ | ⊙ | | ● | ⊙ |
| Vehicle and mobile equipment mechanics, installers, and repairers | | | | | | | | | | | | |
| Aircraft and avionics equipment mechanics and service technicians | | ○ | ○ | | ⊙ | ● | ⊙ | ⊙ | ⊙ | ○ | ● | ⊙ |
| Automotive body and related repairers | ○ | ○ | ○ | | ○ | ● | ○ | | | ○ | ○ | ⊙ |
| Automotive service technicians and mechanics | | ○ | ○ | | ○ | ● | ⊙ | | | ○ | ○ | ⊙ |
| Diesel service technicians and mechanics | | ○ | ○ | | ○ | ● | ⊙ | ⊙ | | ○ | ○ | ⊙ |



| | Personal skills | | | | | | Job characteristics | | | | | |
|--|-----------------|---------------|---------------|------------|-------------|------------|---------------------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Heavy vehicle and mobile equipment service technicians and mechanics | | ○ | ○ | | ○ | ● | ⊙ | ● | | ○ | ○ | ⊙ |
| Small engine mechanics | | ○ | ○ | | ○ | ● | ⊙ | ⊙ | | ○ | ○ | ⊙ |
| Other installation, maintenance, and repair occupations | | | | | | | | | | | | |
| Coin, vending, and amusement machine servicers and repairers | | ○ | | | ○ | ● | | | | ○ | ○ | ⊙ |
| Heating, air conditioning, and refrigeration mechanics and installers | | ○ | ○ | | ○ | ● | ○ | ⊙ | | ○ | ○ | ⊙ |
| Home appliance repairers | | ○ | ○ | | ○ | ● | ○ | | | ○ | | ⊙ |
| Industrial machinery installation, repair, and maintenance workers, except millwrights | | ○ | | | ○ | ● | ○ | ○ | ○ | ⊙ | | ⊙ |
| Line installers and repairers | | ○ | | | ⊙ | ● | ○ | ○ | | ⊙ | ● | ⊙ |
| Maintenance and repair workers, general | | ○ | ○ | | ○ | ● | ○ | | | ⊙ | ⊙ | ⊙ |
| Millwrights | | ○ | ○ | | ⊙ | ● | ○ | ● | ⊙ | ⊙ | ○ | ⊙ |
| Precision instrument and equipment repairers | ○ | ○ | | | ⊙ | ● | ○ | | | | | ⊙ |
| Production occupations | | | | | | | | | | | | |
| Assemblers and fabricators | ○ | ○ | | | ○ | ● | ○ | ○ | | | | ⊙ |
| Food processing occupations | | ○ | | | ○ | ● | | | | ● | | ● |
| Metal workers and plastics workers | | | | | | | | | | | | |
| Computer control programmers and operators | | ○ | | | ⊙ | ⊙ | ○ | ○ | | | | |
| Machinists | ⊙ | ○ | | | ● | ● | ⊙ | ○ | | ⊙ | | ⊙ |
| Machine setters, operators, and tenders—metal and plastic | | ○ | | | ● | ● | ⊙ | ○ | | ⊙ | | ⊙ |
| Tool and die makers | ○ | ○ | | | ● | ● | ⊙ | ○ | | ⊙ | | ⊙ |
| Welding, soldering, and brazing workers | ○ | ○ | | | ○ | ● | ○ | ○ | | ● | ⊙ | ● |
| Printing occupations | | | | | | | | | | | | |
| Bookbinders and bindery workers | ○ | ○ | | | ○ | ● | ○ | ○ | | | | ⊙ |
| Prepress technicians and workers | ⊙ | ⊙ | ○ | | ⊙ | ⊙ | ○ | ○ | | | | ○ |
| Printing machine operators | | ○ | | | ○ | ● | ○ | ○ | | ⊙ | | ● |
| Textile, apparel, and furnishings occupations | ⊙ | ○ | | | ○ | ● | | ⊙ | ⊙ | ○ | | ● |
| Woodworkers | ⊙ | ○ | | | ⊙ | ● | ○ | ⊙ | | ⊙ | | ○ |



| | Personal skills | | | | | | | Job characteristics | | | | |
|---|-----------------|---------------|---------------|------------|-------------|------------|---------|------------------------|-----------------------------|----------------------|--------------|----------------------|
| | Artistic | Communication | Interpersonal | Managerial | Mathematics | Mechanical | Science | Economically sensitive | Geographically concentrated | Hazardous conditions | Outdoor work | Physically demanding |
| Plant and system operators | | | | | | | | | | | | |
| Power plant operators, distributors, and dispatchers | | ○ | ⊙ | ○ | ● | ○ | ● | | | ⊙ | | |
| Stationary engineers and boiler operators | | ○ | ○ | ○ | ○ | ● | ○ | | | ⊙ | | |
| Water and liquid waste treatment plant and system operators | | ○ | ○ | ○ | ⊙ | ● | ⊙ | | | ● | ⊙ | ⊙ |
| Other production occupations | | | | | | | | | | | | |
| Dental laboratory technicians | ⊙ | ○ | | | ○ | ● | ⊙ | | | | | ○ |
| Inspectors, testers, sorters, samplers, and weighers | ○ | ⊙ | ○ | | ⊙ | ● | ⊙ | | | | | ○ |
| Jewelers and precious stone and metal workers | ● | ○ | ○ | | ○ | ● | ⊙ | ● | | | | ○ |
| Ophthalmic laboratory technicians | ○ | ○ | ⊙ | | ○ | ● | ⊙ | | | | | ○ |
| Painting and coating workers, except construction and maintenance | ○ | ○ | | | ○ | ● | | ○ | | ⊙ | | ⊙ |
| Photographic process workers and processing machine operators | ○ | ○ | | | ○ | ● | ○ | ○ | | ⊙ | | ○ |
| Semiconductor processors | | ○ | | | ● | ⊙ | ● | ⊙ | ● | | | ○ |
| Transportation and material moving occupations | | | | | | | | | | | | |
| Air transportation occupations | | | | | | | | | | | | |
| Aircraft pilots and flight engineers | | ● | ● | ● | ● | ⊙ | ● | ● | ○ | ● | ○ | ⊙ |
| Air traffic controllers | | ● | ⊙ | ⊙ | ⊙ | | ⊙ | | ○ | | | ○ |
| Material moving occupations | | | | | | | | | | | | |
| | | ○ | | | | ● | | ● | | ● | ● | ● |
| Motor vehicle operators | | | | | | | | | | | | |
| Bus drivers | | ○ | ○ | | | ○ | | | | ● | ○ | ⊙ |
| Taxi drivers and chauffeurs | | ○ | ○ | | | ○ | | | ⊙ | ● | ○ | ⊙ |
| Truck drivers and driver/sales workers | | ○ | | | | ○ | | ● | | ● | ○ | ● |
| Rail transportation occupations | | | | | | | | | | | | |
| | | ⊙ | ○ | ○ | | ● | ○ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ |
| Water transportation occupations | | | | | | | | | | | | |
| | | ⊙ | ○ | ● | ⊙ | ● | ⊙ | ● | ● | ● | ⊙ | ⊙ |