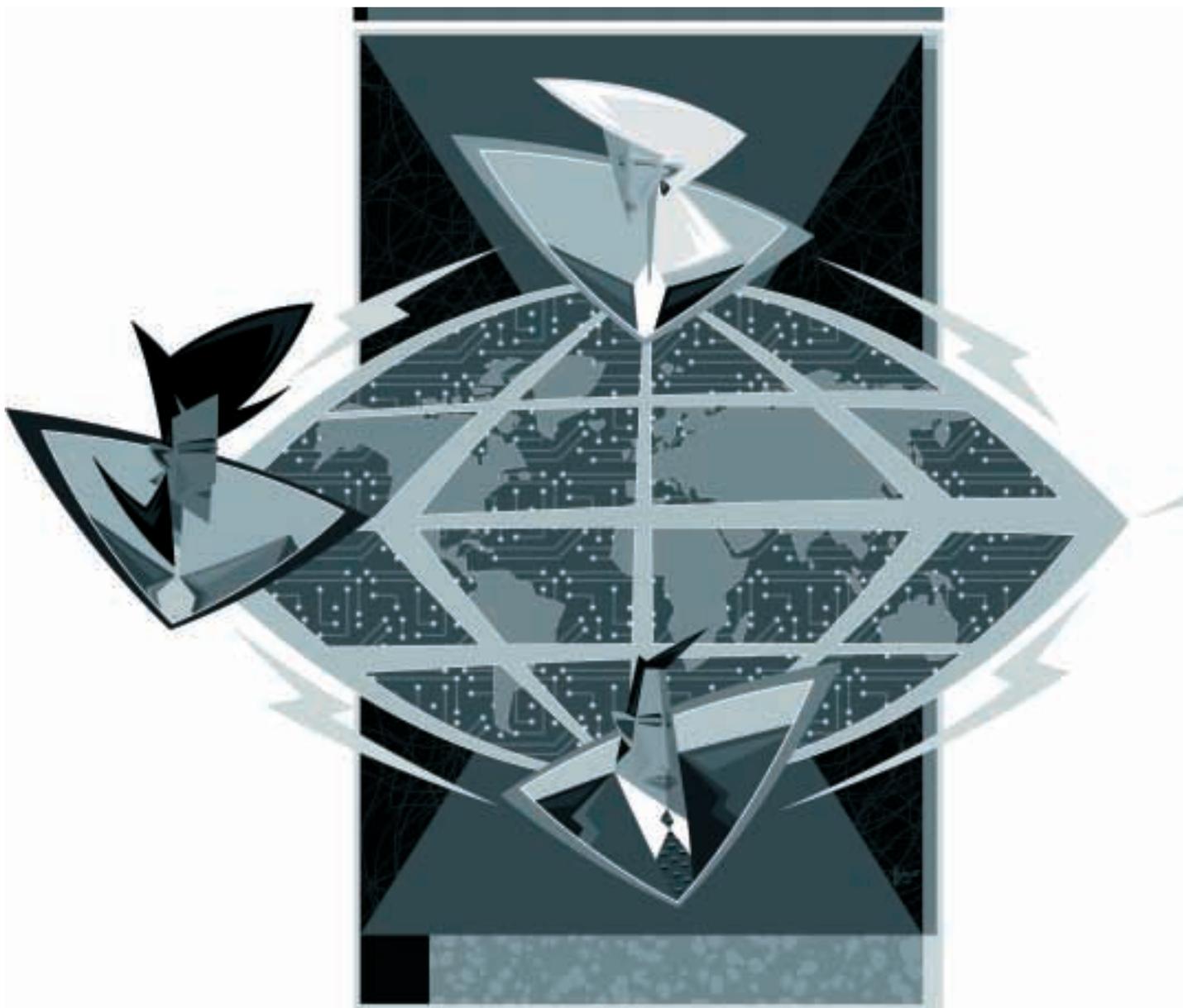


# INTERNET



# USE: HERE, THERE, AND EVERYWHERE

The Internet—that worldwide system of connected computers—is changing the way we live. The details are in the data.

by Terry Schau

Internet use is increasing rapidly, a trend that shows no signs of diminishing. At home and on the job, we use the Internet to conduct many of our daily activities.

According to the National Science Foundation, the amount of time the average person spent on the Internet increased from 15 hours per year in 1995 to 160 hours a year in 1999. The who, where, and why of Internet use reveal some interesting details. For example, a survey conducted jointly by research centers at Rutgers University and the University of Connecticut found that employees who used the Internet on the job spent about one-fourth of their time at work online—or 2 hours out of a typical 8-hour day.

This article examines data from a December 1998 supplement to the Current Population Survey (CPS) to describe who uses the Internet, where they access it,

and for what purpose. It also discusses implications for current and future workers and their jobs, including changes to training requirements for those about to enter the workforce.

## Who uses the Internet?

One-third of people aged 3 and older used the Internet in 1998, the most recent year for which CPS data are available. Those data are supported by others collected more recently by private organizations, which indicate that about 55 million people log onto the Internet on a typical day. Use rates differ by age and education level.

### Age

Internet use varies by age. (See chart 1.) Use of the Internet was lowest among older age groups. One-fourth of persons aged 55 to 64 used the Internet. The 65- to 74-year-old group had an even lower use rate, at 10 percent. Finally, the 75 and older age group had

the lowest rate, about 4 percent.

Not surprisingly, the data show higher Internet use rates among younger people. Those aged 18 to 24 had the highest use rate in 1998, at 44 percent. Individuals between ages 25 and 34 had the second highest use rate, at more than 42 percent. The 35- to 44-year-old group had the next highest use rate, almost 40 percent. Close behind them, the 45- to 54-year-old group had a use rate of 39 percent. The youngest group, those aged 3 to 17, had a use rate of 30 percent.

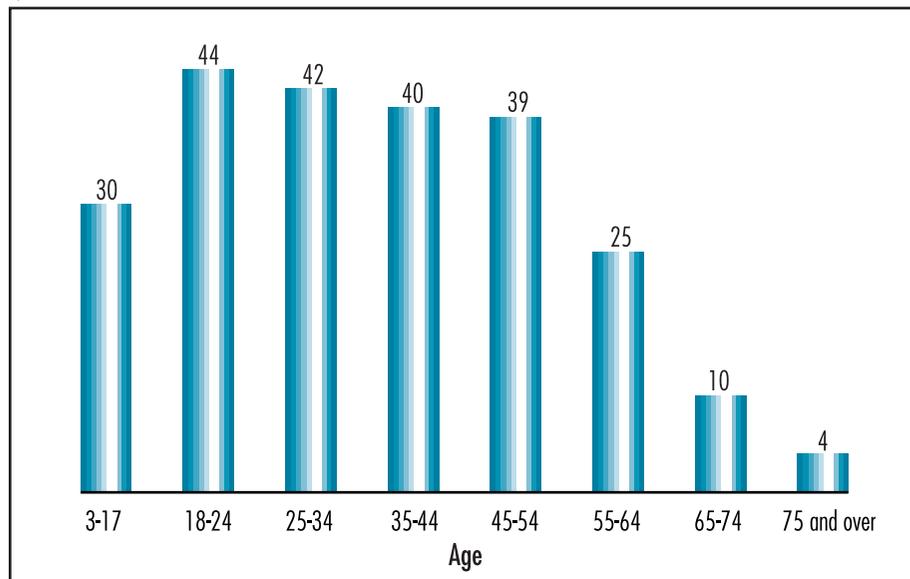
The high Internet use rates among younger individuals were even higher when 3- to 11-year-olds were excluded. Use rates for 12- to 23-year-olds were all above 40 percent in 1998. (See chart 2.) Within this age group, 14- to 17-year-olds reported Internet use rates of more than 50 percent. Eighteen- and 19-year-olds had a rate of 48 percent. Those aged 12 and 13 had a rate of 44 percent. Close behind them were 20- and 21-year-olds (43 percent) and 22- and 23-year-olds (42 percent).



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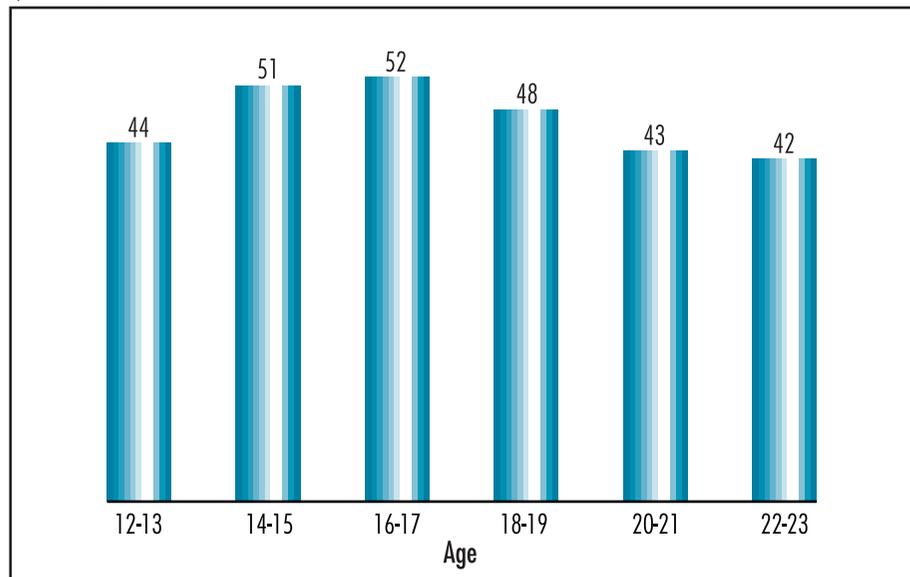
**Chart 1**

**Internet use by age, 1998**  
(percent)



**Chart 2**

**Internet use among 12- to 23-year-olds, 1998**  
(percent)



The relatively high Internet use rates for younger people are attributable, in part, to their early introduction to the Internet. Many people in these groups first used computers in school and, as a result, are more likely to be computer literate. This early exposure may also help explain lower use rates among older age groups. Many older people are less familiar and comfortable with computers because of a lack of exposure or formal training and thus are less likely to use the Internet.

### Education

Internet use also varies by educational attainment. (See chart 3.) The data representing people aged 18 and older indicate that individuals with more education are most likely to use the Internet. In 1998, at least 66 percent of all graduate or first-professional degree holders used the Internet. Next were bachelor's degree holders; 59 percent of this group used the Internet. Forty-three percent of associate degree holders and 42 percent of persons with some college but no degree used the Internet. Among persons with a high school diploma or less education, 16 percent used the Internet.

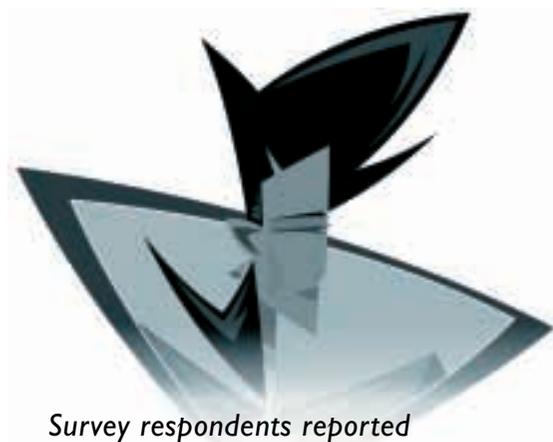
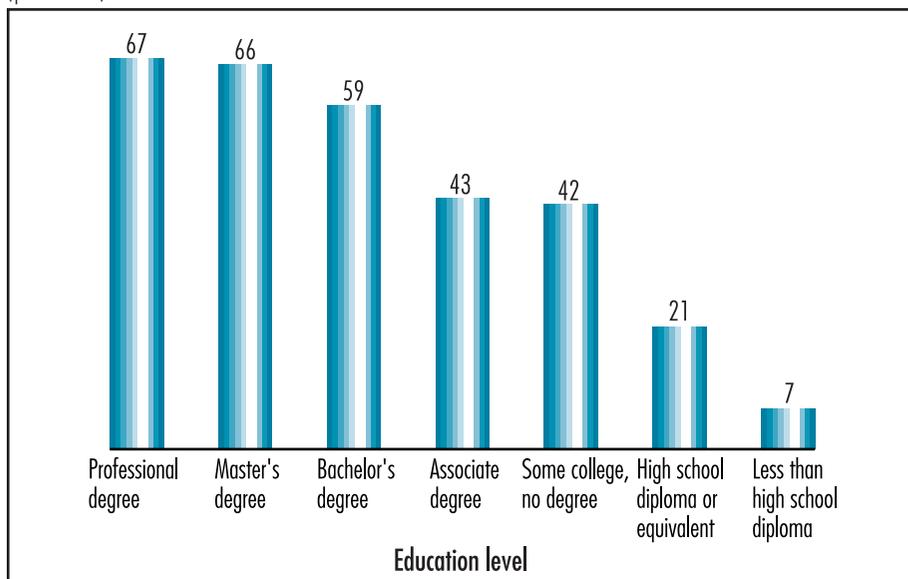
In part, individuals with higher educational attainment levels are most likely to use the Internet because they are often exposed to computers and the Internet as students and are therefore better equipped with the necessary skills to go online. Also, advanced degree holders may have more opportunity to access the Internet. As is discussed below in the use-by-occupation section, many jobs that require advanced degrees also have higher Internet use rates.

### Where do people access the Internet?

The primary places individuals use the Internet are home, school, and the workplace. The survey allowed respondents to

**Chart 3**

**Internet use by education level, 1998**  
(percent)



*Survey respondents reported using the Internet at home, in school, and at work. Younger people had the highest use rates, no matter where they went online.*

identify more than one access location, as well as multiple purposes for which they used the Internet at the primary location. Those purposes are discussed in the next section; this section describes where people of different age groups used the Internet.

### Home

According to 1998 data, home was the most common place for people to access the Internet. More than 22 percent of the U.S. population aged 3 and older used the Internet at home, accounting for about three-fourths of all Internet use.

Compared with overall use rates, home use rates varied little with age. The most noticeable divergence from overall use patterns is that the 18- to 24-year-old group did not have the highest use rate. Persons aged 18 to 24 (with a 25-percent use rate) were about as likely to use the Internet at home as those aged 25 to 34 (28 percent), 35 to 44 (29 percent), or 45 to 54 (29 percent).

Just below the 22-percent average was

the 3- to 17-year-old group, of which 20 percent used the Internet at home in 1998. Those aged 55 to 64 were next, with a rate higher than 18 percent. Well below average were the 65- to 74-year-old and 75-and-older groups, with rates of 8 and 3 percent, respectively.

### School

The wealth of information available on the Internet provides an important educational resource for instructors. As a result, the Internet is increasingly introduced to students in school. In 1998, about 13 percent of kindergarten through 12th graders used the Internet at school. According to the National Center for Education Statistics, 95 percent of all public schools had Internet access in 1999. Consequently, students' early introduction to the Internet is a trend likely to continue.

Most colleges and universities maintain computers with Internet access. While exact figures are difficult to find, Internet use by college and university students contributed to the 44-percent

overall use rate at school of the 18- to 24-year-old group in 1998, the highest rate of any age group.

### Workplace

About one-fifth of employed people reported that they used the Internet at work in 1998. Although those aged 16 to 24 had the highest overall Internet use rate, only 10 percent of all workers in this group used the Internet on the job. Many of these young workers are in labor-intensive service occupations, where use of the Internet is minimal.

The remaining age groups had rates that decreased as the age of the workers in the groups increased—the same as with the overall use rates. The 25- to 34-year-old group had the highest Internet use rate at work, 23 percent. Many people in this age group are relatively new to the workforce and are more likely to offer Internet skills that employers seek. The next highest use rates were among those aged 35 to 44 and 45 to 54, at 21 percent each. The 55- to 64-year-old group had a

use rate of 16 percent. And well below the average of almost 19 percent were those aged 65 to 74 and 75 and older, with rates of 7 and 4 percent, respectively.

### Other locations

Many local libraries make computers with Internet access available to the public. Community centers across the country also may provide Internet access. Portable, hand-held devices, becoming more popular as technology advances, give users the potential to access the Internet from nearly anywhere.

### Why do people use the Internet?

The Internet's capabilities are continually expanding, making many of our daily tasks faster, cheaper, and more enjoyable. As a result, the number of people who use the Internet has increased. For those who use the Internet on the job, reasons varied by occupation and industry.

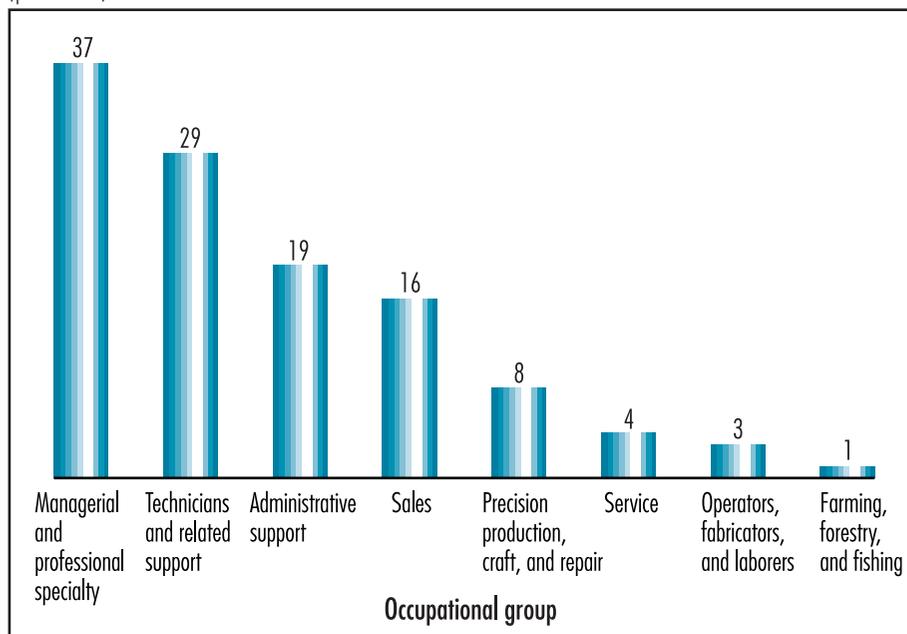
### Common activities

The use of the Internet for e-mail has increased significantly in recent years. In 1998, almost 78 percent of persons with Internet access at home and 54 percent with access outside the home used it to send e-mail, making this the most common Internet activity. Searching for information was the second most popular use of the Internet. Almost 60 percent of those with Internet access at home and 50 percent of those with access outside the home used it to search for information. The Internet also was used to check news, with 46 percent of survey respondents reporting this use.

College and university students used the Internet for a variety of reasons. In addition to conducting general research and sending e-mail, many students used the Internet to look up course information or class assignments. Another popular use of

**Chart 4**

**Internet use by major occupational group, 1998**  
(percent)



the Internet was to take courses or do research for school. Thirty-six percent of those with Internet access at home used the Internet for such purposes. Almost 39 percent of people with access outside the home used it to take courses.

Job-related tasks were another popular use of the Internet, especially for users outside the home. Almost 45 percent of those who used the Internet outside the home and 29 percent of users inside the home used the Internet for job-related tasks.

### Internet use by occupation

In many occupations, the ability and skill to use the Internet are valuable assets. The number of workers using the Internet on the job has increased significantly in recent years. In 1998, about 1 in 5 employed persons used the Internet at work. However, some occupations have significantly higher use rates than others. (See chart 4.) Workers' purposes for using the Internet vary by occupation, as do the

amounts of time they spend online.

**Managerial and professional specialty occupations.** These groups reported the highest job-related Internet use rate in 1998, 37 percent. Workers in these groups commonly use the Internet on the job to communicate inside and outside the office, to find and disseminate information, and to complete other job-specific tasks.

Within the executives and managers group, marketing, advertising, and public relations managers had the highest on-the-job Internet use rate, 55 percent. Marketing and advertising managers increasingly use the Internet to market their products or services. Public relations managers use the Internet for e-mail and teleconferencing.

Among professional specialty occupations, 56 percent of engineers used the Internet at work—one of the highest reported use rates of any occupation. Engineers might use the Internet to compare results of experiments, draw graphic designs and structures, and search for

general engineering information. With the Internet, engineers are able to collaborate more efficiently and with improved accuracy.

Other professional specialty occupations, such as mathematical and computer scientists, also had high on-the-job Internet use rates in 1998. For example, 2 of 3 computer systems analysts used the Internet, one of the highest use rates in this occupational group.

**Technicians, sales, and administrative support occupations.** The next highest Internet use rates among occupational groups were for workers in technician, administrative support, and sales occupations. In 1998, almost 19 percent of all workers in these occupations used the Internet on the job. Within this group, technicians and related support workers had the highest rate, 29 percent. Workers in sales occupations had the lowest rate, nearly 16 percent.

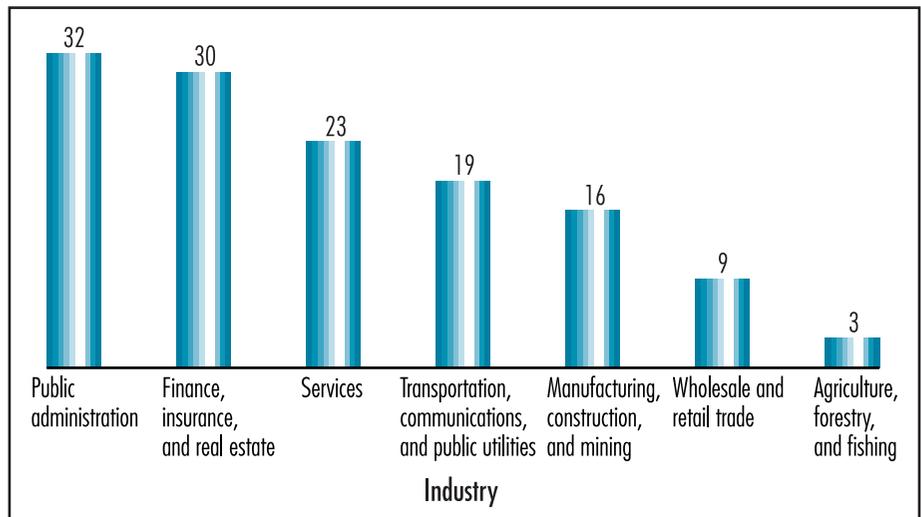
Among specific occupations, computer programmers and nonhealth technologists and technicians had high Internet use rates in 1998—56 percent and 43 percent, respectively. Workers in these occupations need to share time-sensitive information, and the Internet allows them to do so quickly.

**Precision production, craft, and repair occupations.** Overall, Internet use rates among occupations in this group were 8 percent in 1998. These occupations typically are labor intensive, involving work with tools and materials rather than with electronically transmitted information.

However, some occupations in this group have higher Internet use rates than others. For example, more than 52 percent of data processing equipment repairers used the Internet on the job in 1998. Repairers might use the Internet in their diagnosis, repair, and testing of computers and automated teller machines.

**Other occupations.** Collectively, workers in service, operator, laborer, fabrica-

**Chart 5**  
**Internet use by industry, 1998**  
(percent)



tor, farming, forestry, and fishing occupations had an Internet use rate of about 3 percent in 1998. Few of these workers use the Internet on the job. One exception is firefighting and fire prevention workers; one-fourth of these workers used the Internet at work in 1998, primarily for research and communications.

### Internet use by industry

The Internet has affected every industry. In some industries, the Internet has become an indispensable tool for work; in others, it is used more sparingly. (See chart 5.)

**Public administration.** Employees of Federal, State, and local government agencies had the highest on-the-job Internet use rate in 1998, about 32 percent. One of the most popular uses of the Internet in government agencies is for information dissemination to the public. For example, the Bureau of Labor Statistics uses the Internet to collect and disseminate labor, economic, and other statistical data.

**Finance, insurance, and real estate.** Employees in this industry group had the

second highest at-work Internet use rate, 30 percent, in 1998. Workers at institutions such as banks, insurance companies, and securities firms need immediate information and data exchange to conduct business. The ability to conduct transactions rapidly, often when millions of dollars are at stake, almost guarantees continued high Internet use rates in this industry.

Globalization also contributes to increased Internet use in this industry. Many companies are expanding internationally, and the Internet allows these firms and their customers to conduct business electronically, just as if they were next door. For example, securities firms, which often invest in foreign securities, use the Internet as a virtual clearinghouse for securities information from around the world.

**Services.** The overall use rate on the job for workers in the services industry was slightly more than 23 percent in 1998. This industry is large and covers a broad range of activities. Consequently, Internet use rates vary among the different sectors. For example, a small proportion—6

percent—of workers in the personal services sector used the Internet at work in 1998, compared with 58 percent of workers in computer and data processing services who did so.

Internet use for the various sectors of this industry also differ. Health services workers, for example, use the Internet for many purposes, including creating medical websites that allow users to ask qualified practitioners health questions, look up health and medical information, and read the latest health care news. These sites might provide bulletin boards and discussion groups for health care professionals to keep them abreast of the latest medical news and information. Use of the Internet also speeds the exchange of medical information between health care providers, laboratories, and insurance companies.

The Internet has transformed the advertising industry by providing advertisers with a new working medium. Ads appear in online periodicals, on retailers' websites, and on Internet portals. As a result, advertisers can collect and analyze Internet-use data to determine who is seeing their ads. They use this data to target marketing campaigns more effectively toward their intended audiences.

**Transportation, communications, and public utilities.** In 1998, nearly 19 percent of all workers in this industry group used the Internet on the job. Workers in the communications industry were the most Internet-savvy sector within the group, with 2 of every 5 using the Internet in 1998. Radio and television broadcasting and telephone communications depend on the Internet for fast transmission and control of data and signals. In fact, many radio stations now transmit their signals through the Internet, allowing listeners to tune in from all over the world.

About 1 in 4 public utility workers



*Internet use varies by occupation and industry. By occupational group, managerial and professional specialty workers had the highest use rates in 1998. Industrywide, public administration workers went online the most.*

used the Internet in 1998. Many monitoring systems, such as those for power plants and water supply systems, are now computerized. Data that are automatically collected can be sent or viewed from nearly anywhere via the Internet. In addition, workers can make changes to plant or system operations over the Internet, allowing large electricity providers to monitor many individual plants from one location.

The largest sector, transportation, had the group's lowest Internet use rate (10 percent). Passenger transportation establishments may use the Internet to monitor bus or train information, which workers then use to coordinate route schedules for improved efficiency and safety.

**Manufacturing, construction, and mining.** Overall, 16 percent of workers in these industries used the Internet on the job in 1998. Mining including petroleum extraction led, with 1 in 5 workers using the Internet. Generally, workers in this industry use the Internet for data collection, information exchange, and research.

Workers in manufacturing, the largest

industry sector in the group, had an Internet use rate of almost 20 percent, just below that of mining. Manufacturing firms may use the Internet to conduct daily business. For example, workers in computerized plants use electronic data interchange (EDI) to send data instantly to suppliers and other plants, helping firms keep inventories and costs low.

At 7 percent, the Internet use rate for workers within the construction sector was less than half the industry group's average. Although this sector is composed largely of establishments that do not frequently access the Internet for business purposes, firms in the industry will likely increase their use as the capabilities of the Internet expand.

**Wholesale and retail trade.** The combined Internet use rate for workers in the wholesale and retail trade industries was relatively low at 9 percent in 1998. However, wholesale trade industries had higher use rates, with roughly 1 in 5 workers using the Internet. Wholesale trade firms increasingly use the Internet to improve efficiency. For example, firms might use the Internet to take orders, verify and track shipments, and answer customer inquiries.

**Agriculture, forestry, and fishing.** The incidence of on-the-job use of the Internet by workers in this industry is low: less than 3 percent in 1998. Farmers, who accounted for more than one-half of the agriculture production industry's workforce, may use the Internet for access to services that provide marketing information, such as weather and crop reports.

## What are the workforce implications?

Workers and jobseekers alike need appropriate skills to participate in the electronic business world. These skills vary from



one job to the next. Operations research analysts, for example, must know how to use the Internet in their jobs for research. An analyst's ability to sift through the Internet's staggering amount of information is essential for conducting efficient research.

And employers are also responding to the Internet's increasing relevance in the workplace.

### **Training**

In the current job market, many employers place a premium on the skills needed to use the Internet. Individuals with the proper skills and knowledge may have less difficulty finding employment and advancing than do those without such abilities. In fact, many occupations requiring advanced Internet skills are experiencing labor shortages as firms start up and expand faster than the labor market can produce qualified workers.

Most Internet skills can be, and often are, learned on the job. And because occupations may require specialized skills, these skills usually must be acquired on the job. However, some occupations require knowledge typically learned in a certification or college program. For example, a network systems administrator responsible for the selection, installation, and support of hardware and software also must know a variety of Internet programming languages. Nonacademic organizations, including major software companies, offer certification programs in areas such as database administration and Java development.

As firms adopt and use Internet technologies, workers are often required to complete on-the-job training or Internet-related courses. Most workers are able to learn simple Internet tasks, such as sending e-mail or researching a topic, quickly and easily. But they may need more ex-

*Internet skills may give some jobseekers an edge in finding employment, as some companies rely heavily—sometimes exclusively—on the Internet to conduct business.*

tensive on-the-job training or a short course to learn other tasks, such as extracting data from a large database.

The employee's ability to use the Internet effectively on the job is important, and, in some cases, essential. In today's constantly changing world of work, obtaining these skills is increasingly worthwhile. And with technologies used in today's online world constantly changing as well, workers must also keep those skills current.

### **Employment**

As Internet capability expands, its value to the business world increases. Companies of every type have a presence on the Internet—some primarily to advertise their products, others to operate many aspects of their business. Once considered simply an additional source of business, the Internet has become an important tool for many companies. In fact, some new companies rely solely on the Internet for business activities.

The Internet also has changed the way some workers do their jobs. For example, purchasing managers, buyers, and purchasing agents are responsible for obtaining quality merchandise at a low cost to

their employers. Typically, these workers use multiple communication methods to collect data. Now, however, workers can use the Internet to quickly and efficiently collect information on prices, quality, availability, and suppliers and to place orders.

The Internet will also create new occupations as technology advances and increases the demand for workers with specialized skills. Among the emerging occupations are network or computer systems administrators—workers who design, install, and support an organization's Internet and other related systems—and Internet or web developers, also called web designers, who are responsible for day-to-day website design and creation.

### **About the data**

Data in this article are based on a December 1998 supplement to the monthly Current Population Survey (CPS), a nationally representative sample survey of about 48,000 households. As with any sample survey, the results may have differed if every household had been included. Results also are affected by respondents' interpretations of survey questions.

The supplement, conducted by the Bureau of the Census for the Bureau of Labor Statistics, included questions on Internet and computer use, addressing points and methods of Internet access and types of Internet use. Survey questions were asked of the U.S. civilian noninstitutional population aged 3 years and older.

Data in charts 4 and 5 represent on-the-job Internet use at workers' primary place of employment—and include private and self-employed workers. 