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Occupational Outlook Quarterly

Spring 2009 • Volume 53, Number 1

2 Making the news: Jobs in TV journalism
by Lauren Csorny

To engage a television audience, the news must be interesting as well as timely and accurate. Find out about some of the workers whose decisions affect the way TV news is presented.



14 Careers in forensics: Analysis, evidence, and law
by Elka Maria Torpey

The field of forensics includes more occupations than you might realize. Learn more about what forensics is and how this specialty applies to a broad range of careers.



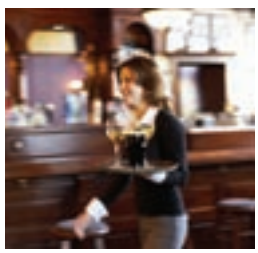
20 Grab Bag

Help yourself and your community, Federal work for students, scholarships for car enthusiasts, support for first-generation college students, and park ranger employment.



22 More than food and drink: Careers in restaurants
by Drew Liming

Are you considering a restaurant career? If you can keep cool when things heat up, you have many occupational options. One of them could be your meal ticket.



34 Employment, trends, and training in information technology
by Benjamin Wright

Like most industries, information technology has had job gains and losses. This article discusses IT workers; their employment, both past and projected; and ways to prepare for these occupations.



42 You're a *what*? Futurist
by John Mullins

Christopher Kent studies the present for insight about the future.



44 OOChart
Spectator sports employment by metropolitan area, 2007 annual averages



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Making the news:
Jobs in TV journalism

To engage a television audience, the news must be interesting as well as timely and accurate. Find out about some of the workers whose decisions affect the way TV news is presented.

Lauren Csorny

What do TV news workers do each day? For many of them, contributing to daily news broadcasts has changed greatly over the years. This evolution will likely continue for years to come.

The first televised news programs, which began about 60 years ago, were brief segments produced by national networks. These programs gradually expanded to longer formats involving the networks' local affiliates. With the growth of cable television came 24-hour news stations—and, finally, expansion to the many around-the-clock weather, sports, business, and other shows we have today.

Lauren Csorny is an economist in the Office of Occupational Statistics and Employment Projections, BLS. She is available at (202) 691-5517 or csorny.lauren@bls.gov.



And more changes to news production are expected, according to Tom Weir, an associate professor at the University of South Carolina's School of Journalism and Mass Communications. "The technology we will see in 5 years doesn't exist yet," he says, "at least not in a commercially viable form." Jobseekers whose diverse talents and training are adaptable to these developing technologies are likely to have the best prospects.

Some news anchors and correspondents who do national or local broadcasts are so recognizable that they have celebrity status. Although they are the faces of TV news, these workers compose a small part of the staff that broadcasts news to the public.

This article describes the work of anchors in a section on news analysts, reporters, and correspondents. But it also discusses some of the other workers on news broadcasts, including producers, camera operators, and film and video editors. Occupational descriptions cover the job duties, earnings, employment, qualifications, and training for people in these occupations. To weigh other considerations for would-be TV workers, see the sections about station size and the good and bad sides to the work. Finally, sources of additional information are provided at the end of the article.

Newswork

From the people on the air to the people behind the scenes, workers in television news are responsible for preparing and broadcasting current events in a timely, accurate way.

Producer

Producers plan and develop news broadcasts and coordinate the activities of on-air personnel, production staff, and other members of the broadcast team. In other words, these workers run the show.

There are a number of different types of producers, and each is responsible for different segments of the broadcast: The executive producer coordinates the overall show, pulling together the segments to create a cohesive program; line producers or associate producers have more hands-on involvement than the executive producer does in the day-to-day activities.

The executive producer is the person in charge. His or her role is primarily managerial. Other staff members report to the executive producer, who makes major decisions regarding the program and, often, its overall financing.

A line producer works with the production team to keep the show on schedule and within budget. An associate producer, whose job tasks are usually broader than those of a line producer, assists the executive producer in everything from writing news stories to proposing ideas for news coverage to making editorial decisions, such as setting priorities for the placement and duration of news items in the broadcast.

Producers work either in the studio or away from it ("in the field"). Studio producers usually have a set schedule and work indoors. Field producers travel with a crew to cover stories in locations that could span the globe. In addition to having a producer, field teams usually include a correspondent, editor, and sound person all doing specialized work. Their work may expose them to dangerous situations—such as when they cover military conflicts, natural disasters, or accidents.

Assignments vary in the commitment required, ranging from a few hours for a story about a local business, for example, to several weeks spent covering a natural disaster overseas. Although studio and field producers generally have the same rank and salaries, a move to the studio is desirable because the

schedule and working conditions are more predictable.

Producers must be familiar with the segment of the broadcast for which they are responsible. For example, a field producer is responsible for the segments prepared by his or her team, and executive producers are accountable for the entire program. The producer should be fully prepared before shooting begins, know exactly what is going to air, and manage the workers involved in creating the program.

During a live news broadcast, producers have specific duties related to the show. For example, producers may keep an eye on the studio monitors to ensure that everything progresses on schedule. If something goes wrong, it is up to the producer to fix the situation without disrupting the broadcast.

Employment and wages. The U.S. Bureau of Labor Statistics (BLS) collects data on producers and directors as a single occupation overseeing stage, television, video, and motion picture productions. About 14,000 producers and directors were in the television broadcasting industry in May 2007, according to BLS.

In television broadcasting, median annual wages for producers and directors in May 2007 were $55,620, according to BLS.

Qualifications and training. Producers need a combination of skills and training to succeed in their work.

To do their jobs well, producers need to be flexible, able to incorporate program changes and new information quickly, and able to remain calm and organized under stressful circumstances. They also must have solid communication skills, both written and oral, because they coordinate the activities of several staff members. And producers should be good negotiators, as they often manage contract discussions, hiring interviews, and other personnel meetings.

Entry-level producers usually need at least a bachelor's degree. College courses teach students occupation-specific skills, such as writing a script, checking segments for accuracy and length, and overseeing a broadcast production.

Television newscasts are planned and developed by producers, who coordinate segments for consistency.



Competition for jobs is keen, so students should look for opportunities to gain relevant experience while still in school. For example, many high schools and colleges have broadcasting studios, in which students are responsible for producing programs that are transmitted primarily within the school or for a limited range in the community.

Working in an internship at a local station is another good way for students to gain experience. Many stations offer internships, usually unpaid but with another kind of payoff. "Internship programs give students hands-on experience," says Weir. "And interns gain valuable industry contacts that may give them an advantage over other applicants for these sought-after jobs."

Producers usually begin their careers in support positions, such as researching or assisting. Getting hired at a small station or in small markets is generally easier than starting out in large ones; however, even small stations are unlikely to turn over production to a recent graduate. Some full-time, professional experience is nearly always required.

News analysts, reporters, and correspondents

News analysts, reporters, and correspondents are the on-air faces of TV news. They are the people we recognize from everyday broadcasts about what's happening in our town, in our country, and around the world.



News analysts, reporters, and correspondents often conduct interviews outside of the studio.



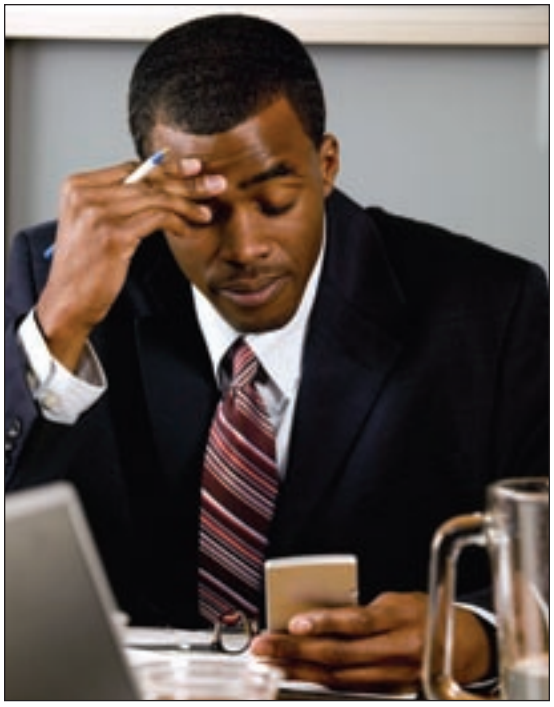
Broadcast news analysts, commonly known as news anchors, are often the most recognizable members of a television news team. During the broadcast, they generally sit at a desk and report the news. Viewers sometimes mistakenly think that's all anchors do. "One of the most common misperceptions," says Julie Hartenstein, deputy director of career services at Columbia University Graduate School of Journalism, "is that an anchor is nothing more than a mouthpiece."

In fact, anchors have a background in journalism. They may research and write a portion of the stories they deliver on the air, although the volume of news that must be reported means that professional newswriters prepare most stories. Still, nearly all anchors have the authority to rewrite or edit the news stories they report.

Anchors may conduct interviews, either on the air or as part of the research for a story being broadcast. They prepare for these interviews by learning both about the topics to be discussed and about the person they will interview. Even if the topic is something the anchor has little previous knowledge of, he or she must become well enough informed to be able to discuss it with the interview subject.

Some news anchors specialize, reporting on single topics such as sports or the weather. These anchors must have some expertise in their respective specialties. Having a background in meteorology may be required to develop or interpret weather forecasts, for example, and in-depth knowledge of a range of athletic activities and organizations is necessary to deliver sports news.

Reporters and correspondents often provide much of the foundation for anchors' news stories. Their research tasks include investigating leads and news tips, reviewing documents, observing events, and interviewing people. Especially at smaller stations, reporters and correspondents may have to take related photographs or video footage. Then, they organize the material they've gathered, write the story, and, in some cases, edit the accompanying video.



Research and writing are part of a journalist's job in preparing to deliver stories on the air.

Reporters generally shoot a news segment in the field and submit it electronically to the station. Their segments may be broadcast live, may be previously recorded, or may be reported live with some parts prerecorded.

Correspondents are reporters who are sent, usually with field teams, to places outside the area served by their network or station. The cities or towns that correspondents visit may be anywhere in the world but are usually large and heavily populated locales or are temporary focal points. Correspondents may change locations often, including traveling to areas with harsh conditions or risks of danger. Whatever the situation, their job tasks are similar to those of locally based reporters.



Many reporters and correspondents research and investigate their stories before writing their scripts. They may spend weeks researching some stories. During their investigation, they seek out and interview sources and follow through on leads. This type of reporting may require a reporter to travel wherever the information leads. Similar to anchors, reporters, and correspondents make the final decisions in editing the script, even if they have writers providing assistance.

Employment and wages. In May 2007, according to BLS, there were about 4,110 news analysts and about 6,560 reporters and correspondents employed in television broadcasting.

BLS data also show that median annual wages of news analysts in the television broadcasting industry were $58,130 in May 2007. For reporters and correspondents in television broadcasting, median wages were $38,450.

Qualifications and training. Having a journalism background is generally expected of aspiring news analysts, reporters, and correspondents. But their on-air presence makes other preparation important, too.

The ability to communicate is essential in this occupation. And this need for communication skills goes beyond being able to write and speak well: No matter what their personal feelings are, news analysts, reporters, and correspondents should not let their emotions affect their on-air presence. Those who report the news must maintain their composure, even during chaotic circumstances.

Similarly, appearance is a consideration for anyone on television. At a minimum, news analysts, reporters, and correspondents must be clean and well groomed for broadcasts. Special makeup for television appearances is intended to counteract unnatural studio conditions, such as bright lights, and is usually applied to both men and women.

News analysts, reporters, and correspondents usually benefit from getting a journalism education. A bachelor's degree in journalism teaches the basic skills needed to do these jobs: researching and writing, conducting interviews, understanding the industry, and learning business and journalism law and ethics.

Reporters and correspondents are generally expected to know how to handle a camera and to digitally edit and transmit their work. They may not need to use these skills, but those who have the training may have an advantage in a competitive job market.

Gaining experience in a school studio or through an internship is recommended for news analysts, reporters, and correspondents. Many high schools and colleges have student-run studios that have limited broadcast range but provide an opportunity for training in a less stressful environment than that of a TV station.

Many local stations offer internships, which may not include a paycheck but could lead to full-time employment. Interns in TV stations, like interns in other businesses, are often the first to be considered when entry-level openings occur.

Camera operators and film and video editors

News is transmitted from the studio to televisions due, in part, to the work of camera operators and film and video editors. By recording and preparing segments and shows for broadcast, these workers make it possible for the information to be presented as the other members of the news team intend.

Camera operators record the images we see on the news. Often, their duties include setting up and maintaining camera equipment.



A camera operator who works outside the studio must be ready to travel to events as they happen.

Camera operators may work in a variety of settings that range from inside the local studio to outdoors anywhere in the world.

In the studio, jobs for camera operators have become more limited due to technology. For example, automated camera systems mean that one operator works several cameras remotely. Smaller news stations may not have elaborate systems, however. In these smaller stations, several operators are seated at different cameras. One camera at a time records live, and the producer often signals to the camera operators when it is time to switch to another camera.

Camera operators who work outside the studio are often called news camera operators or electronic news gathering (ENG) operators. Camera operators who work in the studio are more likely to have a regular schedule, but ENG operators' schedules may vary considerably because they are rarely in the studio. Travel requirements may range from short distances for a few hours—a nearby city to cover a press conference, for example—to across the world for days or months. And camera operators face the same risks, dangers, and limitations that other members of the field team do.

Film and video editors are the last people to see a segment before it airs. After a segment is shot, an editor may be left with a jumble of material consisting of several takes from different angles. It is the editor's job to get rid of the extraneous footage and put together a final segment. The final segment reflects the best shots from each take and makes the reporter and interview subjects appear as intended by the producer.

Some editors work in the studio, and others travel with a field team and edit a segment

immediately after it is recorded. Wherever they work, editors make use of digital technology to do their jobs. Video is shot on a digital camera and uploaded directly onto a computer. There, the editor puts together the segments and makes changes as often as needed until the producer gives final approval.

Employment and wages. In May 2007, there were about 6,960 camera operators and about 2,900 film and video editors employed in television broadcasting, according to BLS.

BLS data also show that camera operators in TV broadcasting earned a median annual wage of $36,060 in May 2007. Median annual earnings of film and video editors in TV broadcasting were $37,270 in May 2007.

Qualifications and training. Camera operators and film and video editors in broadcasting usually need a degree to enter these occupations. Workers in both occupations also must bring some specific abilities to the job.

Video editors compile the best shots from multiple angles into one segment.



Camera operators should have good hand-eye coordination and be able to move quickly in response to developing stories. ENG operators also must be physically able to hold a camera for long periods and to carry heavy equipment for short distances. Film and video editors must show good judgment, be able to concentrate in a chaotic atmosphere, and be adept at communicating reasons for editing decisions.

Familiarity with computers and digital technology is necessary in both occupations. But some knowledge and skills required may be specific to the equipment used in a particular job and, therefore, likely to be taught on the job. Camera operators get this on-the-job training during the first several months.

Most stations have their own criteria for what they seek in a job candidate. Some employers look for a candidate who has a well-rounded educational background; others may want someone with professional videography experience. Due to the more difficult conditions ENG operators face, positions in that field are usually less competitive than those in a studio.

Film and video editors may earn a bachelor's degree in any field, but majoring in broadcasting or a related field is also an option. Whatever their educational background, though, prospective editors should have some experience with editing software.

As with workers in other broadcast-related occupations, students interested in becoming a camera operator or film and video editor should gain experience before graduation. High schools and colleges with student-run studios and local TV stations that have internship programs offer opportunities to develop the skills needed in these occupations.



Fact-checking tasks are often assigned to interns. Internships are a good way to gain experience for many jobs in TV news.

Station size matters

The size of news operations varies, which in turn can affect workers' tasks, pay, and opportunities for entry-level and more advanced positions.

Major cities have the broadest range of news operations. These include everything from large national—and international—network and cable stations to small, independent ones. Small stations may be in sparsely populated cities, or they may be second-tier stations in major cities.

Job duties within a specific occupation also vary by station size. Large stations generally operate with larger budgets, which allows for greater specialization. And some jobs exist only at large stations. For example, only large stations can usually afford to send correspondents to other cities.

Workers at smaller stations often have less specific job functions than their large-station counterparts. For example, reporters or camera operators at small stations may also function as editors or producers. Some small stations might use what is referred to as a "one man band": one person performing the role of an entire team. These workers go into the field, set up a camera, stand in front of it to report their story, and edit the segment before sending it to the studio.

High pay and prestige attract workers to large stations in populous cities. However, strong competition for jobs at these stations makes it difficult for all but a few—usually the most experienced workers—to secure these positions.



As a result, recent graduates are more likely to be hired by small stations. These stations provide workers with solid training, and there are a growing number of opportunities at smaller, local stations. Many cities, for example, now have 24-hour news stations that are dedicated specifically to local news.

The good news—and the bad

Television journalism is a career option with broad appeal. Anchors and reporters become the face of the news for their community—and the Nation. And behind-the-scenes employees are important in shaping the voice of the broadcast.

But some aspects that make these careers appealing also present challenges. The fast pace that keeps the work exciting also can be stressful. For example, reporters and anchors must be prepared to handle breaking news. As they rush to compile and broadcast the story, a reporter or anchor must also ensure its accuracy—which means evaluating quickly, with little room for error. Overzealous reporters who do not take the time to check facts may discover that their careers suffer.

Required travel, from none to much, varies by job and station size, among other factors. Many people enjoy traveling and might even consider the opportunity to do so a perk of the job. Enthusiasm often wanes, however, when travel becomes complicated, inconvenient, and lasts for extended periods, often to unappealing—or even dangerous—places.

News programs also have long, sometimes nonstandard, hours of operation. News cycles are 24 hours, 365 days a year. "If a story breaks on Christmas, you have to be there," says Ed Esposito of Akron, Ohio, chairman of the Radio-Television News Directors Association. And recent entrants into news careers usually work the least desirable schedules.



In their rush to cover breaking news, reporters must take care to ensure a story's accuracy.

Still, Esposito says, working in the news—whether broadcast or print—provides unique opportunities. "You are a witness to history," he says, "and you can express yourself and the feelings of your neighbors unlike you can in any other field."

Learning more

This article describes some, but not all, of the many occupations in TV news. Occupations in departments ranging from human resources to accounting are another important part of bringing the news to the viewing public. For more information about occupations in news broadcasting, visit your local library or career center. There are many books, periodicals, and other resources describing occupations in this field and how to prepare for them.

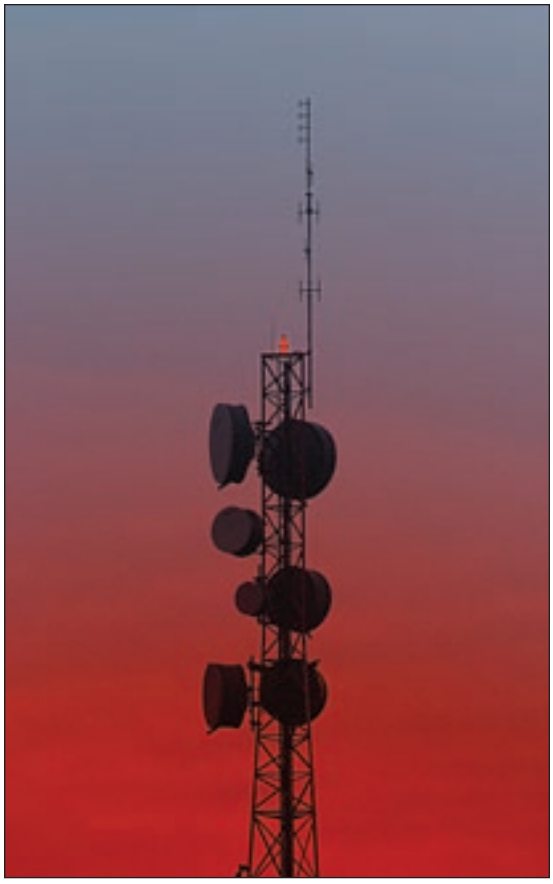
One resource in many libraries and career centers is the *Occupational Outlook Handbook*, also available online at **www.bls.gov/ooh**. The *Handbook* describes the nature of the work, required training, working conditions, employment, earnings, and job outlook of many TV news occupations.

In addition, the *Career Guide to Industries* profiles the broadcasting industry, which includes television news. To access additional information about this industry, go to **www.bls.gov/oco/cg/cgs017.htm**.

University journalism and broadcasting departments are another good source of information in this field. In addition, State employment services may also be helpful.

Many associations also provide information, including the following.

National Association of Broadcasters
1771 N St. NW.
Washington, DC 20036
(202) 429–5300
www.nab.org
nab@nab.org



Small stations and school-based studios have limited broadcast range.

The Society of Broadcast Engineers
9102 N. Meridian St., Suite 150
Indianapolis, IN 46260
(317) 846-9000
www.sbe.org
mclappe@sbe.org

College Broadcasters Inc.
UPS—Hershey Square Center
1152 Mae St.
Hummelstown, PA 17036
(713) 348–2935
Toll free: 1 (877) ASK-CBI1 (275–2241)
www.askcbi.org

Radio and Television News Directors Association
4121 Plank Rd., 512
Fredericksburg, VA 22407
(202) 659–6510
www.rtnda.org

Careers in forensics:

Analysis, evidence, and law



Elka Maria Torpey

In legal proceedings, a case is only as strong as its evidence. And whether that evidence is strong depends, in large part, on the work of forensic specialists.

The field of forensics is broad and involves many kinds of workers. Some of them are involved in crimesolving. Others, such as forensic social workers or forensic economists, help to resolve different legal issues.

But one thing all forensic specialists have in common is that their work is connected to the law in some way. These workers might have a background in life sciences, art, engineering, healthcare, social sciences, or a number of other fields. And although their specialized knowledge and job titles vary, all forensic workers have expertise related to a legal issue or case.

This article discusses forensics and some of the work it encompasses. The first section talks about what forensic workers do and lists selected specialties within the field. A second section describes places of employment, potential earnings and opportunities, and education and training requirements. A final section provides sources for finding more information.

Elka Maria Torpey is an economist in the Office of Occupational Statistics and Employment Projections, BLS. She is available at (202) 691-5719 or torpey.elka@bls.gov.



Forensics at work

Forensic workers apply scientific or other specialized knowledge to questions and issues related to the law. Their job duties fall into two basic categories: analyzing evidence and acting as expert witnesses in legal proceedings. Some forensic specialists concentrate primarily on one of these tasks, although many do both.

When analyzing evidence, forensic specialists often uncover details about past events—for example, a time of death, the cause of a car accident, or the source of a computer hacking. They might investigate clues about what happened and draw conclusions using their expertise. Whatever they find, they share with law enforcement and other personnel involved in the case or investigation.

Some workers focus largely on the study of physical evidence. Like anyone who works with items related to legal proceedings, these forensic specialists must be careful to document their receipt and handling of evidence. They must also record their observations.

Other forensic specialists look to the future. For example, a forensic economist might help to determine the impact that an injury will have on an individual's earnings potential. A forensic social worker might seek to ensure that a client receives the services that he or she needs.

When testifying as expert witnesses, forensic specialists present their findings in legal proceedings. They might need to prepare a report or exhibits that summarize their analysis and conclusions. Often, the information that forensic workers study is complex, so they must be able to explain technical concepts to judges, juries, attorneys, and others.

Forensic workers have diverse training, so their specializations vary. Job tasks depend on the area of expertise. Below are some examples.

Computer forensic investigators obtain and search computers and electronic records for evidence related to a case—for example, by recovering deleted files from a victim's computer or by probing a company's records for evidence of fraud. For more information, contact the International Association of Computer Investigative Specialists by writing P.O. Box 1728, Fairmont, WV 26555; calling toll free 1 (888) 884-2247; or e-mailing *cfce@cops.org*. Or, visit online at **www.iacis.com**. See also the *Occupational Outlook Handbook* statement on private detectives and investigators at **www.bls.gov/oco/ocos157.htm**.

Crime scene photographers take photographs of details related to a crime. They might, for example, photograph the crime scene, a victim's injuries, and other objects on the scene. Contact the International Association for Identification by writing 2535 Pilot Knob Rd., Suite 117, Mendota Heights, MN 55120; calling (651) 681-8566; or e-mailing *iaisecty@theiai.org*. Or, visit online at **www.theiai.org**.

Firearm and toolmark examiners study guns, bullet striations, spent bullet casings, and other markings to help determine the type of firearm used. These workers also can identify the particular tools used in a crime, such as those applied to a window pane for forcing entry into a building. Contact the Association of Firearm and Toolmark Examiners' president Thomas Price at the Kansas Bureau of Investigation by writing Forensic Science Lab, 1620 SW. Tyler St., Topeka, KS 66612; calling (785) 296-8309; or e-mailing *tl.price@kbi.state.ks.us*. Or, visit the association online at **www.afte.org**.



Forensic accountants examine financial transactions related to a legal case or issue to help identify fraudulent or illegal activity. Contact the Association of Certified Fraud Examiners by writing the Gregor Building, 716 West Ave., Austin, TX 78701; calling toll free 1 (800) 245-3321; or e-mailing *memberservices@ACFE.com*. Or, visit online at **www.acfe.com**. See also the *Occupational Outlook Handbook* statement on accountants at **www.bls.gov/oco/ocos001.htm**.

Forensic anthropologists specialize in human bones and use this knowledge to help determine information—such as age, height, and sex—related to skeletal or other remains. Anthropologists also help to find and recover these remains. Contact the American Board of Forensic Anthropology by writing California State University, Anthropology Department, 400 W. First St., Chico, CA 95929; or calling or e-mailing the board secretary, Elizabeth Murray, at (513) 244-4948 or *Elizabeth_Murray@mail.msj.edu*. Or, visit the association online at **www.theabfa.org**.

Forensic artists produce art-related works that may help to solve a case, such as sketches of suspects based on witness descriptions or computer-generated images of missing persons' age progressions. Contact the International Association for Identification by writing 2535 Pilot Knob Rd., Suite 117, Mendota Heights, MN 55120; calling (651) 681-8566; or e-mailing *iaisecty@theiai.org*. Or, visit online at **www.theiai.org.**

Forensic biologists examine organic substances and perform DNA analysis of samples, such as those of hair or blood. Information about forensic biologists may be available from organizations for related occupations. See, for example, forensic anthropologist and forensic pathologist.

Forensic chemists do chemical analyses of evidence that includes drugs, soil, and shards of glass. Information about forensic chemists may be available from organizations for related occupations. See, for example, forensic toxicologist.

Forensic document examiners analyze handwriting, printing, inks, and related types of evidence to verify authenticity of documents. Contact the American Board of Forensic Document Examiners, Inc. by writing 7885 San Felipe, Suite 122, Houston, TX 77063. Or, visit the association online at **www.abfde.org**.

Forensic economists use economic theories and models to help calculate monetary awards in legal cases. Contact the National Association of Forensic Economics by writing PO Box 394, Mount Union, PA 17006; calling toll free 1 (866) 370-6233; or e-mailing *Nancy@nafe.net*. Or, visit online at **nafe.net**.

Forensic engineers interpret physical evidence using their knowledge of engineering. They might, for example, reconstruct an accident to determine its cause—and, thus, help to establish which parties are legally responsible. Contact the National Academy of Forensic Engineers by writing 174 Brady Ave., Hawthorne, NY 10532; calling toll free 1 (866) NAFE-ORG (623-3674); or e-mailing executive director Marvin Specter at *specter@nafe.org*. Or, visit the academy online at **www.nafe.org**.

Forensic nurses provide nursing care to assault victims and collect physical evidence from them related to these incidents. They also aim to prevent future assaults through educational outreach programs. Contact the International Association of Forensic Nurses by writing 1517 Ritchie Hwy., Suite 208, Arnold, MD 21012; calling (410) 626-7805; or e-mailing *info@iafn.org*. Or, visit online at **www.iafn.org**.



Forensic pathologists are medical doctors who perform autopsies or other investigations to help determine a cause of death. Contact the National Association of Medical Examiners by writing 430 Pryor St. SW., Atlanta, GA 30312; calling (404) 730-4781; or e-mailing *name@thename.org*. Or, visit online at **www.thename.org**.

Forensic psychologists apply their knowledge of human behavior and thought processes in a variety of legal contexts. Examples include determining a defendant's mental competency, helping to develop a suspect's psychological profile, or assessing a witness's credibility. Contact the American Psychology-Law Society by writing, P.O. Box 11488, Southport, NC, 28461; calling (910) 933-4018; or e-mailing *APLS@ec.rr.com*. Or, visit online at **www.ap-ls.org.**

Forensic social workers help to improve the lives of people involved in the legal system. For example, they might meet with a child and later make recommendations in a custody case related to him or her, or they

might help to evaluate and provide social services to criminal defendants. Contact the National Organization of Forensic Social Work by writing 460 Smith St., Suite K, Middletown CT 06457; calling (860) 613-0254; or e-mailing executive director Paul Brady at *pbrady@nofsw.org*. Or, visit the organization online at **www.nofsw.org**.

Forensic toxicologists study bodily fluids and other evidence to help determine whether drugs, alcohol, or other toxic substances were involved in a crime or death. They also might perform drug testing for employers. Contact the American Board of Forensic Toxicology by writing 410 N. 21st St.,Colorado Springs, CO 80904; calling (719) 636-1100; or e-mailing immediate past president Yale Caplan at *ABFTOX@aol.com*. Or, visit the board online at **www.abft.org**.

Latent print examiners identify suspects by studying fingerprints, footprints, and related clues from a crime scene. Contact the International Association for Identification by writing 2535 Pilot Knob Rd., Suite 117, Mendota Heights, MN 55120; calling (651) 681-8566; or e-mailing *iaisecty@theiai.org*. Or, visit online at **www.theiai.org**.

Career investigation: Where they work, what they earn, and how they prepare

The specialties described above are just some of many opportunities in forensics. This section gives an overview of workers' employment, wages, and career preparation.

Employment. Forensic specialists work in a variety of places. Examples include police departments, government agencies, prosecutors' offices, law firms, insurance companies, hospitals, and consulting firms. Some specialists are self-employed, such as those who analyze clues and offer testimony as expert witnesses. Others hold jobs in addition to forensics-related assignments—for example, a full-time civil engineer who also works occasionally as an expert witness.

The U.S. Bureau of Labor Statistics (BLS) collects data on forensic science technician, a broad occupational title that encompasses many forensic specialties. As defined by BLS, these workers collect, identify, classify, and analyze evidence for criminal investigations. Some examples are firearm and toolmark examiners, forensic document examiners, forensic toxicologists, and latent print examiners. According to BLS, all types of forensic science technicians held about 12,030 wage and salary jobs in May 2007.

Competition is keen for jobs in forensics, due to the popularity of the work. However, demand for some of these workers is expected to increase. BLS projects that forensic science technicians will grow by 31 percent over the 2006–16 decade, faster than the average for all occupations, with job opportunities best for those who have a bachelor's degree in forensic science.

Earnings. Earnings of forensic specialists depend on the field in which they work. Forensic science technicians earned a median annual wage of $47,680 in May 2007, according to BLS. Earnings of other forensic specialists most likely compare to those of workers in their broader occupation. For example, earnings of forensic chemists would likely be similar to those of all chemists.

Some forensic specialists have sporadic earnings, especially those who are self-employed or who work on call. Expert witnesses, for example, might only be compensated when they work on a particular case. This compensation is often at a set hourly rate, which varies by specialty, geographic location, and other factors.

Skills and preparation. Precision, attention to detail, objectivity, problem-solving ability, and strong oral and written communication skills are important for forensic specialists. Many of these occupations also require specialists to remain analytical in potentially unpleasant or challenging situations, such as viewing a murder scene or studying an accident's wreckage.

Some forensic specialists, such as computer forensic investigators, have a background in law enforcement. And an understanding of, or experience with, the law and legal procedures can be helpful for many forensics careers.

Educational backgrounds of forensic specialists vary. But all require at least the minimum knowledge or training for workers in their field of specialization, and many have additional requirements. Becoming a forensic pathologist, for example, requires a medical degree, completion of a residency program, and board certification in pathology and in forensic pathology.

Most forensic specialists need at least a bachelor's degree and sometimes an advanced degree. Workers who provide expert analysis and testimony often have a Ph.D. or master's degree in their field of expertise. In addition, workers who are employed as expert witnesses usually need many years of work experience in their occupation, credentials from professional organizations, and sometimes, other achievements, such as published research. A solid professional reputation in their field is also essential.

Discovering more information

To learn more about forensics careers, or about the broader occupations discussed in this article, refer to the *Occupational Outlook Handbook*. The *Handbook* is available in many public libraries and online at **www.bls.gov/ooh** (search "forensic"). And BLS employment and earnings data on forensic science technicians is available in the *Handbook*'s coverage of science technicians, online at **www.bls.gov/ooh/ocos115.htm**.

For earnings data in occupations such as chemist or psychologist, refer to the Occupational Employment Statistics Web site at **www.bls.gov/oes**.

And for information about forensic science careers, contact:

The American Academy of
Forensic Science
410 N. 21st St.
Colorado Springs, CO 80901
(719) 636-1100
pgilliam@aafs.org
www.aafs.org.



Grab bag

Help yourself, help your community

Education isn't limited to the classroom. That's the message from Learn and Serve America, which encourages community service as a supplement to academics.

Learn and Serve America supports the service-learning projects of schools, community groups, and other institutions through grants, training, and research. And, for students who want to start a new program in their community, Learn and Serve America provides resources to help projects get off the ground.

Students seeking volunteer opportunities in their communities can find a link to the USA Freedom Corps, which lists thousands of service projects across the country. First-time volunteers will find practical advice, such as how to find a worthwhile cause or balance volunteering with schoolwork. And students with exemplary service records might be eligible for Learn and Serve America's Presidential Freedom Scholarship or other awards.

For more information, write to Learn and Serve America, 1201 New York Ave., Washington, DC 20525; call (202) 606-5000; e-mail *LSAabout@cns.gov*; or visit online at **www.learnandserve.org**.

Federal work for students

Looking for a Federal job can be daunting, especially if you're still in school. Fortunately, the U.S. Government's employment Web site, **www.usajobs.gov**, has a sister site geared toward student jobseekers.

That site, **www.studentjobs.gov**, gives students access to the same jobs available on USAJobs. StudentJobs also provides the same online features, including tools to assess career interests and to create and save resumes for multiple job applications.

But StudentJobs provides additional resources for career-seeking students. For example, StudentJobs lists the mission of each Federal agency and highlights some careers that might be available. There are also quick links to opportunities, including internships and special programs that may be available only to students and recent graduates.

Both StudentJobs and USAJobs are managed by the Office of Personnel Management. For more information, write to the Office of Personnel Management, 1900 E St. NW., Washington, DC 20415; call (202) 606-2525; e-mail *USAJOBS@opm.gov*; or visit online at **www.opm.gov**. (And in the summer 2004 *Occupational Outlook Quarterly*, see "How to get a job in the Federal Government," online at **www.bls.gov/ooq/2004/summer/art01.pdf**, for general information about your Federal job hunt.)

Scholarships for auto aficionados



Your interest in cars might lead to cash for your studies. The Automotive Hall of Fame offers more than $20,000 in scholarships annually to students pursuing auto-related study.

The organization awards several scholarships. Some of the scholarships are for a specific career field, such as automotive engineering or the automotive replacement parts industry. Other awards are more general.

All applicants must be full-time students at an accredited college, university, or trade school and have a GPA above 3.0. Individual scholarship requirements vary, but all applicants must write a statement explaining their interest in automotive work and their career goals. Financial need is considered for most scholarships. Mailed applications must be postmarked no later than June 1.

For more information or for application materials, write to the Automotive Hall of Fame, 21400 Oakwood Blvd., Dearborn, MI 48124 (include a self-addressed, stamped envelope); call (313) 240-4000; or visit online at **www.automotivehalloffame.org/scholarships.php**.

First to college



When it comes to college, students and would-be students often ask family members or friends for advice. But this guidance is harder to find for those who don't have college-educated family members. First In The Family helps them get advice from people who've faced the same challenge.

First In The Family is a resource for both current and aspiring college students. Its Web site devotes a section to high school students and addresses the issues they face when considering college. Another section assists college students in adjusting to their new environment and responsibilities.

Student advice on the site covers a variety of topics, including getting into college, managing family responsibilities, and balancing paid work with schoolwork. There are also resources for summer programs and financial aid.

For more information about First In The Family or its parent site, What Kids Can Do, write to What Kids Can Do, P.O. Box 603252, Providence, RI 02906; call (401) 606-5000; e-mail *info@whatkidscando.org*; or visit online at **www.firstinthefamily.org**.

Park rangers: Protecting, preserving, and educating

Don't want to work inside all day? If you're a park ranger for the National Park Service, you could spend much of your workday outdoors at one of nearly 400 locations nationwide.

Park rangers work as law enforcement officers, nature experts, or both. They protect national parks and other federally managed areas by investigating complaints, enforcing laws and regulations, performing searches and rescues, and helping to direct forest- and fire-control efforts. These tasks are usually handled by park rangers working full time, year round.

Other park rangers work as seasonal employees or volunteers. These rangers might be involved in visitor outreach programs—aimed, for example, at spurring interest in local wildlife by leading guided tours or printing informational brochures. Experience gained from seasonal and volunteer work often leads to permanent employment.

For more information on working as a park ranger, write to the National Park Service, 1849 C St. NW., Washington, DC 20240; call (202) 208-6843; or visit its Web site at **www.nps.gov/personnel**.



More than food and drink: Careers in restaurants

Drew Liming

In restaurants, the food's the thing. But the drinks, presentation, service, and ambience are important, too. And it's up to restaurant workers to provide diners with a square meal that's well rounded.

The hard work of the kitchen, bar, and dining-room staff gets food and drink from menu to mouth. Some of the more visible workers may include waiters and waitresses (also known as servers), busboys, hosts and hostesses, bartenders, and sommeliers. Less visible restaurant staff includes chefs, cooks, managers, dishwashers, and janitorial and office staff. All have a role in helping to make a diner's experience pleasant.

This article begins with an overview of the restaurant industry. It then looks at four occupations—cooks, executive chefs, servers, and bartenders—and describes their job duties; employment, wages, and outlook; and skills and training. You'll learn what working in a restaurant is like, including its challenges and rewards. Suggested resources for additional information on restaurant careers are at the end.

Drew Liming is an economist in the Office of Occupational Statistics and Employment Projections, BLS. He is available at (202) 691-5262 or liming.drew@bls.gov.



The restaurant industry

The restaurant industry doesn't just feed people; it also employs them. In fact, the food and drinking places industry, as defined by the U.S. Bureau of Labor Statistics (BLS), had more than 9 million workers in 2007, making this industry one of the largest employers in the country.

The food and drinking places industry includes snack bars, fine dining—and everything in between. Limited-service eating places, such as cafeterias and fast food establishments, employ about 43 percent of workers in food and drinking places. The smallest segment of the industry comprises special food services, such as caterers and food-service contractors, and drinking places, including pubs and nightclubs.

Full-service restaurants—in which diners order, are served, and eat while seated—employ almost 48 percent of workers in the food and drinking places industry. It is this latter type of establishment that is the focus of the occupations covered in this article.

Popular belief holds that new restaurants struggle to survive, and many close their doors within the first couple of years. Although restaurants are difficult to run, their failure rate is reported to be about 60 percent—similar to the failure rate for all new businesses.

Restaurant occupations

The following pages describe the job duties, employment, wages, outlook, and skills and training of cooks, executive chefs, servers, and bartenders. Job titles vary depending on the type and size of the restaurant, but workers in these occupations have some similar responsibilities.

High turnover in most restaurant occupations means that prospective workers usually have excellent prospects. And because restaurants are in nearly every town or city, jobs should be widely available.

Cooks

Restaurant cooks turn the food orders they receive from servers into appetizing cuisine—often while racing the clock. Some cooks are referred to as chefs, usually because they have additional skills or responsibilities. (See, for example, executive chefs, described in more detail beginning on the next page.)

For cooks, the kitchen's pace becomes hectic before diners arrive. "You're always busy," says Jon Gatewood of Ludlow, Vermont, who has worked as a cook. "There were times when we were finishing prep work even as the doors opened for business."

Cooks follow recipes in preparing, measuring, and mixing ingredients—and, often, testing the final product—to create menu items. And to make some dishes, cooks might need to arrive several hours before serving begins. In addition to cooking, preparations might include a daily briefing from the executive chef on menu changes or kitchen performance. Cooks also use their prep time to ensure that all of the equipment in their work areas is clean and fully functional.

To fill diners' orders, cooks either prepare a dish from scratch or combine ready-made items.



Restaurant cooks use special, industrial-grade equipment to prepare food. For example, they might use step-in coolers, high-quality knives, and meat slicers and grinders. And most restaurants have multiple sets of heavy-duty ovens and stovetop burners that cooks use to prepare dishes simultaneously.

In most kitchens, cooks are assigned to different stations, such as deep fryer, broiler, or vegetables. Some restaurants may also have cooks who specialize in a type of food and work on a single course, such as pastries or soup. Cooks may collaborate on a dish or work individually. Either way, they frequently work together under the direction of executive chefs or their assistants, sous chefs.

The true test of kitchen skills is in efficiently filling orders. Cooks receive diners' orders, called meal tickets, from servers. To complete the ticket, cooks either prepare a dish from scratch or combine ready-made items. Many diners expect that when a server brings their order from the kitchen it will be pleasing to the eye, as well as to the palate. It is the cook's task to arrange the food into an artistic presentation.

During mealtime in a busy restaurant, cooks are constantly in motion and must often change tasks while working on multiple meal tickets simultaneously. It's a steady pace that lasts awhile. "We'd be very busy for 3 or 4 hours," says Gatewood of his work as a cook. "There really weren't any breaks."

Even with all that activity, cooks must ensure that their work areas remain tidy and hygienic. Doing so saves time and money: It allows them to work efficiently without having to search for utensils or ingredients, and it prevents the need to remake a meal ruined by unsanitary conditions.

After serving hours, cooks also must clean the kitchen. Depending on the restaurant, cooks might supervise cleaning workers or do the cleanup themselves. And cooks sometimes use this time to prepare for the next day's work.

Employment, wages, and outlook. According to BLS, there were almost 700,000 full-service restaurant cooks employed in the United States in May 2007. Their median annual wage was $20,970 in May 2007, with the lowest 10 percent earning $15,040 or less. The highest paid 10 percent earned $29,610 or more.

Employment of restaurant cooks is projected to grow 12 percent overall between 2006 and 2016, about as fast as the average for all occupations.

Skills and training. Restaurant cooking requires a combination of skills and knowledge. Some of these are best acquired on the job, but others may be learned through formal training.

Some kitchen skills, such as basic cooking ability, may be expected even for entry-level workers in these jobs. But succeeding as a restaurant cook requires more than culinary talent. For example, collaborating with other cooks requires strong communication and teamwork skills. Good manual dexterity, attention to detail, and the ability to do many tasks at once, often quickly, are also essential.

Finding a mentor is a great way for young cooks to learn. And, contrary to popular belief, not all chefs are temperamental. "My first mentor never exhibited that classic chef temper you see on television," says Gatewood. "He was always very level-headed and never lost his cool on the line, and I modeled my career on him."

Because many cooking skills are learned on the job, a good mentor can impact a cook's development. A mentor is also useful as a career resource, providing both introductions to other chefs and recommendations for jobs.

To refine skills and gain credentials, cooks may also attend culinary schools and other credential programs. Culinary schools and programs teach different cuisines and techniques—and may help give young cooks an edge in jobseeking. Even experienced cooks may benefit from taking classes to hone and update their skills.

As with any job, however, a cook's success might start with a lucky break. Dean Thomas of San Diego, California, got his first cooking job while working as a restaurant dishwasher. One day, he was asked to fill in for a cook and was told to join the line. Thomas, now certified as both an executive chef and a culinary educator, has been in the kitchen ever since.

Executive chefs

The domain of executive chefs spans both the kitchen and the office. Executive chefs usually have years of experience as cooks and, after finding success on that level, are ready to assume responsibilities outside of the kitchen.

Although both executive chefs and cooks are kitchen experts, executive chefs are also responsible for behind-the-scenes work. "The primary difference between a chef and a cook is paperwork," says executive chef Steve Armstrong of Enfield, North Carolina. "An executive chef does all the things to keep the restaurant running that you don't see on the plate."

Thomas agrees, specifying the executive chef's broad range of possible duties. "Any executive chef in any operation needs to be a jack-of-all-trades," he says. "Sometimes you're a chef. Other times, maybe a human resources consultant, purchaser, businessman, or health inspector." In some establishments, these tasks are handled by restaurant managers or owners.

Executive chefs are divided into two categories: "working" and "nonworking." The two types differ in how much time they spend in the kitchen and on administrative duties. Working executive chefs prepare food alongside their cooks during mealtime. Nonworking executive chefs, especially in larger restaurants, are busy with administrative duties.

Executive chefs make most of the restaurant's administrative decisions. These decisions include designing the menu, setting



Executive chefs delegate some tasks to sous chefs and cooks.

prices, reviewing food and beverage purchases, and planning special menu items. Most executive chefs are also responsible for interviewing and hiring prospective kitchen workers and investing in employee development and training.

During mealtime, the chef may do administrative work or, depending on how busy the restaurant is, help the cooks in the kitchen. Executive chefs can't oversee everything that occurs during mealtime, so they must delegate some tasks to sous chefs or cooks.

After the day's cooking shifts are complete, the executive chef gives and receives feedback from cooks, initiates cleanup, and logs the day's sales.

Employment, wages, and outlook. BLS data show that in May 2007, there were about 50,000 chefs and head cooks—the occupation that includes executive chefs—employed in full-service restaurants in the United States. They had a median annual wage of $34,970 in May 2007, with the lowest earning 10 percent making $20,720 or less. However, chefs and head cooks may also earn bonuses, based on sales volume and revenue. The highest paid 10 percent earned $60,770 or more.

Employment of chefs and head cooks is projected to grow 8 percent overall during the 2006–16 decade, more slowly than the average for all occupations. But most of the new jobs for these workers are expected to be in full-service restaurants.

Skills and training. Running a kitchen requires both general skills and specialized knowledge. Most executive chefs have gained these skills and knowledge through training or experience working as cooks or in other restaurant jobs.

Communications skills, especially for leading and directing the kitchen staff, are important for executive chefs. "Long-term success results from awareness of other people," says chef Scott Neuman of Portland, Oregon. "You have to be able to get your staff to work well as a team and convince them we're all in this together." Executive chefs also need to be effective communicators to negotiate with vendors and suppliers.

Prospective executive chefs should also learn the business of restaurant work. Administrative skills, such as accounting and employee counseling, are important to keep the restaurant running. Executive chefs must also know how to direct staff and delegate tasks. Many executive chefs first gain managerial experience by working as sous chefs.

Cooks who are interested in advancing to executive chef positions should commit to practicing new recipes. Because executive chefs are often responsible for developing a menu, they must be able to create unique meals that are easily reproduced.

As with cooks, executive chefs don't necessarily need to attend school. However, credential programs provide their students with specialized knowledge. And continued learning keeps chefs updated with new techniques, business models, and recipes.

Servers

Servers are a restaurant's frontline workers. Their interactions with customers may turn new diners into regular ones. What comes from the kitchen may get diners' attention, but

the serving staff gives them the restaurant's first impression.

As the link between the dining room and the kitchen, servers affect a diner's experience. Servers interact with diners several times per visit, but knowing when and how to approach each table isn't always easy. "Consumers have an internal clock that says when they expect to receive service," says server Paul Paz of Beaverton, Oregon. "Anticipating customers' needs is a difficult skill to learn."

Shortly after diners are seated, servers greet them and may take orders for drinks and appetizers. Because servers attempt to customize dining experiences, they tailor their behavior to diners' preferences. For example, some diners enjoy conversing with their server; others prefer more restraint. The best servers figure out their customers' preferences and adjust accordingly.

Servers usually stop by a table several times during a meal: to take food and drink orders; to present drinks and food, sometimes in several courses; to check on diners during the meal; and to bring the bill after everyone has finished eating. In most restaurants, dining tables are divided into groups, or stations, based on the number of servers working the shift. Servers wait on the diners seated at tables in their assigned station.

When diners are ready to order, servers must be prepared to answer questions about menu items—and to ask diners to choose among options that may be available to them, such as types of salad dressing or side dishes. Diners who are indecisive may ask servers for advice. If this happens, servers use their knowledge of the restaurant's dishes to suggest items that fit the diners' tastes.

Servers bring food to diners' tables, sometimes with flourish. Knowledgeable servers might describe how the food was created in the kitchen. "It's not just about how the food tastes," says Bernard Martinage, president of

To customize the dining experience, servers assess diners' preferences and tailor interactions to match.



the Federation of Dining Room Professionals in Fernandina Beach, Florida. "Diners want dinner theater."

Servers check on tables throughout the meal to ensure that diners are satisfied and to remove any finished items. Toward the end of the meal, servers may take orders for desserts or after-dinner drinks. After these are finished, the server brings diners the bill and collects payment.

The extent of service provided by servers may depend on the type of restaurant, its volume of business, and the availability of floor staff. For example, some servers know which wines fit well with certain foods. But at other restaurants, such suggestions are the job of the restaurant's sommelier, an expert in pairing food and wine. In addition, some restaurants focus server duties more narrowly by assigning different staff members to deliver food, refill water glasses, or clear tables.

Employment, wages, and outlook. According to BLS, there were about 1,750,000 waiters and waitresses (servers) employed in full-service restaurants in the United States in May 2007. Their median annual wages, including tips, were $15,800 in May 2007. The lowest earning 10 percent made $13,090 or less, and the highest paid 10 percent earned $27,700 or more.

Those data include wages for many servers who are in the occupation temporarily; career servers at upscale restaurants have the potential for higher earnings. For most servers, higher earnings result from receiving more in tips, not higher hourly wages. Because tips are usually calculated as a percentage of diners' bills, servers at expensive restaurants generally earn more.

Employment of waiters and waitresses is projected to increase 11 percent overall during the 2006–16 decade, about the average for all occupations.

Skills and training. Most servers receive their training on the job, but when hiring, employers often seek out applicants with some basic skills. These abilities include interacting well with others, following safe food-handling procedures, and carefully maneuvering through a busy dining room. Servers must also be personable, well groomed, and neatly dressed and should enjoy interacting with diners.

Restaurants may differ in their specific practices, but many serving techniques are common. And some techniques that are taught on the job may require practice outside working hours. For example, maneuvering trays full of food can be difficult. Paz trains by carrying a tray with multiple plates, each with several golf balls on it, to simulate a sauce or delicate part of a dish. As he walks around a room, Paz keeps the tray balanced to prevent the golf balls from rolling around on the plates.

Many servers gain experience in informal restaurants and use their experience to advance to more prestigious—and pricey—restaurants. Skilled servers are more likely to make a career in fine dining.

In addition to getting on-the-job training, servers can enroll in certification programs. The number of these programs has been increasing as restaurants place more emphasis on training their dining-room staff. "The industry has been becoming more formal," says Martinage. "And the number of education programs is rising to meet the needs of restaurant managers and servers."

Not surprisingly, the number of career servers with culinary and college degrees is also increasing. Upscale restaurants may prefer servers who have culinary degrees: The training helps servers translate diners' desires into kitchen terminology that cooks can understand. And sometimes, culinary school students might start training to be chefs but discover that they prefer interacting with diners.

In some States, servers must pass an alcohol server education course before being certified to serve alcoholic beverages. States also vary in their minimum age requirements for serving alcohol.

Bartenders

Bartenders in restaurants pour and serve mixed drinks, beer, wine, and other beverages

to restaurant diners and bar patrons. Although they're working hard, bartenders also enjoy the social scene. "It's almost like being a rock star," jokes bartender Christopher Shelley of Bethesda, Maryland, adding, "You meet a lot of people, and it can be a ton of fun."

During busy periods, many people might order drinks at the same time, and servers also place drink orders from diners. So, bartenders must know how to mix a variety of drinks quickly and efficiently, because they usually don't have time to consult recipes in preparing orders. Their task is even more difficult when they receive large numbers of drinks, all of which may require different ingredients and procedures to make.

Attending to diners at the bar or in the lounge area requires the bartender to perform the duties of a server: taking food and drink orders, relaying food orders to the kitchen, serving the order, and delivering the bill.

In addition, however, bartenders are responsible for preparing and serving drinks—not only for those customers, but also for others in the bar and restaurant. "Sometimes, I'll be serving several cocktail customers and the bar at the same time," says Shelley. "I have to make sure everything is running smoothly at all locations."

Because bartenders focus on preparing drinks and serving customers, they have few administrative duties. And during a slow shift, a bartender may take stock of supplies and write a list of needed items for the barbacks—bartending assistants who don't serve customers. Most administrative decisions involving the bar are made by executive chefs or kitchen managers.

Employment, wages, and outlook. There were almost 200,000 bartenders employed in full-service restaurants in the United States in May 2007, according to BLS. They had median annual wages, including tips, of $17,550 in May 2007. The lowest earning 10 percent made $13,850 or less, and the highest paid 10 percent earned $31,890 or more.

Like servers, bartenders depend on tips for a large part of their earnings. These tips vary, depending on the shifts a bartender works. In a popular restaurant bar on Friday and Saturday nights, tips may be substantial. But there is keen competition for these lucrative shifts, and they may be assigned based on seniority. Bartenders at upscale restaurants also usually earn more because their tips, based on a percentage of the bill, are likely to be higher.



Bartenders perform the duties of a server when attending to diners seated at the bar.

Employment of bartenders is expected to grow 11 percent overall between 2006 and 2016, about the average for all occupations.

Skills and training. Bartending requires a mix of personality, skills, and on-the-job training; experience is also helpful. Formal training programs are available, but attendance in them is largely voluntary. Bartenders also might have to meet State requirements.

Bartenders should be friendly and approachable. Those who are not are unlikely to be tipped well and will find it difficult to advance to more prestigious restaurants. "A bartender's success is largely determined by personality," says Shelley. "I've known people who were extremely fast and could handle large-volume orders but just didn't have the right personalities."

Some skills are necessary for bartenders to have before they come to the job. For example, they need to have excellent hand-eye coordination to work in a small area surrounded by glass. Bartenders must also be

able to memorize complicated drink orders and reproduce them without hesitation.

Bartenders learn other skills, especially those specific to the occupation, on the job—often through practice. To make mixed drinks, for example, bartenders must master the pour count: the number of seconds it takes a bottle's spout to pour one ounce of liquid. Because every type of spout pours at a different rate, bartenders practice until they are comfortable with pour counts.

Restaurant experience isn't necessarily a prerequisite for bartending jobs, but it helps. Many bartenders have previous experience interacting with customers as servers, for example. Shelley was a senior server when he was approached about a bartending position. He first worked as a bartender on slow shifts, to familiarize himself with the bar and its duties, before taking busier shifts. Other bartenders may start as barbacks to gain experience.

Bartending schools are another way to learn basic skills and recipes. These schools, however, are not formally recognized and are not a substitute for practical experience. But bartending schools may offer classes in specialized skills. For example, flair bartending, in which bartenders entertain guests by manipulating bar tools and bottles in creative ways, might be difficult to learn without instruction.

Like servers, bartenders must be of a legal minimum age to serve alcohol; age requirements vary by State. Some States also require that, to serve alcohol, bartenders have certification from State-approved schools.

The restaurant lifestyle

For those who want to make a career in restaurant jobs, satisfying diners makes the hard work rewarding. Restaurants play host to many important life events, including engagement proposals, business meetings, and birthday and anniversary celebrations. "We help create memories for people," says Martinage. "Every day, we are a part of those memories."

But making a career in a restaurant isn't easy. Workers in both the kitchen and dining room are subject to two major challenges common in restaurant jobs: high levels of stress and often-erratic schedules.

Stress

Satisfying the different demands of many diners can create a stressful environment for restaurant workers. Many restaurant employees enjoy the adrenaline rush, but even longtime workers admit it can be overwhelming at times.

Different restaurant occupations have different sources of stress. Cooks, for example, need to produce quality food consistently. And unlike many jobs, which may have deadlines every couple of days or weeks, kitchen work must sometimes be completed within minutes—and successfully—every time. "You have to get excited about every order, day in and day out," says chef Neuman. "You're only as good as the last plate you've put out."

But it's not only cooks who feel the kitchen's heat. Executive chefs have even more responsibility. To many chefs, the added authority is appealing, but it can also be stressful. "When you're the executive chef, you're the king," executive chef Armstrong says. "But that means when something goes wrong, it's always your fault."

To experience kitchen stress during its busiest time, Neuman recommends job shadowing. He suggests that would-be cooks, especially those considering culinary school, contact a local restaurant and ask to shadow a chef or cook to get a feel for the kitchen's atmosphere during mealtime.

For servers and bartenders, interaction with customers is a common source of stress. These workers rarely have downtime, yet they are expected to display a pleasant demeanor in all circumstances. "We're performers, and we have to keep a smile on our faces even when we're stressed or working hard," says server Paz. "It can be very difficult, especially for new workers."



Even with the stress of a restaurant's fast pace, many workers enjoy the friendly atmosphere.

Schedules

In most restaurants, staff schedules are variable. Workers must cover shifts on weekends and holidays, as these are often restaurants' busiest days. And on these occasions, creative workers still find ways to please diners. Server Paz, for example, brought a digital camera to work one Thanksgiving and offered to take family pictures of his diners. "Everyone was thrilled by the offer," Paz says. "It's what the hospitality business is all about."

Working on holidays may sound difficult, but even normal days in a restaurant are long. A cook's shift, for example, may require being at the restaurant for up to 10 hours—with little time for rest in the rush to meet diners' demands.

Executive chefs frequently work even longer than cooks. Most do their inventory and planning work in the mornings and stay until dinner service is finished. Many culinary students, unprepared for an executive chef's workload, find the experience an eye opener. "These are long hours," warns executive chef Thomas. "It's not all the glory you see on television."

Servers and bartenders usually have flexible schedules, and some may work a couple of shifts at multiple restaurants each week. Bartenders' shifts are both long and unusual. Shelley, for example, tends bar for 12-hour shifts on Fridays and Saturdays, from 4 p.m. to 4 a.m. And because weekend nights are usually busy, Shelley frequently finds himself on his feet the entire time.

The inconsistent work has other drawbacks for restaurant workers. Many, especially servers and bartenders, receive hourly wages plus tips instead of salaries, and few get benefits through their employers. The result is that many restaurant workers are paid only for the hours they work and aren't paid on days they are sick, for example. Usually, large corporations are the only employers that may provide benefits.

Still, not all restaurant workers regard the stress and long hours of their jobs as drawbacks. For example, many cite the strong bonds between coworkers that result from the challenging circumstances. "At times, the



pressure can make working in a restaurant very regimented and militaristic," says executive chef Gatewood. "But the atmosphere can also be relaxed and family-like, because everyone usually becomes good friends."

For more information

To learn more about jobs in restaurants, begin paying closer attention to the work atmosphere when you dine out. But you'll also want to visit your public library, school counseling office, or career center. To find a career center near you, go to **www.servicelocator.org**; call toll free, 1 (877) US2-JOBS (872-5627) or TTY 1 (877) 889-5627; or e-mail *info@careeronestop.org*. The Web site also has links to career exploration tools and other job-related resources.

Another helpful source for career information, available at many libraries and career centers, is the *Occupational Outlook Handbook*. The *Handbook* is also available online at **www.bls.gov/ooh**. This resource has detailed descriptions of hundreds of occupations, including some of the ones described in this article.

Articles in previous issues of the *Occupational Outlook Quarterly* describe occupations related to restaurants. "You're a *what*? Sommelier," online at **www.bls.gov/ooq/2003/summer/yawhat.pdf**, profiles a restaurant worker whose expertise is pairing wine with food. "You're a *what*? Research chef," online at **www.bls.gov/ooq/2002/fall/yawhat.pdf**, describes the work of a chef who develops new recipes for a restaurant chain.

For first-hand information about what it's like to work in a kitchen, contact a local restaurant and ask to speak with the workers there. Job shadowing, in which you observe a trained worker in an occupation that interests you, may help you decide if a restaurant career is for you.

The following associations provide general information for those interested in restaurant jobs:

National Restaurant Association
1200 17 St. NW.
Washington, DC 20036
(202) 331-5900
info@restaurant.org
www.restaurant.org

Food Service Interactive
7702 E. Doubletree Ranch Rd., Ste. 300
Scottsdale, AZ 85285
(623) 433-9690
www.foodservice.com

The following associations provide certification information:

National Restaurant Association
Educational Foundation
175 W. Jackson Blvd., Ste. 1500
Chicago, IL 60604
Toll free: 1 (800) 765-2122
info@restaurant.org
www.nraef.org

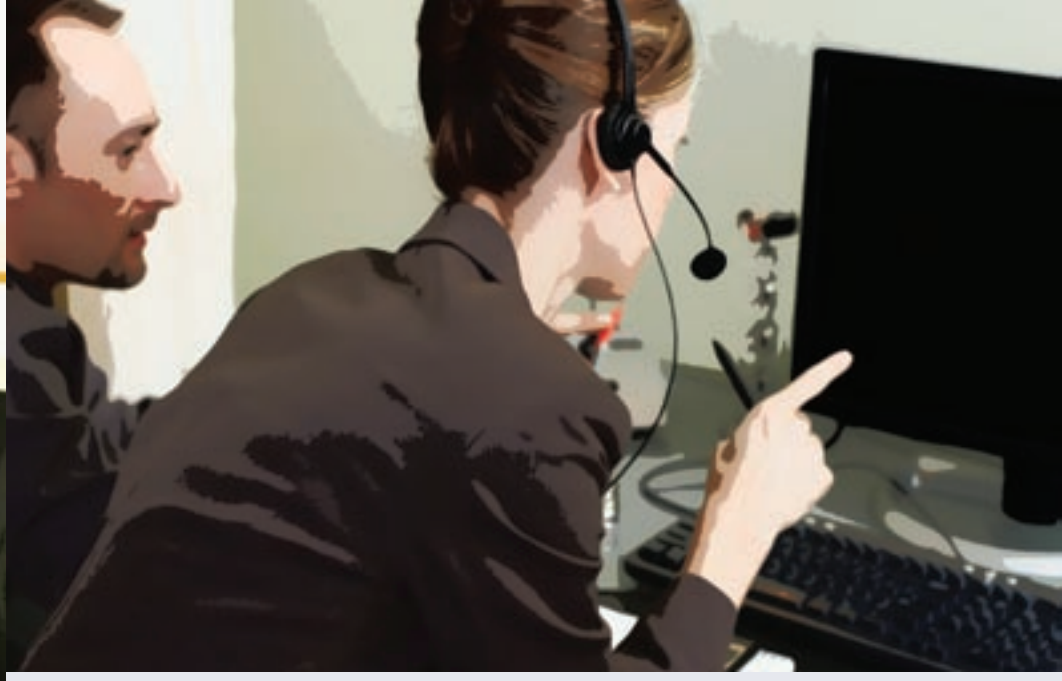
American Culinary Federation
180 Center Place Way
St. Augustine, FL 32095
Toll free: 1 (800) 624-9458
helpdesk@afcchefs.net
www.acfchefs.org

Federation of Dining Room Professionals
1417 Sadler Rd., No. 100
Fernandina Beach, FL 32034
Toll free: 1 (877) 264-FDRP (3377)
info@fdrp.com
www.fdrp.com

National Bartenders' Association
(770) 864-7811
bartender@craver.org
www.bartender.org

WaitersWorld
14314 SW. Allen Blvd., No. 507
Beaverton, OR 97005
(503) 524-0788
tips@waitersworld.com
www.waitersworld.com





Employment, trends, and training

Benjamin Wright

Amari and Aaron have always loved computers. Growing up, Amari spent much of her free time building computers and fixing technical problems. Aaron enjoyed writing simple programs. Both planned to enroll in the computer science department at their local universities and pursue careers in information technology.

But now, as high school graduation draws near, neither student is sure what to do. They've heard about computer jobs being moved to other countries, even as technology seems pervasive in everyday life. Will there be opportunities in information technology? Will jobs be moved abroad? Is computer-related training a bad investment of time and money?

Benjamin Wright is an economist in the Office of Occupational Statistics and Employment Projections, BLS. He is available at (202) 691-5724 or wright.benjamin@bls.gov.





in information technology

Amari and Aaron are not alone in their uncertainty. In recent years, students, workers, and jobseekers have received mixed signals about the job market for information technology. Periods of strong job growth have been punctuated by brief periods of employment declines. Optimism about information technology, commonly referred to as IT, as a career field has been tempered by concerns about job security and competition abroad. Jobseekers and students, unsure of what the future holds, are understandably confused about the direction in which IT careers are headed.

But, as this analysis shows, the IT field continues to offer opportunities for jobseekers who have the right skills and training. The good news for Amari and Aaron is that most IT occupations are expected to remain in high demand and have strong job growth.

Data in this article are from the U.S. Bureau of Labor Statistics (BLS)—including the Current Population Survey and the Occupational Statistics and Employment Projections program. Keep reading for an overview of some information technology occupations studied by BLS. There's also a discussion of past employment, future prospects, and education and training for IT workers. A final section provides sources of more information.

Who are IT workers?

There is no universal definition of the IT workforce. For purposes of this article, IT workers are grouped into 10 selected occupations commonly identified for their computer-related focus. These occupations are in nearly all areas of the country and in nearly all types of organizations. Workers in most of the occupations are in demand—and, as a group, earned wages that were almost twice the national average of $40,690 in May 2007, according to BLS.

Computer and information research scientists explore new ideas in information technology. They create and refine the theories that are the starting point for many computer products and systems.

Computer and information systems managers are in charge of the computer systems in an organization. They determine which IT products the organization needs—such as computers, networks, and software—and supervise the workers who operate these products.

Computer hardware engineers design computer hardware, such as computer chips, circuits, and drives. These engineers' products are in personal computers, cellular phones, and cars, among other equipment.

Computer software engineers design computer software. They analyze the needs of computer software users and then design, develop, and test software to meet those needs.

Computer programmers translate the designs of software engineers into computer code—a language that the computer understands. This code tells the computer what to do, such as to navigate to a Web page when the user clicks on a link to that page.

Database administrators determine the best way to organize and store data. They deploy and maintain database software systems and take steps to ensure that the data remain secure.

Network systems and data communications analysts plan, design, and test computer systems. They also design new ways for computer systems to share information.

Computer systems analysts help businesses and other organizations select the best products for their computing needs. They determine which types of systems and software will help an organization reach its goals and recommend ways to keep the systems safe.

Network and computer systems administrators oversee the computer networks and systems in an organization. They make sure that computer systems run efficiently, and they maintain system security.

Computer support specialists fix technical problems for computer users. Some of these workers run diagnostic programs and perform network maintenance. Others answer users' technical questions or install computer equipment in customers' homes or businesses.

IT employment facts and fallacies

Job prospects in information technology, like those in many career fields, vary by occupation. Some computer jobs were eliminated when their tasks moved overseas—a business practice known as offshoring. Although offshoring affected only a few IT occupations, many people were concerned that information technology as a whole was in distress.

Technology jobs timeline. In the 1990s, technology became a larger part of everyday life. As personal and business use of computers and the Internet grew, so did demand for IT services. Employers hired IT workers at a rapid pace throughout the decade to meet this demand.

Then, in 2001, employment in IT services began to decline. Studies suggest that many students believed that this decline would be permanent. Students feared that demand for IT services would fall, resulting in poor job prospects for IT workers. And when reports of IT offshoring became widespread, students began to believe that a significant number of technology jobs were being moved abroad. Enrollment in computer-related majors fell.

However, Current Population Survey data show that these concerns were largely unfounded. Overall, employment in IT occupations grew by about 8 percent between 2001 and 2007.

In 2001, IT employment reached about 3.54 million workers. In 2002, that number dipped to about 3.37 million. This decline was at least partly the result of the downturn in Internet-related ventures.

But in 2003, employment began to increase again, and by 2006 there were more IT workers in the United States than the previous high in 2001. Employment continued to go up, reaching 3.84 million workers in 2007.

As these data show, the demand for IT workers continued to increase over time, despite offshoring. An analysis of the factors

affecting employment helps explain why.

Factors affecting employment. Recent IT employment patterns have varied by occupation. This variation is a result of several factors, including demand for certain IT services, increasing efficiency in particular fields, and different susceptibilities to offshoring. For example, employment of database administrators, computer and information systems managers, and computer software engineers all grew by 22 percent or more between 2001 and 2007. Computer scientists and systems analysts, network and computer systems administrators, and network and data communications analysts also saw employment growth, with increases between 8 and 16 percent over the same period.

Employment in some occupations did fall, however. Computer programmers and computer support specialists, for example, both saw job losses of more than 6 percent. These two occupations are more susceptible to offshoring than other IT occupations, according to BLS, because their tasks are routine, can be done by telephone or over the Internet, require little interaction with other types of workers, and require little familiarity with the cultural practices of customers.

Although offshoring may have contributed to job losses in those occupations, it is likely that other factors also played a part in their employment declines. For example, some programming and support functions that were previously performed by IT workers have been automated. This automation has lowered demand for workers in these occupations, resulting in job losses.

Apart from those two occupations, offshoring's impact on technology jobs has probably been limited. A report by the Association for Computing Machinery states that in previous years, IT jobs in which workers need comparatively lower levels of skill—such as programmers and support specialists—were the primary focus of offshoring efforts; meanwhile, other occupations that require higher level skills were largely unaffected.

Furthermore, the same factors that allow U.S. firms to move work to other countries allow foreign businesses to hire workers in the United States, thus creating jobs. Raymond R. Panko, a professor of IT management at the



University of Hawaii, asserts that more jobs may have been gained through this process than lost through offshoring.

Future prospects

Every 2 years, the BLS Occupational Statistics and Employment Projections program produces long-term employment projections for occupations, industries, the labor force, and the overall economy. Data from the most recent set of projections indicates that the outlook for technology jobs is relatively bright.

Employment in combined IT occupations is expected to increase by more than 800,000 jobs over the 2006–16 projections decade. This increase represents expected job growth of 24 percent—compared with 10 percent growth for all occupations. So, opportunities should be plentiful for workers who hope to enter the IT field.

IT workers are needed in nearly all types of organizations, from retail establishments to manufacturing plants. As IT operations expand across the economy, demand for IT workers should expand along with them.



Although offshoring is likely to continue, BLS research suggests that job opportunities in information technology will continue to be excellent. And a study by the Association for Computing Machinery finds that even though offshoring may increase, prospects for IT workers in the United States will be strong.

As the chart shows, employment in several IT occupations is expected to grow especially fast over the 2006–16 decade. With a projected employment increase of 53 percent—more than 5 times the rate for all occupations—network systems and data communications analyst is projected to be the fastest growing IT occupation. It's also projected to be the fastest growing of all occupations in the United States. As businesses and other organizations continue to adopt newer, more efficient computer networks, these workers will be in high demand.

But one occupation is expected to see employment declines. Employment of computer programmers is projected to decrease by 4 percent from 2006–16. Continued offshoring in this occupation, as well as increased efficiency, will reduce demand for programming services during the projections decade.

Preparation for IT careers

How can someone get started in an IT career? There are many paths. Having both general and specific skills is helpful. But for many jobs, formal training is essential.

During the technology boom of the 1990s, workers with no more than a high school diploma reportedly could land a high-paying job in a wide array of computer occupations. Now, however, most employers prefer applicants who have at least a bachelor's degree. Certification, which may be required in some jobs, is also available.

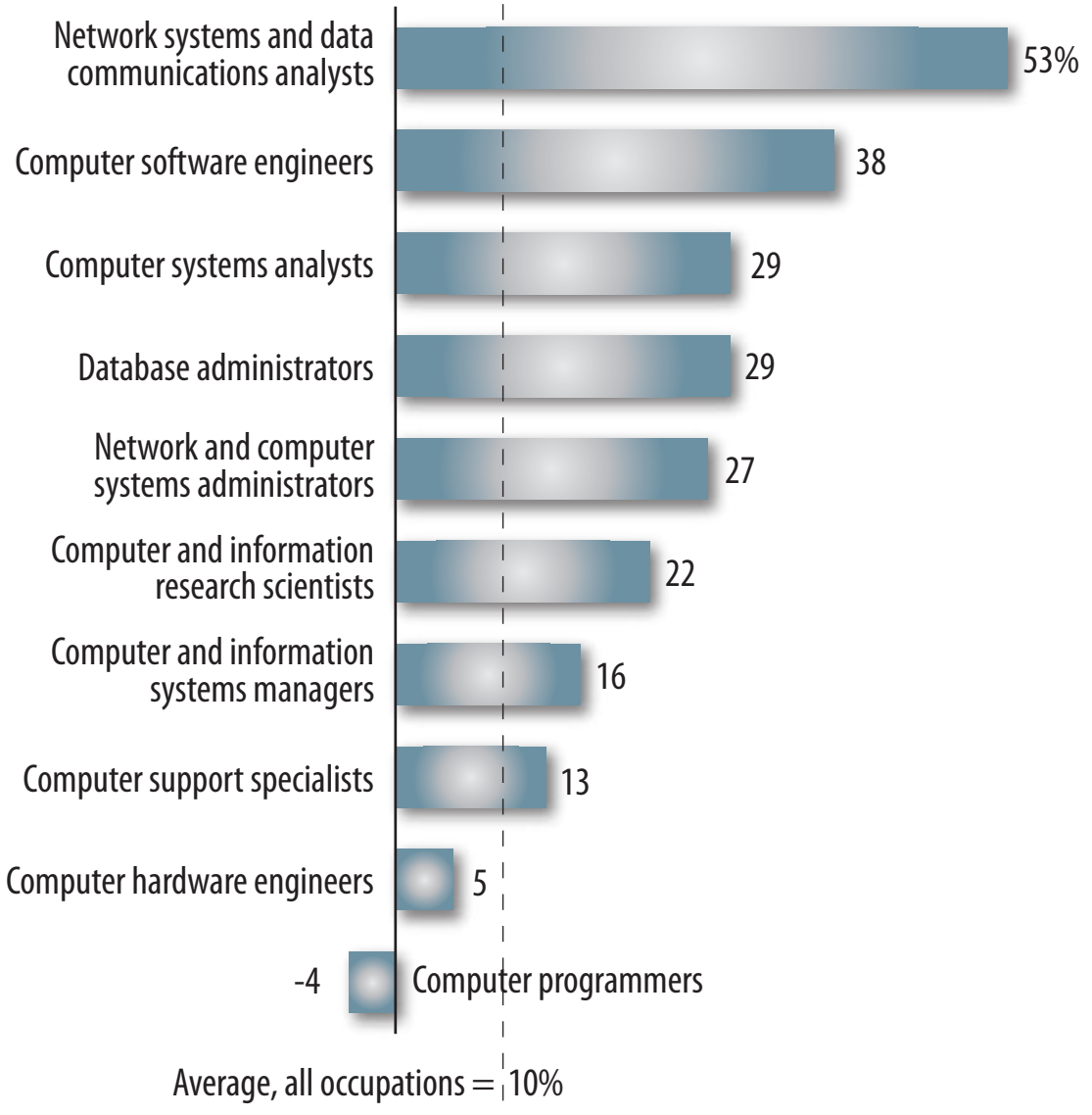
Skills. A general foundation, such as ease with computers and a curiosity about how they work, is important for working in IT. And several specific skills may be helpful

for a variety of IT occupations, especially for those that are expected to remain in demand. Among these skills is business aptitude and proficiency in wireless networking; knowledge of information security also is recommended. In addition, problem-solving skills and attention to detail are essential in all areas of IT. Students can begin gaining some of these skills as early as high school.

Business aptitude is useful as profitability, project management, and cost-benefit analyses increasingly become the responsibility of a number of IT workers, such as computer and information systems managers. High school classes in mathematics are helpful for establishing a strong foundation for IT training and for business-related subjects ranging from accounting to finance.

As technology improves, and cell phones and other wireless devices gain networking capabilities, people increasingly seek access to the Internet. As demand for mobile access

Percent change in employment of information technology (IT) workers, by selected occupations, projected 2006–16



continues to grow, workers who are proficient in wireless networking will be in high demand. Workers in this area need to be detail oriented to effectively design, install, and maintain wireless networks and systems.

Protecting information systems and data from the threat of cyberspace criminals is important to businesses and other organizations. Specialized training prepares IT workers to gain expertise in security issues.

Degrees. A bachelor's degree is the usual minimum qualification for many IT jobs. Many entry-level software engineers and computer systems analysts, for example, are required to have a bachelor's degree. Those who do the most complex tasks may need a master's degree. In 2007, according to BLS, almost 70 percent of IT workers had a bachelor's or higher degree.

The most applicable degrees for IT jobs are those in computer science, computer engineering, software engineering, or information systems. But many other types of degrees can lead to a career in information technology. According to the National Science Foundation's 2006 science and engineering workforce surveys, almost 66 percent of IT workers indicated that their highest degree was in a field other than computer and information sciences. These fields included management, electrical and computer engineering, mathematics, and arts and humanities.

Not all IT workers need a bachelor's degree, however. One example is computer support specialists. Jobs in this occupation may be open to applicants who have a high school diploma, some college, or an associate degree.

Certification. Certification demonstrates a level of proficiency in a product or subject. Certification programs usually require candidates to take a test or a series of tests; a passing score represents to employers an IT applicant's or worker's knowledge and skills. Some programs allow candidates to study on their own for these tests, and others offer test-preparation courses.

Certification is offered by IT product vendors and professional organizations. IT product vendors generally offer certification in the computer software or hardware they produce. Some vendors require certification for people who work with their products.

Professional organizations offer voluntary certification programs in a broad range of subjects. Popular topics include wireless networking and information security. Before entering such programs or paying any fees, workers should research the program to determine its reputation within the IT community.

For more information

Visit your local library or school's career counseling office to learn more about IT occupations. The *Occupational Outlook Handbook*, available in many libraries and online at **www.bls.gov/ooh**, provides in-depth information about the occupations described in this article.

For a recent BLS analysis of offshoring, see the December 2008 *Monthly Labor Review* article "Service-providing occupations, offshoring, and the labor market," available online at **www.bls.gov/opub/mlr/2008/12/art4full.pdf**.

The following organizations are among the many that offer further information on IT careers, training programs, and certification:

Institute of Electrical and Electronics Engineers Computer Society
1828 L St. NW.
Washington, DC 20036
(202) 371-0101
help@computer.org
www.computer.org

Association for Computing Machinery
2 Penn Plaza, Suite 701
New York, NY 10121
acmhelp@acm.org
computingcareers.acm.org

CompTIA
1815 S. Meyers Rd., Suite 300
Oakbrook Terrace, IL 60181
(630) 678-8300
www.comptia.org/trainingandeducation/default.aspx

CWNP (Certified Wireless Network Professional)
4381 Beech Haven Trail, Suite 400
Smyrna, GA 30080
(770) 433-9339
www.cwnp.com

Cisco Systems, Inc.
170 W. Tasman Dr.
San Jose, CA 95134
Toll free: 1 (800) 553-NETS (6387)
(408) 526-4000
www.cisco.com/web/learning/le3/learning_certification_overview.html

Microsoft Corporation
1 Microsoft Way
Redmond, WA 98052
Toll free: 1 (800) 636-7544
MCPHelp@microsoft.com
www.microsoft.com/learning/mcp/default.mspx



You're a *what*?

Futurist

John Mullins

When Christopher Kent was a graduate student, he studied the history of medieval Europe. But that's all in the past. These days, Christopher uses his skills to study the future.

Christopher is a futurist. He examines the present for clues to changes that the future may bring. His training in history serves him well. "As a historian, you usually deal with incomplete information," he says. "You look at disconnected clues and information to piece together a story about the past. A futurist looks at clues and information from today to piece together stories for the future."

Futurists specialize in recognizing upcoming uncertainty and attempting to manage it. They realize that unknown—and unknowable—changes will shape the future. By identifying a range of possible changes, these workers develop alternate visions of the future.

There are different types of futurists, and each type has different methods, motives and objectives. For example, some futurists' work is primarily academic and focuses on social criticism. Others, like Christopher, are professional futurists: They help paying clients—either organizations or individuals—anticipate change and make plans and adjustments accordingly.

Professional futurists begin work on a project by defining a client's goals. Then, they typically gather relevant information from media reports, statistical databases, and other sources. Futurists' skill lies in the ability to recognize connections in scattered bits of information. These connections are often a sign of emerging trends, and identifying them allows futurists to forecast likely and alternative futures.

Alternative futures are presented in a variety of ways. Futurists may develop narratives describing different paths that the future may follow. Or, they may forecast possible futures confronting a specific industry or product line.

Both the methods used and the project's final product are tailored to fit the client's needs. "One client wanted us to look at how different trends influenced specific generations over the course of 10 years," Christopher says by way of example. "We developed an interactive, color-coded timeline that allowed the client to see the work graphically."

Christopher and his colleagues spend some of their time working on clients' custom research projects. The focus of such projects may be narrow, such as analyzing the future prospects of a single product; other projects may be as broad as forecasting the future of an entire industry. Futurists at Christopher's firm also work on self-directed research projects for a research database available to subscribers.

One thing futurists do not do, says Christopher, is make predictions. "The P-word is a loaded term," he says. "The future can't be predicted accurately, because it is unknown." Rather than tell clients what *will* happen, in other words, futurists identify what *could* happen.

A few professional futurists are self-employed, but most, like Christopher, work for futures consulting companies. Some of these companies focus on specific topics or indus-

John Mullins is an economist in the Office of Occupational Statistics and Employment Projections, BLS. He can be reached at (202) 691-6547 or mullins.john@bls.gov.

tries. Others, including Christopher's firm, deal with a range of topics and have a broad clientele. Clients of Christopher's firm include private companies, government agencies, and nonprofit organizations.

In most firms, projects are assigned to teams based on analysts' interests, experience, and expertise. But opportunities to work on more general projects allow futurists to gain new proficiencies. "I enjoy working with colleagues on projects outside my specialization," says Christopher. "It gives us all a broader base of knowledge, which can be useful in all projects."

The U.S. Bureau of Labor Statistics does not specifically track the employment and wages of futurists. And because futurism is a broad, interdisciplinary field, these workers may have a variety of occupational titles. Anecdotal information suggests that there are between 500 and 1,000 professional futurists working in the United States.

There are formal programs in futures studies at several U.S. and international universities. Although graduates of these programs may have an advantage in the field, there are no formal educational requirements for becoming a futurist. Most employers prefer applicants who have at least a bachelor's degree in any subject. Christopher has a bachelor's degree, with a double major in English and history, in addition to his master's degree.

After graduating from college, Christopher worked in Washington, D.C., as a public policy analyst, forecasting political trends 6 to 9 months out. He enjoyed forecasting and felt that a move to analyzing longer-term futures was a logical next step. So, when an opportunity arose in the firm where he now works, Christopher decided to pursue the challenge.

Futurists need to be inquisitive, critical, and creative. They also must be comfortable with uncertainty. And they should have the imagination necessary to envision major disruptive events—but be able to let solid research guide that imagination.

Christopher recommends the occupation for those who like research and variety. "This is a perfect job," he says, "for people who are intensely curious and get bored easily."



OOChart

Work during play: Jobs in spectator sports

You don't always have to be a competitor or a fan to be part of the game. In the spectator sports industry, for example, there are many more workers on the sidelines than on the field.

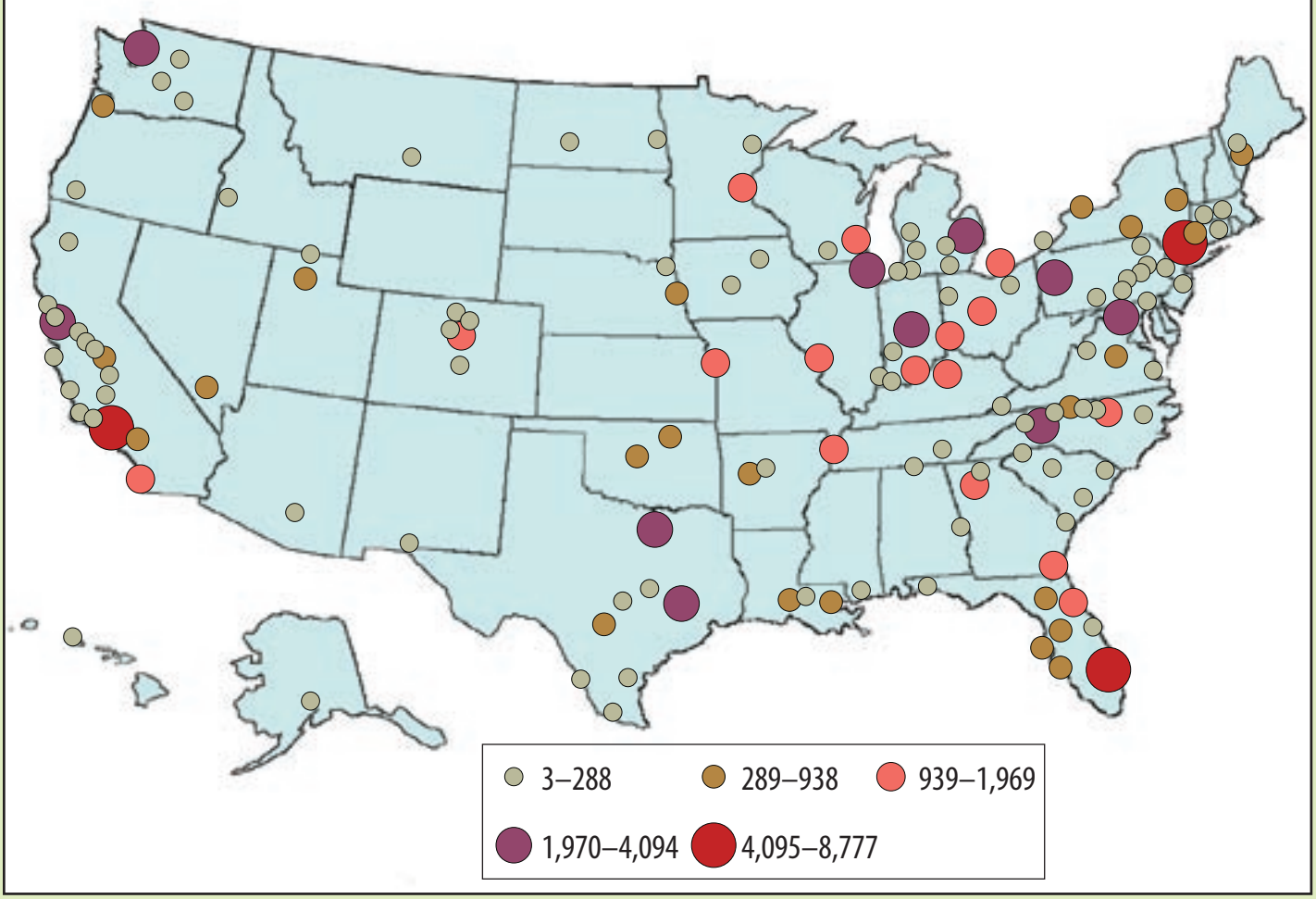
Spectator sports employment includes those who are part of live sporting events that take place in front of a paying audience. These events can be professional or amateur and include car, horse, or dog races. Ushers, lobby attendants, and ticket takers, as well as the athletes, trainers, and managers of sports teams and racetracks are among those who work in the industry. Other occupations with significant employment in the spectator sports industry include food preparation and service workers, landscaping and groundskeeping workers, and janitors and cleaners.

The chart shows metropolitan areas that had the most employment in spectator sports in 2007. The larger the circle, the more spectator sports workers were employed there. Areas with the greatest such employment in 2007 included New York City and northern New Jersey, Los Angeles, Miami, Chicago, Charlotte, and Indianapolis. Sports teams are often located near cities or major metropolitan areas—so employment is concentrated near large cities throughout the country.

For more information about these and other industry employment data, visit the Quarterly Census of Employment and Wages Web site at **www.bls.gov/qcew**. Or, write to the Division of Administrative Statistics and Labor Turnover, Bureau of Labor Statistics, 2 Massachusetts Ave. NE., Rm. 4840, Washington, DC 20212; call (202) 691–6567. (To send an e-mail, go to **www.bls.gov/cew/cewcont.htm**.)

For more data on the occupations in the spectator sports industry, visit the Occupational Employment Statistics Web site, **www.bls.gov/oes/current/naics4_711200.htm**.

Spectator sports employment by metropolitan area, 2007 annual averages





The *Occupational Outlook Quarterly* online:
www.bls.gov/ooq

U.S. BUREAU OF LABOR STATISTICS
Postal Square Building, Rm. 2850
2 Massachusetts Ave., NE.
Washington, DC 20212-0001

Official Business
Address Service Requested

Periodicals
Postage and Fees Paid
U.S. Department of Labor
USPS 492-690

Careers in forensics

page 14

