Occupational Outlook Handbook: a review of 50 years of change

The content of the Handbook *has been little altered, but the information has changed significantly to reflect new statistical data, methodological improvements, and shifts in philosophical and societal attitudes*

Michael J. Pilot

In a September 1, 1948, letter of transmittal to Secretary of Labor Maurice J. Tobin, Commissioner of Labor Statistics Ewan Clague announced that an *Occupational Outlook Handbook* (*OOH*) was "being made available through public sale."[1] The first of 23 editions was published in 1949. (See table 1.)

The 1949 edition updated and expanded information issued in August 1946 in Veterans' Administration Manual M7-1, titled *Occupational Outlook Information*. The manual was prepared at the request, and with the financial support, of the Veterans' Administration, which, under the provisions of the 1944 G.I. bill of rights, was authorized to make available information concerning the Nation's needs for general education and trained personnel in the various trades, crafts, and professions.[2]

Prepared in the BLS Occupational Outlook Branch (currently called the Division of Occupational Outlook), the *OOH* relied on the continued financial support of the Veterans' Administration through a second revision in 1951. Four years later, Congress provided for a program of regular reappraisal of the employment outlook and for up-to-date maintenance of the *Handbook* and related publications. This action funded the 1957 third edition of the *OOH* and subsequent biennial revisions, as well as a new periodical, the *Occupational Outlook Quarterly*, which would provide a "flow of up-to-date information between editions of the *Handbook*." The Bureau of Labor Statistics produced subsequent editions of the *OOH* in 1959, 1961, 1963–64, and, biennially, in even-numbered years starting with 1966 and on up to the current 1998–99 edition. (See table 1.)

At first glance, most readers would see a great deal of similarity in the content of the detailed occupational statements in the 1949 and 1998–99 editions of the *Handbook*. Both volumes contain information about the nature of work; employment; training, qualifications, and advancement; the outlook for various occupations; and earnings and working conditions. Both mention where to find additional information. A detailed examination of the coverage and content of various editions over the course of 50 years, however, reveals significant changes. The purpose of this article is to chronicle the introduction of, and rationale for, some of the major improvements and other changes that occurred and, in the process, illustrate the ever-shifting occupational structure and social environment over the 50-year period.

Occupations and industries

Occupations included in the first edition of the *Handbook* were "largely those found by the Veterans [sic] Administration to be of major interest to *veterans* requesting guidance" (p. 5, my italics). Within the span of the next three editions,

Michael J. Pilot is Chief, Division of Occupational Outlook, Office of Employment Projections, Bureau of Labor Statistics, Washington, DC.

the perceived target audience of the book broadened as its occupational coverage expanded. The 1951 edition targeted "*veterans and other young people*" (p. 4), the 1957 edition "*school and college students, veterans, and other young people*" (p. 4), and the 1959 edition simply all "*young people*" (p. 4) [my italics in all]. The Bureau dropped references to young people in the 1978–79 edition. By that time, users of the *Handbook* included reentrants to the labor force, those who were in the process of changing careers, displaced workers, and other jobseekers.

Criteria governing the selection of occupations covered in the *Handbook* changed very little over the years, until the mid-1980s, when program cuts forced changes in policy. Occupations requiring relatively long periods of training—either formal education or on-the-job training—generally received the most attention, because the need for long-range outlook information is more acute in connection with choosing careers in these occupations. Large occupations providing plentiful job opportunities also received priority, followed by small, but rapidly growing, fields of employment.

During periods of rapid expansion in coverage—the 1950s through the mid-1960s, and the early 1970s—the only constraint bridling decisions to add occupations was staff resources. The Bureau added occupations thought to be of special interest to users of the *Handbook*, with little concern regarding the availability of reliable statistical data on employment or other subjects. If no employment data were available from BLS or Census surveys, for example, the Bureau relied on estimates supplied by associations and organizations representing workers in various occupations. Thus, it is not unusual to read that "in 1965, an estimated 3,500 professional range managers [persons responsible for the managment, development, and protection of rangelands] were employed" (1966–67 edition, p. 58), or that in 1972, "an estimated 150 persons worked as full-time interpreters" (1974–75 edition, p. 607). Anthropologists, astronomers, city managers, and models are examples of other occupations for which the Bureau relied on outside sources for employment estimates. In some editions—particularly those prior to 1963—no employment data at all were presented for some occupations.

Two separate budget contractions caused severe cutbacks in occupational coverage in the early 1980s. Program managers were forced to develop rigid criteria for including an occupation in the *OOH*, and they placed great weight on the availability of employment data from BLS sources. Beginning with the 1984–85 edition, this criterion alone became the standard governing occupational coverage in the *Handbook*.

Occupations. Changes in the level of program funding affecting staffing resources and changes in sources of employment data affecting the level of occupational detail were key factors influencing occupational coverage in the *Handbook* over the years. Changes in occupational classification, a reliance on new and improved sources of data, and management decisions largely determined how related occupations were clustered.

The 1949 *Handbook* covered 288 occupations in 209 separate reports clustered under three broad groupings: professional, semiprofessional, and administrative occupations; clerical, sales, and service occupations; and trades and industrial occupations. These groupings reflected, for the most part, the classifications in use at the time by the Bureau of the Census in the most recent decennial census of population and by the U.S. Employment Service in the *Dictionary of Occupational Titles* (*D.O.T.*).[3] A separate section comprising 64 pages, or nearly one-sixth of the content relating to occupations, discussed agricultural production occupations on 26 different types of farms in 10 different geographical regions, as well as 28 types of farm service jobs ranging from crop dusting to whitewashing services.

The Bureau acknowledged that "many significant occupations could not be included in the first edition," but promised that "reports on other occupations will be incorporated into future editions as rapidly as studies can be made" (1949 ed., p. 5). The Bureau then conducted new occupational studies at a rapid pace. The second edition of the *Handbook*, published in 1951, included 433 occupations, a 50-percent increase in coverage over that of the 1949 edition.

As occupational coverage expanded throughout the 1950s and into the 1960s, so did the number of major groupings. The 1968–69 *Handbook* covered more than 700 occupations

Table 1. Editions of *Occupational Outlook Handbook*, 1949–99

Edition		Year published	Bulletin number
Number	Year		
1	1949	1949	940
2	1951	1951	998
3	1957	1957	1215
4	1959	1959	1255
5	1961	1961	1300
6	1963–64	1963	1375
7	1966–67	1966	1450
8	1968–69	1968	1550
9	1970–71	1970	1650
10	1972–73	1972	1700
11	1974–75	1974	1785
12	1976–77	1976	1875
13	1978–79	1978	1955
14	1980–81	March 1980	2075
15	1982–83	April 1982	2200
16	1984–85	April 1984	2205
17	1986–87	April 1986	2250
18	1988–89	April 1988	2300
19	1990–91	April 1990	2350
20	1992–93	May 1992	2400
21	1994–95	May 1994	2450
22	1996–97	February 1996	2470
23	1998–99	January 1998	2500

under seven major groups: professional and related occupations, managerial occupations, clerical and related occupations, sales occupations, service occupations, skilled and other manual occupations, and a category titled "some major industries and their occupations."

The 1974–75 edition of the *Handbook* covered more than 850 occupations, nearly triple the 288 covered in 1949. However, because of the way in which the Bureau counted occupations, a discrepancy arose between the number (850) of "detailed" occupations and the number of occupational reports, now called *briefs* or *statements*, which had increased by less than one-half, from 209 to 304. This growing gap between the number of occupations "covered" and the number of occupational reports was due, in large part, to the number of *D.O.T.* job title descriptions covered in individual statements. For example, the 1974–75 *Handbook* statement on statistical clerks contained descriptions of work for 14 separate *D.O.T* job titles. And because "statistical clerk" itself was not a *D.O.T.* title, the tally of occupations covered in this one occupational report totaled 15. The Bureau abandoned this quirky accounting method beginning with the 1982–83 *Handbook*, in part for reasons that are discussed subsequently.

The Bureau made considerable revisions to the 1974–75 edition, which presented a new clustering system designed to organize occupations by related activities. This edition, with later ones up through the 1980–81 edition, grouped reports on different fields of work into two major divisions: "employment outlook for occupations" and "employment outlook for industries." The occupational division classified occupations into 13 "career clusters": industrial production and related occupations; office occupations; services; educational and related occupations; sales; construction; occupations in transportation activities; scientific and technical occupations; mechanics and repairmen; health; social science; social services; and art, design, and communications.

These career clusters helped relate the *Handbook*'s reported outlook on the various occupations to school curriculum and occupational training programs, career ladders and lattices, and fields of interest for young persons engaged in exploring and planning their careers. The clusters were based on a concept of related activities. Physicians, for example, were included in the same section as hospital attendants. Within each of the career clusters, occupations were further grouped into related subfields. Within the office-occupation cluster, for example, the reader could find groups for clerical occupations, computer and related occupations, banking occupations, insurance occupations, and administrative and related occupations. In contrast to the career clustering for occupations, the industry reports were grouped according to major industry divisions in the economy established by the Standard Industrial Classification, which was intended for use in statistical measurements relating to agriculture; mining; construction; manufacturing; transportation; communications and public utilities; wholesale and retail trade; finance, insurance, and real estate; service and miscellaneous industries; and government.

Disaster struck in fiscal year 1978: the Division of Occupational Outlook incurred a drastic cut in funding. The ramifications of this cut affected staffing resources and, consequently, the ability to conduct analyses for the 1982–83 *Handbook*. The Bureau ceased issuing statements on the outlook for industries, and the 1982–83 edition of the OOH contained none.[4] In addition, two dozen occupational statements were dropped, bringing the reported number of occupational statements in the *Handbook* down to 251.

The 1982–83 *Handbook* also adopted a new occupational clustering arrangement, adhering in principle to the system outlined in the 1980 edition of the *Standard Occupational Classification* (SOC) manual. This system classified occupations into 20 groups: administrative and managerial occupations; engineers, surveyors, and architects; natural scientists and mathematicians; social scientists, social workers, religious workers, and lawyers; teachers, librarians, and counselors; health-diagnosing and -treating practitioners; registered nurses, pharmacists, dietitians, therapists, and physician assistants; health technologists and technicians; writers, artists, and entertainers; technologists and technicians, except health; marketing and sales occupations; administrative support occupations, including clerical occupations; service occupations; agricultural and forestry occupations; mechanics and repairers; construction and extractive occupations; production occupations; transportation and material-moving occupations; helpers, handlers, equipment cleaners, and laborers; and military occupations.[5] Prior to the SOC, labor market analysts tended to group occupations into hierarchical categories such as "white collar" and "blue collar." The latter grouping often was disaggregated further into "skilled," "semiskilled," and "unskilled." Authors of the SOC clustering arrangement hoped to dissuade analysts from reliance on these kinds of socioeconomic hierarchies. With only minor changes, this new system of grouping occupations remained in place through the 1988–89 edition of the *Handbook*.

The 1982–83 *Handbook* was the first to incorporate data from the Occupational Employment Statistics (OES) survey.[6] This edition also contained statements on occupations outside the framework of the projections matrix, such as anthropologist, city manager, college student personnel worker, floral designer, model, and range manager. In most cases, the Bureau relied on outside sources for estimates of employment in these occupations.

Another cut in program funding in fiscal year 1982 necessitated more reductions of occupational coverage in the 1984–85 *Handbook*. A new criterion was established to govern coverage: only occupations for which OES employment data were

available would be covered. This criterion, which still holds today, resulted in a wholesale castoff of occupations.[7] The 1984–85 edition thus had only 185 detailed occupational statements, but coverage, nevertheless, accounted for well over half of all jobs in the economy. In addition, the Bureau presented summary data for 170 occupations for which employment projections were prepared, but detailed occupational information was not. This summary data consisted of a brief description of the occupation, the number of jobs it had in 1982, and a phrase describing prospects for future employment growth or decline. Altogether, these occupations accounted for an additional 20 percent of the Nation's jobs.

From this nadir, the Office of Employment Projections conducted new occupational studies at a gradual pace over the next 15 years, adding to both occupational content and employment coverage. Employment mentioned in the approximately 250 occupational statements covered in detail in the main body of the current 1998–99 *Handbook* accounts for 6 out of 7 jobs in the economy. The chapter presenting summary data on occupations not examined in detail lists just 73 occupations, accounting for only about 5 percent of all jobs.

Much of the increase in coverage reported was accomplished by grouping related occupations in a single statement. For example, starting with the 1986–87 edition of the *Handbook*, the statement on machine tool operators expanded coverage to include all metalworking and plastics-working machine operators, and the statement on welders and flame cutters broadened to include welding machine operators. Program managers believed that grouping these closely related occupations into one statement, rather than several, would make it easier to use the statement in exploring one's career options. In the 1988–89 edition, three industry-specific occupational groupings were added: apparel workers, textile workers, and woodworking occupations. In the 1990–91 edition, an entire major occupational group—handlers, equipment cleaners, helpers, and laborers—was covered in a single statement.

Starting with the 1990–91 *Handbook*, the Bureau grouped all professional specialty occupations under a single banner and combined two technician groups, thereby reducing the number of major clustering groups from 20 to 12. The 1998–99 *Handbook* combined professional specialty and technician occupations and dispersed the agriculture, forestry, fishing, and related occupations, further reducing the occupational arrangement to the following 10 major clusters: executive, administrative, and managerial occupations; professional and technical occupations; marketing and sales; administrative support, including clerical occupations; services; mechanics, installers, and repairers; construction trades; production; transportation and material-moving occupations; and handlers, equipment cleaners, helpers, and laborers.[8]

Industries. The first *Handbook* contained occupational outlook reports for eight "industries." A separate section covered agricultural production occupations and farm service jobs. A section titled "Trades and Industrial Occupations" included occupational reports covering seven industries: foundries, fur manufacturing, furniture manufacturing, hotels, printing, radio and television broadcasting, and railroads.

During the 1950s, the Bureau developed nearly two dozen industry employment outlook reports, on the following industries: aircraft, the Armed Forces, atomic energy, baking, banking, air transportation, department stores, electric power, electronics, the Federal Government, industrial chemicals, insurance, iron and steel, men's tailored clothing, automobiles, paper and allied products, petroleum production and refining, plastics products, radio and television broadcasting, retail food stores, shipbuilding and ship repairing, State and local government, and the telephone industry. Two of the original industries—fur manufacturing and furniture manufacturing—were dropped after the 1951 edition. Shipbuilding and ship repairing appeared only in that edition. Plastics products would become part of industrial chemicals, men's tailored clothing part of apparel. Petroleum production and refining eventually would be split into petroleum and natural gas production and processing, and petroleum refining.

During the 1960s, five industries were added: aluminum, apparel, construction, the merchant marine, and the Post Office. During the early 1970s, seven were added: coal mining, drugs, laundry and drycleaning plants, logging and lumber mills, office machines and computers, retail food stores, and trucking. As a result of expansion over the years, the 1974–75 *Handbook* contained 35 detailed industry outlook statements, not counting those on agriculture and construction, which are classified as industry divisions.

As mentioned earlier, the lingering effects on staff resources of a program cut in fiscal year 1978 culminated in a decision to drop the entire section titled "Outlook for Industries" from the 1982–83 *Handbook*. It would be another decade before the Bureau of Labor Statistics produced the *Career Guide to Industries.*

Occupations then and now

Coming up with a list of occupations that can be construed as comparable over the 50 years that have elapsed since the publication of the first and the current editions of the *Handbook* is tricky at best and hazardous at worst, because of changes in occupational classification, definition, coverage, and skills. Possibly, a one-to-one match would exist if employment data were available at the same level of occupational detail in both the 1949 and 1998–99 occupational statements. (See exhibit 1, "Matching.") Nearly one-fourth of the occupations (52 of 209) in the 1949 *OOH* meet this test, despite the fact that trades

and industrial occupations accounted for 60 percent of the occupational content of the *Handbook*. Another 39 occupational statements in the 1949 edition match up with 21 statements in the 1998–99 edition on the basis of varying levels of disaggregation or aggregation. (See exhibit 1, "Summary.")

The occupational comparability between 39 statements in the 1949 edition and their closest 1998–99 counterparts is different enough to warrant placing them in a third category. (See exhibit 1, "Different.") With the exception of funeral directors and embalmers, occupational coverage in the 1998–99 *Handbook* is much broader. Seventy-nine (nearly two-fifths) of the 1949 *Handbook* occupations are not covered in the 1998–99 edition. Most of these occupations (62) were found in forge shops, foundries, machine shops, and fur manufacturing, furniture manufacturing, and printing establishments. (See exhibit 1, " 1949 occupations not covered. . . .")

Occupations dropped from the Handbook. Some occupations disappeared from the workplace or declined significantly in their relative importance between 1949 and today because of the impact of technology or falling demand for the products and services that they provided. Others were combined in the workplace or were redefined by revisions to occupational classification systems. Following are some examples of the effects of each of these factors on various occupations.

1. Technology. Printing and publishing, which ranks among the largest manufacturing industries, has witnessed dramatic technological change over the past 50 years, particularly in regard to the printing process. Especially affected were occupations in the composing room, where manuscript once was set in type. According to the 1949 *Handbook*, *hand compositors and typesetters*, the oldest composing-room occupation, was the largest. Workers in this occupation set each line of type in a composing stick, letter by letter and line by line. The *Handbook* reported that "in the long-run, employment in this occupation will no doubt tend to decrease, owing to continued advances in machine typesetting" (p. 297). In many shops, *linotype operators*—the second-largest composing-room occupation—pounded the keyboards of machines that set lines of type automatically and much more rapidly than was possible by hand. The 1949 *Handbook* reported the long-range outlook for this occupation as "reasonably favorable—more so than for hand compositors" (p. 298), but hinted that technology could eventually lead to a decline in employment. *Monotype keyboard operators*—employing only a small number of workers at the time—used machines that assembled type automatically. The 1949 *OOH* reported that the long-range trend in employment was "upward" (p. 298).

It is probably safe to say that no one envisioned the dramatic technological changes that eventually occurred in the printing and publishing industry. Linotype and monotype operators would, for the most part, disappear; so would hand compositors and typesetters, except for a few that operate specialty printing shops. Descriptions of the nature of the work in these three occupations last appeared in the 1986–87 edition of the *Handbook*. Occupations such as composing data entry keyers and electronic pagination systems workers (eventually called desktop-publishing specialists) would displace them. The following "snapshots," written 10 years apart, record the march of this technological change:

> Changing technology will tend to limit the growth of composing-room occupations; a new group of composing room occupations, usually made up of photocompositors is becoming important. In phototypesetting, a photographic process replaces the function of the hot metal, and final product is a film or photographic paper print of the type rather than a metal slug (1959 edition, pp. 338, 340).

> Over the past decade there has been an increasing use of automatically operated typesetting machines activated by an electronic device into which perforated tapes are fed; computers, recently introduced, are programmed to perforate the codes for spacing, length of line, and hyphenation (1968–69 edition, p. 450).

> The most advanced method of typesetting uses electronic phototypesetting equipment (1978–79 edition, p. 49).

> The most advanced method of typesetting—called electronic pagination—is in limited commercial use at present; keyboarding of text may be done by typesetters or data entry clerks at the printing establishment or, increasingly, by the author before the job is sent out for composition (1988–89 edition, p. 356).

> Because of advances in computer software and printing technology, much of the typesetting and page layout work is increasingly done by customers on their computers and this change, called "desktop publishing," poses new challenges for the printing industry. The industry is rapidly moving toward complete "digital imaging," by which customers' material received on computer disks is converted directly into printing plates (1998–99 edition, pp. 443–44).

2. Demand. In 1950, nearly 44,000 persons worked as blacksmiths. This number had dwindled to 11,000 by the time the occupation was last covered in the *Handbook* (the 1980–81 edition). The number declined due to the greater use of machines in forge shops to produce many of the metal articles that were formerly handmade by blacksmiths. In addition, welders were doing much of the metal repair work once done by blacksmiths.

Agriculture and railroads were robust sectors of the economy 50 years ago. Agricultural production employed roughly 1 in 8 workers; railroads provided roughly 1 in 30 jobs. Thus, the authors of the first *Handbook* saw fit to devote considerable space to discussions of employment opportunities on 26 different kinds of farms and for 15 different railroad occupations. Today, these industry sectors account for

Exhibit 1. **Matchup of occupational statements in 1949 and 1998–99 editions of *Occupational Outlook Handbook***

1998–99 edition	1949 edition
Matching (52):	
Accountants and auditors	–
Aircraft mechanics, including engine specialists	–
Architects	–
Boilermakers	–
Bookkeeping, accounting, and auditing clerks	–
Bricklayers and stonemasons	–
Butchers and meat, poultry, and fish cutters	–
Carpenters	–
Chemical engineers	–
Chemists	–
Chiropractors	–
Civil engineers	–
Clinical laboratory technologists and technicians	–
College and university faculty	–
Dental hygienists	–
Dental laboratory technicians	–
Dentists	–
Diesel mechanics	–
Drafters	–
Electrical and electronic engineers	–
Glaziers	–
Heating, air-conditioning, and refrigeration technicians	–
Home appliance and power tool repairers	–
Hotel managers and assistants	–
Industrial engineers	–
Industrial machinery repairers	–
Librarians	–
Licensed practical nurses	–
Mechanical engineers	–
Medical record technicians	–
Meteorologists	–
Millwrights	–
Mining engineers	–
Nursing aides and psychiatric aides	–
Occupational therapists	–
Optometrists	–
Pharmacists	–
Physical therapists	–
Physicians	–
Plasterers	–
Plumbers and pipe fitters	–
Printing press operators	–
Radiologic technologists	–
Registered nurses	–
Restaurant and food service managers	–
Sheet-metal workers	–
Social workers	–
Structural and reinforcing ironworkers	–
Tool and die makers	–
Underwriters	–
Upholsterers	–
Veterinarians	–

Exhibit 1. Continued—Matchup of occupational statements in 1949 and 1998–99 editions of *Occupational Outlook Handbook*

1998–99 edition	1949 edition
Summary (39):	
Air traffic controllers	Airport and air-route traffic controllers
	Dispatchers and assistants (air transportation)
Aircraft pilots	Airline pilots
	Flight engineers
	Navigators (air transportation)
Automotive body repairers	Automobile mechanics (including automobile body and fender repairmen)
Automotive mechanics	
Baggage porters and bellhops	Bell captains and head baggage porters
	Bellmen and baggage porters
	Redcaps
	Train baggagemen
Barbers and cosmetologists	Barbers
	Beauty operators
Bindery workers	Bookbinders
	Bindery workers
Electricians	Electricians, construction
	Electrical repairmen
Flight attendants	Airplane hostesses
	Flight stewards
Insurance agents and brokers	General-insurance agents and brokers
	Life-insurance agents
Jewelers	Jewelry workers
	Jewelry repairmen
Line installers and cable splicers	Linemen, electric light and power
Telephone installers and repairers	Telephone installers, repairmen, and linemen
Optical goods workers, precision	Optical mechanics (ophthalmic)
	Precision optical workers
Metallurgical, ceramic, and materials engineers	Ceramic engineers
	Metallurgical engineers
Painters and paperhangers	Painters
	Paperhangers
Schoolteachers—kindergarten, elementary, and secondary	Kindergarten and elementary school teachers
	High school teachers
	Physical education instructors
Stenographers, court reporters, and medical transcriptionists	Secretaries, stenographers, and typists
Typists, word processors, and data entry keyers	
Watchmakers	Watch and clock factory workers
	Watch repairmen
Welders, cutters, and welding machine operators	Acetylene burners
	Arc and gas welders
	Resistance welders
Different (39):	
Chefs, cooks, and other kitchen workers	Cooks and chefs
Commercial and industrial electronic equipment repairers	Electronic technicians (commercial and industrial servicing)
	Electronic technicians (electronics manufacturing)
Communications equipment mechanics	Central office equipment installers, telephone
	Radar technicians
	Radio servicemen
Designers	Fur designers
	Furniture designers
	Industrial designers
	Interior decorators
	Tool designers
Food and beverage service occupations	Waiters and waitresses

Exhibit 1. Continued—Matchup of occupational statements in 1949 and 1998–99 editions of *Occupational Outlook Handbook*

1998–99 edition	1949 edition
	Beverage-service workers
Funeral directors and morticians (excludes embalmers)	Funeral directors and embalmers
Hotel and motel desk clerks	Front-office clerks (hotels)
Janitors and cleaners and cleaning supervisors	Hotel housekeepers and assistants
Lawyers and judges	Lawyers
Machinists and tool programmers	All-round machinists
Material equipment-moving operators	Construction machinery operators
Painting and coating machine operators	Painters, spray
Personnel, training, and labor relations specialists and managers	Personnel workers
Photographers and camera operators	Photographers
Police, detectives, and special agents	Detectives
	FBI agents
	Federal police and detectives
	Policemen
Prepress workers	Lithographic occupations
	Photoengravers
Radio and television announcers and newscasters	Radio announcers
Rail transportation occupations	Brakemen (railroads)
	Conductors (railroads)
	Hostlers (railroads)
	Locomotive engineers
Reporters and correspondents	Newspaper reporters and editors
Shoe and leather workers and repairers	Shoe repairmen
Visual artists	Commercial artists
Woodworking occupations	Cabinetmakers
	Furniture finishers
	Furniture woodworking machine operators
1949 occupations not covered in 1998–99 *OOH* statements (79):	
–	Accounting-bookkeeping machine servicemen
–	Accounting-statistical machine servicemen
–	Adding machine servicemen
–	Armature winders
–	Assemblers, bench (machinery manufacturing)
–	Assemblers, floor (machinery manufacturing)
–	Automobile parts salesmen
–	Bakers
–	Blacksmiths
–	Blasters and powdermen
–	Bridge and building mechanics (railroads)
–	Calculating machine servicemen
–	Carmen (railroads)
–	Cash register servicemen
–	Castings inspectors (foundry)
–	Chainmen, rodmen, and axmen
–	Chippers and grinders (foundry)
–	Clerks (railroads)
–	Drop hammer operators (forge shop)
–	Dry cleaners
–	Electroplaters
–	Electrotypers and stereotypers (printing)
–	Engine-lathe operators (machine shop)
–	Filling-station attendants, managers, and owners
–	Finishing jobs (plastics molding)
–	Fleshers (fur dressing)
–	Flight radio operators
–	Forging-press operators

Exhibit 1. Continued—Matchup of occupational statements in 1949 and 1998–99 editions of *Occupational Outlook Handbook*

1998–99 edition	1949 edition
–	Foundry technicians
–	Fur blenders
–	Fur craftsmen (manufacturing)
–	Furniture assemblers
–	Furniture finishing-room workers
–	Furriers, retail trade
–	Grinding-machine operators (machine shop)
–	Ground radio operators and teletypists (air transportation)
–	Gunsmiths
–	Hammersmiths (forge shop)
–	Hand compositors and typesetters (printing)
–	Hand coremakers (foundry)
–	Hand molders (foundry)
–	Heaters, forge
–	Inspectors, machinery parts
–	Lay-out men (machine shop)
–	Linotype operators (printing)
–	Locomotive firemen and helpers
–	Machine coremakers (foundry)
–	Machine molders (foundry)
–	Melters (foundry)
–	Milling-machine operators (machine shop)
–	Mold makers (glass)
–	Mold makers (structural clay products)
–	Monotype caster operators (printing)
–	Monotype keyboard operators (printing)
–	Patternmakers (foundry)
–	Plastics molding machine operators
–	Proofreaders
–	Radio operators (broadcasting)
–	Radio operators (telephone and telegraph industry)
–	Riveters, pneumatic (manufacturing)
–	Rotogravure photoengravers (printing)
–	Set-up men (machine shop)
–	Shaper operators (machine shop)
–	Ship radio operators
–	Signalmen and signal maintainers (railroads)
–	Spotters (dry cleaning)
–	Station agents (railroads)
–	Stock and stores clerks (air transportation)
–	Superintendents of service (hotels)
–	Switch tenders (railroads)
–	Telegraphers and telephoners (railroads)
–	Towermen (railroads)
–	Traffic agents and clerks (air transportation)
–	Turret-lathe operators (machine shop)
–	Typewriter servicemen
–	Upsetters (forging)
–	Weather observers
–	Wood carvers and spindle carvers (furniture)
–	Wood turners (furniture)

only about 1 in 40 workers and 1 in 500 jobs, respectively. Accordingly, the 1998–99 *Handbook* has just a single statement covering farmers and farm managers and a single statement on rail transportation workers, four-fifths of whom railroads employ.[9]

Occupations associated with fur manufacturing—fleshers (fur dressers), fur blenders, and fur craftsmen—last appeared in the 1951 *Handbook*. The number of jobs remaining in the industry and falling employment prospects were the underlying reasons for dropping coverage of these occupations. Employment in the industry was subject to cyclical as well as seasonal swings; fur workers rarely worked full time, year round. By 1947, combined employment in dressing and dyeing plants, fur garment manufacturing, and retail shops was appreciably below the peak level reached in 1927.

3. Combined in the workplace or by current occupational classification systems. The occupation of flight attendant, which combines airplane hostesses—later called stewardesses—and flight stewards, is the best example of this type of aggregation. Other examples are air traffic controllers; baggage porters and bellhops; and welders, cutters, and welding machine operators. (See exhibit 1, "Summary.")

Occupations that emerged. Throughout the period under review, the occupational lexicon expanded as new occupations emerged in response to various economic and social stimuli. The invention of the electronic computer, for example, spawned the emergence of an expanding number of computer-related occupations over the years.[10] In 1951, the first computer was installed for commercial use.[11] In 1959, the Bureau added programmers to the *Handbook*'s content, calling the occupation "one of the newest in the country" (p. 208). The 1959 edition reported that people in this occupation prepare instructions or "programs" for the great new electronic computers that are often called "giant brains" and that "it is the programmer who does the thinking that makes the machines work" (p. 209). In the 1968–69 *Handbook*, the Bureau added systems analysts. The statement would eventually expand to include computer scientists and computer engineers. The 1988–89 *Handbook* introduced users to operations research analysts, who use computers extensively in their work to tackle a whole host of problems facing large business and government organizations, including strategy, forecasting, resource allocation, the layout of facilities, inventory control, personnel schedules, and distribution systems.

Advances in medical science, together with medicare and other health insurance reform, brought about new health technician specialties and auxiliaries, such as home health care aides. Efforts to assimilate highly trained Vietnam-era medical corps personnel into the civilian sector resulted in the emergence of physician assistants. Technology that hammered away at composing-room occupations in the printing industry eventually created a need for desktop-publishing specialists.

Content

"Outlook Summary" and "Significant Points." Occupational reports in the 1949 and 1951 editions of the *Handbook* began with a short, one-paragraph section titled "Outlook Summary" that summarized information presented in greater detail in the section on job outlooks. Occupational statements in the 1998–99 *Handbook* feature a section, "Significant Points," that highlights important things about the occupations presented elsewhere in the statement, including the section on job outlooks. "Significant Points" first appeared in the 1992–93 *Career Guide to Industries*. The favorable reaction from users prompted the Bureau to publish a similar section in the *Handbook*.

Nature of the work. This section of the *Handbook* explains what workers typically do on the job. Descriptions of the nature of the work in the 1949 *Handbook* tended to be very brief; some, however, included employment data and provided information about places of employment and opportunities for advancement. Eventually, material presented in the section dealt exclusively with workers' duties and responsibilities, the tools or equipment they used, and how closely they were supervised. The accuracy and timeliness of the content of the section depend heavily on analysts' ability to identify changes to the nature of work resulting from changes in technology and also to identify the emergence of new specialties within occupations, as well as changes in the way firms conduct business. This task requires staying abreast of developments by researching the current literature and communicating with experts in the field. The reputation the *Handbook* has enjoyed over the years as a source of comprehensive, up-to-date, accurate, and reliable information is testimony to the analysts' ability to accomplish that task.

Sex stereotyping. From the outset, analysts preparing the *Handbook* relied heavily on the Bureau of the Census for employment data and the *D.O.T.* for descriptions of work. Because the occupational classification system used by each of these sources contained sexist titles, they naturally found their way into the *Handbook*. Thus, the 1949 edition presented separate reports on airplane hostesses and flight stewards. Under a description of the duties of these two occupations, readers learned that "when a hostess and steward work together, as is often the case on big planes, the former tends to specialize in service to the women and children aboard, [while the latter] tends to handle the heavier work" (p. 163). Under "Qualifications and Advancement," one learned that "as a general rule, only single women (or widowed or divorced

Exhibit 2. References to employment of women in selected occupations, 1972–73 through1978–79 *Occupational Outlook Handbooks*

Occupation	Edition of *OOH*	Reference to employment of women
Accountant	1972–73	"About 2 percent of the CPA's and less than 20 percent of all accountants are women" (p. 30).
	1974–75	"About 3 percent of the CPA's and less than 22 percent of all accountants are women" (p. 128).
	1976–77	"About 4 percent of the CPA's and more than 24 percent of all accountants are women. Since the early 1960's, employment of women accountants has increased more rapidly than that of men, and there is every indication that women will continue to play an increasingly active role in the occupation" (p. 124).
	1978–79	Dropped.
College and university teacher	1972–73	"Men predominate in college teaching and hold more than nine-tenths of the positions in engineering, the physical sciences, agriculture, and law. However, most teachers in nursing, home economics, and library science are women" (p. 217).
	1974–75	"[A]bout one-fourth...were women. Women worked more frequently in 2-year colleges than in 4-year colleges...and were more likely to teach certain subjects such as nursing, home economics, and library science" (p. 209).
	1976–77	"About one-fourth...are women" (p. 210). References to subjects taught were dropped.
	1978–79	Dropped.
Lawyers	1972–73	None.
	1974–75	"...most of them men..."(p. 142).
	1976–77	"Although the majority were men, increasing numbers of women are choosing careers in law. In 1974, for example, about 1 of every 5 students in American Bar Association (ABA) approved law schools was a woman" (p. 139).
	1978–79	Dropped.
Physicians	1972–73	"...7 percent were women" (p. 78).
	1974–75	"More than 7 percent were women" (p. 479).
	1976–77	"[A]bout 7 percent...were women. The recent increase in female enrollment in medical schools points to a larger number of women doctors in the future" (p. 448).
	1978–79	Dropped.

women without children) are eligible for jobs, and their continued employment is conditioned upon their remaining unmarried" (p. 163). Further, "about 1 out of 10 of all present stewardesses are nurses, [and] girls without this qualification must, as a rule, have at least 1 or 2 years of college education" (p. 163).

In early editions of the *Handbook*, it is not unusual to find third-person singular pronouns (he, his, she, her, and so forth) used in describing the nature of work in occupations in which most workers were either men or women. Equal employment legislation such as the Civil Rights Act of 1964 and the Age Discrimination in Employment Act of 1967 prohibited the use of sex- and age-specific language in inappropriate contexts by the public employment service. To conform to these regulations, the U.S. Department of Labor issued a publication in 1975 revising nearly 3,500 job descriptions in the *D.O.T.* that were considered potentially discriminatory with regard to sex or age.[12] For example, terms circumscribing a person's age, such as "boy," "girl," "junior," and "senior," were eliminated, as was sex-stereotyping language, such as "man," "woman," "lady," and suffixes like "-ess," denoting females. Thus, "foreman" was replaced by "supervisor" and "draftsman" by "drafter." The Bureau formally adopted the use of nonsexist job titles in the 1976–77 *Handbook*, with the sole exception of "able seaman," which, for reasons unknown, was retained.

Only scattered references to the number of women employed in various occupations appeared in the 1949 *OOH*. Beginning with the 1957 *Handbook*, however, the Bureau made an effort to provide more information on the employment of women. Eventually, though, the authors became dissatisfied because they felt that numbers showing very small or very large percentages of women employed in certain occupations constituted sex stereotyping. Exhibit 2 illustrates how they wrestled with this issue in describing four occupations during the 1970s. Photographs were sought showing women and other minorities in nontraditional occupations in an attempt to counter the numbers, but they were difficult to come by. More importantly, one could not mask the impact of statements alluding to the fact that just 1 percent of engineers, but 97 percent of receptionists, were women. The subtle mes-

sage they sent, of course, was that the former was an occupation for men, the latter for women. By the mid-1970s, the Bureau believed that, from a career-counseling standpoint, the negative effects of sex stereotyping far outweighed the merits of presenting employment data on women in the *Handbook*. Consequently, the authors dropped all references to the employment of women beginning with the 1978–79 edition.

References to race. Throughout its history, the *OOH* has been sprinkled with only a few references to race. All of them should strike readers today as insensitive and irrelevant. Four of these references are associated with railroad occupations that were subject to stringent hierarchical hiring and seniority practices. In the 1949 and 1951 *Handbooks*, the occupational reports on redcaps indicated that they "must be strong enough to carry heavy baggage. Most of them are Negroes" (1949 edition, p. 343; 1951 edition, p. 425). In the 1951 and 1957 editions, text in the report on Pullman porters and passenger attendants reads, "Most porters are Negroes; a few are Filipinos" (1951 edition, p. 417; 1957 edition, p. 586). The following statement about dining-car cooks appears: "On most roads only Negro men are hired at present, although some western and northern roads employ white cooks" (1949 edition, p. 418; 1957 edition, p. 587). And on dining-car attendants, the *Handbook* says, "There is little opportunity for advancement for Negro waiters, since the stewards who are in charge on most dining cars are white men" (1951 edition, p. 420).

In the 1949 and 1951 editions, the statement on funeral directors and embalmers foolishly reports the number of mortuary establishments that were operated by Negroes. Curiously, this occupation was dropped from the 1957 *Handbook*; it would not appear again until the 1974–75 edition—this time without any reference to race.

Working conditions. Only a small number of occupational reports in early editions of the *Handbook* contained information about working conditions. Those that did generally focused on hours of work, shift work, or weekend work. Analysts tended to tack this information onto the section on earnings. Very few reports discussed occupational hazards.

The passage of the Occupational Safety and Health Act in 1970 raised social consciousness about safe and healthful working conditions. Starting with the 1974–75 edition of the *Handbook*, analysts sought to provide information about physical activities required on the job and about the workplace environment and hazards. Beginning with the 1980–81 edition, the Bureau placed this information in a separate section following that on the nature of work, to ensure greater consistency in content and format. The following excerpts from the 1949 and 1998–99 *Handbook* regarding the work of police officers clearly illustrate improvements in the treatment of working conditions:

> The predominant work schedule for city police is 8 hours a day and 48 hours a week. In several large cities the workweek has recently been cut to 40 hours. State police generally live in barracks, are on call 24 hours a days, and often work more than 60 hours a week (1949 edition, p. 143).

> Police work can be very dangerous and stressful. In addition to the obvious dangers of confrontations with criminals, the need to be constantly alert and ready to deal appropriately with any situation can be very stressful (1998–99 edition, p. 346).

Places of employment. The title of this section was changed to "Employment" starting with the 1982–83 edition of the *OOH*. The 1949 *Handbook* provided "figures on employment in each field whereever [sic] possible, both in charts and text, because the most useful single clue to the prospective employment opportunities in each occupation is the number of workers employed in it" (p. 7). This section also provides information on key industries employing workers, the geographic distribution of jobs, and the proportion of part-time and self-employed workers.

Since the 1984–85 edition, employment has been characterized in terms of jobs, and not workers, reflecting a shift from the use of household-based data to that of establishment-based data.

Training, other qualifications, and advancement. This section describes the education or training requirements for entry into various occupations, as well as the opportunities and skills needed for advancement in the occupation. Individuals can qualify for jobs in many occupations in more than one way, although generally, one way is predominant or preferred. The *Handbook* discusses the relative advantages and disadvantages of each path to qualification.

Since 1996, the Bureau has identified the category of education and training most workers took to become proficient in each of more than 500 occupations in the national industry-occupation matrix.[13] The two most recent editions of the *Handbook* have a table showing the projected fastest growing occupations and occupations having the largest numerical projected increase in employment, by level of education and training.

Job outlook. The job outlook section is the heart of the *Handbook*. It describes the projected change in employment and identifies the factors that will influence employment roughly 10 years ahead in the occupation. This section also addresses the occupation's susceptibility, in general, to layoffs due to imports, slowdowns in economic activity, and technological advancements. It calls attention, for example, to large occupations with high turnover rates that generally provide the most job openings, reflecting the need to replace workers who transfer to other occupations or who stop working. The section also seeks to inform users about job opportunities and the degree of competition that entrants are likely to encounter.

In an introductory section of the 1949 *Handbook*, the Bureau called attention to the problems of evaluating the employment outlook, but stated that "the long-run trend is more important than short-run fluctuations for appraising employment opportunities in connection with the individual's choice of a lifetime occupation" (p. 6). Despite the emphasis on long-run prospects, the 1949 and 1951 *Handbooks* presented information on the current employment situation in many fields of work and on the opportunities to be expected in the succeeding few years. These types of analyses, in general, have not reappeared since, except to call attention to anecdotal reports of widespread shortages in key occupations. For example, the 1990–91 *Handbook* indicated that physical therapists were in short supply in the recent past. The report went on to say that the situation likely would ease somewhat as the number of graduates of physical therapy programs—particularly entry-level master's degree programs—continued to increase. Within the span of a few years, the situation did indeed improve, and the 1996–97 *Handbook* stated, "[A]necdotal reports about shortages of physical therapists that existed in recent years are no longer common. The number of physical therapy education programs has increased and more graduates have moved in[to] the labor force" (p. 170). Late-1980s and early-1990s editions of the *Handbook* reported that similar conditions had existed for registered nurses.

Factors affecting employment change. Demographic trends, shifts in demand for products or services, technological innovations, the impact of imports, and changes in the way business is conducted are among the variables that drive employment in an occupation up or down. The discussion that follows looks at a few specific factors and their effect on selected occupations.

1. Demographics. In an introductory chapter, the 1949 *Handbook* used the term "baby boom" in reference to its expected influence on the employment outlook. This generation probably had a more profound impact on the demand for goods and services over the ensuing 50 years than did any other economic stimulus.[14]

The teaching profession may be the best example of occupations whose employment outlook seesawed as this "demographic pig in the python" ran its course. The 1959 *Handbook* reported shortages of qualified teachers in kindergarten and primary schools. The 1963–64 edition called attention to the growing number of secondary school teachers that would be needed during the mid- to late 1960s, when enrollments would expand rapidly as a result of the high birthrates following World War II. And the 1968–69 *Handbook* reported that opportunities over the 1966–75 period likely would be excellent for college and university teachers because "a great increase in college enrollments is in progress" (p. 188).

By the early 1970s, the slowdown in birthrates beginning in the mid-1960s, combined with a growing pool of college graduates qualified to teach at all levels of education, began affecting job prospects for teachers. In discussions of the employment outlook through the mid-1980s, the 1974–75 *Handbook* painted a gloomy picture for individuals seeking to enter the teaching profession at any of its three levels.

Currently, the job outlook for kindergarten and primary school teachers, as well as that for secondary school teachers, varies widely by geographic area and specialty. Shortages exist in inner cities and for teachers of mathematics, science, bilingual education, and computer science. Competition for college faculty positions is still keen. However, retirements should increase significantly through the middle of the next decade as the large number of faculty who entered the profession during the 1950s and 1960s reaches retirement age. In addition, the traditional college-age population will begin to grow again, spurred by the leading edge of the baby boom "echo" generation (children of the baby boomers) reaching college age.

2. Technology. Wrestling with the impending effects of office automation would tease and challenge *Handbook* analysts for years. Looking at what was said about the projected employment change for typists provides some insight into the analysts' dilemma.

The 1957 edition of the *Handbook* was the first to mention the effects of office automation on employment, saying that the introduction of new labor-saving equipment such as electric typewriters failed to halt and, in fact, stimulated the rise in employment among typists. The 1982–83 *Handbook* projected that the number of typists would grow about as fast as the average for all occupations through the 1980s as business expansion increased the volume of paperwork. The 1984–85 *OOH* projected that employment growth would be slower than average for typists through the mid-1990s, but reported that the experts were divided about the issue of the impact of office automation on employment. The 1988–89 *Handbook* reported that the productivity of typists had risen dramatically due to the installation of word-processing equipment, improvements in optical character recognition technology, and the greater use of desktop personal computers and executive workstations by more and more professionals and managers. The Bureau projected that the employment of typists (now called typists and word processors) would decline through the year 2000, despite an "information explosion" and rapid growth in the volume of business transactions. Productivity gains and organizational restructuring brought about by new technologies and improvements in telecommunications that allowed data entry to be outsourced to workers in nations with low wages pummeled the occupation in the 1990s. By the

time the 1998–99 *Handbook* was published, the occupation of typists and word processors ranked third on the list of occupations with the largest projected numerical decline in employment (–100,000) through the year 2006.

3. Foreign trade. Readers of editions of the *Handbook* produced from the 1960s through the 1980s can see jobs associated with apparel march from the North to the South and then offshore as firms in the industry strove to lower labor costs in order to compete in a constantly changing, increasingly global, marketplace.

4. The unexpected. Even one-time shocks, such as the Three Mile Island reactor accident 20 years ago, could have dampening and lasting effects on an occupation—in that case, nuclear engineers. Since the incident, and the 1986 Chernobyl disaster, only a small number of nuclear power plants remain under construction in the United States, and it is possible that some older plants will shut down because of public concerns over safety. The 1998–99 *Handbook* reports that employment growth among nuclear engineers is expected to be slower than average—contrasting sharply with the projected faster-than-average growth reported in the 1984–85 edition, the first to cover this engineering specialty.

Adjectives describing employment change. Although projections of employment change underpin information on the employment outlook in the *Handbook*, the information in the outlook section is generally presented as a qualitative statement about growth in an occupation. This is because percent changes, by themselves, may have little meaning to high school students unfamiliar with long-term growth prospects and may imply a degree of precision that is unwarranted. Job opportunities in a particular occupation usually are favorable, however, if employment increases at least as rapidly as the economy as a whole. Occupations in which employment stays about the same or declines generally offer less favorable job prospects.

Prior to the mid-1960s, when analysts developed occupational employment projections independently, rather than as part of a comprehensive statistical framework, it was not unusual to find varying phraseology to describe projected employment changes—even in the same edition of the *OOH*.[15] In the 1949 *Handbook*, for example, one finds the following descriptions:

> In the long run, there will be expanding opportunities in the profession [chemists]... (p. 76).
>
> In the long run, total employment [of meteorologists] will rise slowly... (p. 82).
>
> The profession [lawyers] is expected to go on expanding over the long run... (p. 105).
>
> The long-run trend of employment [for waiters and waitresses] is slowly upward (p. 139).
>
> Police work is an expanding field (p. 142).
>
> Over the long run, employment [of automobile mechanics] will probably continue to rise... (p. 199).
>
> The trade [shoe repairmen] can use only a few additional workers in the next several years (p. 225).

The development of comprehensive statistical projection procedures in the mid-1960s and the publication of information on projected employment changes for detailed occupations spurred efforts for greater consistency in descriptions of employment change in the *Handbook*. Thus, one finds more statements about employment being *expected to grow rapidly* or *expected to continue to decline*.

Despite this improvement, without the projections in hand, users still lacked a reference point with which to interpret employment growth. Accordingly, beginning with the 1974–75 *Handbook*, the Bureau supplied a "key" in the chapter entitled "How the *Handbook* Is Organized." (See the top half of exhibit 3.) In the 1972–85 projection series that underpinned the employment outlook information in the 1974–75 edition, the Bureau projected total employment to increase by 24.2 percent. Thus, a statement about an occupation that read "employment is expected to increase moderately" meant that the projected employment change for that occupation fell between 15.0 percent and 29.9 percent, giving the user a means to interpret the adjective describing growth, as well as a basis with which to make comparisons among occupations.

In the 1976–77 *Handbook*, the Bureau changed the adjectives "very rapid," "rapid," and "moderate" to "much faster than," "faster than," and "about as fast as" the average for all occupations, respectively. Also, the five ranges of employment decline were replaced by a single adjective categorizing the decline. With each new projection series, the ranges of percent change shifted, of course, to reflect differences in the projected change in total employment. Still, the revisions to the adjectives would hold up in subsequent editions. The bottom half of exhibit 3 shows key phrases used in the 1998–99 *Handbook* to describe projected employment changes between 1996 and 2006.

Besides describing projected employment changes, the outlook section might discuss the degree of competition for jobs that applicants are likely to encounter. This piece of information is usually couched in very qualitative terms, because a great deal of judgment underlies its description. Accordingly, as with "employment change," beginning with the 1974–75 *Handbook*, the Bureau supplied a "key" to help readers interpret the various phrases used to describe "opportunities and competition for jobs."

The Bureau's characterizations of prospective supply-demand relationships, even if expressed in qualitative terms, exhibited a certain boldness up through the 1996–97 *Hand-*

book, as illustrated in exhibit 4. In the 1998–99 edition, the Bureau confronted users with only three supply-demand categories, as opposed to the previous five. Whether this change reflects caution, wisdom, or both is left to the reader.

Availability, reliability, and consistency of earnings data. The 1949 *Handbook* reported that "few people make an occupational choice solely on the basis of how much money they may be able to earn, but most people do want to have some idea of the earnings to be expected in the various occupations they are considering" (p. 8). Not much has changed in the intervening years. Today, data on earnings are still one of the most sought-after pieces of information those contemplating a career use in their calculations. Sources of earnings data, however, did change over the years, as did approaches used to provide readers with some measure to compare earnings among occupations. In all cases, the availability of an improved alternative was the impetus for change.

The 1949 *Handbook* utilized the concept of relative earnings, depicting an occupation as a low-paying field, one that paid about the average, or a field in which earnings had been consistently high. However, not many earnings statements contained such information in the 1949 edition. The following are some of those that did:

> [The] average physician was in the top 3 percent of the population with respect to income in 1947 (p. 45).
>
> Average earnings [for funeral directors and embalmers] are not high (p. 114).
>
> Bricklayers' wages are among the highest in the building trades (p. 180).
>
> Industrial machinery repairmen are generally among the best paid maintenance workers (p. 202).
>
> AM-FM repairmen have lower wage rates than many other groups of skilled workers (p. 211).
>
> [Tool and die maker] is the highest paid machine-shop occupation (p. 231).
>
> Patternmaking is among the highest paid occupations in manufacturing (p. 259).
>
> Wage scales in this occupation [bookbinder] tend to be below the average for all printing trades (p. 309).
>
> Women bindery workers have the lowest wage rates of any group of production workers in the printing and allied industries (p. 310).

The 1957 and 1959 *Handbooks* included a chapter titled "Earnings from Work." The chapter was designed, in part, to suggest the range of earnings that young people entering the labor market could expect to receive in the immediate future. Tables and charts presented interesting and informative data showing variations in pay within broad occupational groups and selected occupations and industries. For example, the 1959 edition reported that "only 1 out of 1,000 workers in the automobile industry earned less than $2 an hour in 1957 contrasted with more than 900 out of 1,000 in the textile industries" (p. 32).

Most of the information on earnings presented in all editions of the *Handbook* up through the 1982–83 edition came from various surveys conducted by the Bureau. Nevertheless, the earnings reports relied heavily on data gathered by private and other Federal government sources, particularly in *Handbooks* whose occupational content differed from that of the BLS wage surveys and Census household survey. Because of the wide variety of sources used, the earnings data in each *Handbook*'s occupational statements referred to different periods of time, covered disparate geographic areas, represented different kinds of statistical measures, and had varying degrees of accuracy. Some of these statements did not contain any information on earnings. And it was not uncommon to find phrases such as "according to scattered reports from various parts of the country," "a very rough estimate suggests," "according to one estimate," and "according to limited data." Not surprisingly, the section titled "Points to Bear in Mind in Using the Reports" stated that comparisons between the earnings data for different occupations should be made with caution.

Exhibit 3. Key phrases having to do with employment change in the *Occupational Outlook Handbook*

Changing employment between 1972 and 1985[1]

Adjective	Increase	Decline
Very rapid	40.0 percent or more	–40.0 percent or more
Rapid	30.0 percent to 39.9 percent	–30.0 percent to –39.9 percent
Moderate	15.0 percent to 29.9 percent	–15.0 percent to –29.9 percent
Slow	5.0 percent to 14.9 percent	–5.0 percent to –14.9 percent
Little or no change	0 percent to 4.9 percent	–0 percent to –4.9 percent

Changing employment between 1996 and 2006[2]

If the statement reads. . .	Employment is projected to. . .
Grow much faster than the average	Increase 36 percent or more
Grow faster than the average	Increase 21 percent to 35 percent
Grow about as fast as the average	Increase 10 percent to 20 percent
Grow more slowly than the average, or little or no change	Increase 0 percent to 9 percent
Decline	Decrease 1 percent or more

[1] The average increase projected for all occupations for the 1972–85 period is 24.2 percent.

[2] The average increase projected for all occupations for the 1996–2006 period is 14.0 percent.

Starting with the 1974–75 *Handbook* and continuing through the 1982–83 edition, the Bureau endeavored to provide users with a measure to compare earnings among occupations. Generally, this took the form of comparing earnings in an occupation with the average earnings of all nonsupervisory workers in private industry, except farming. The earnings data were derived from the Current Employment Statistics (CES) survey.[16] In 1980, these nonsupervisory workers represented about 60 percent of all workers. Thus, the 1982–83 *Handbook* reported that

> Tool-and-die makers are among the highest paid machining workers. In 1980, tool-and-die makers employed in metropolitan areas had average earnings of $10.34 an hour. This was about one and three-fourths times as much as the average for all nonsupervisory workers in private industry, except farming (p. 418).

Exhibit 4. Key phrases having to do with opportunities and competition for jobs in the *Occupational Outlook Handbook*

Job opportunities	Prospective supply-demand relationship
Excellent	Demand much greater than supply
Very good	Demand greater than supply
Good or favorable	Rough balance between demand and supply
May face competition	Likelihood of more supply than demand
Keen competition	Supply greater than demand
If the statement reads. . .	**Job openings compared with jobseekers may be. . .**
Very good to excellent opportunities	More numerous
Good or favorable opportunities	In rough balance
May face competition or can expect keen competition	Fewer

This information was provided only for some occupations, however, and not consistently among occupations from one edition to the next. In addition, using this measure for occupations like secondary school teacher, systems analyst, and cashier probably did not benefit the user much, because the measure was too broad and, hence, largely irrelevant.

The 1984–85 *Handbook* was the first to use annually averaged weekly earnings data that became available from the household Current Population Survey (CPS) to show the earnings distribution of full-time wage and salary workers within an occupation. Using data from the 1982 CPS, many statements presented median earnings and described the earnings of the middle 50 percent, the lowest 10 percent, and the highest 10 percent, of workers. Earnings from self-employment, which tend to be higher than earnings from salaries, were not included.

Up through the current 1998–99 edition, the CPS was the major source of earnings data used in the *Handbook*. Some statements continued to include earnings data from sources other than the CPS, so, because the characteristics of these data varied, the *Handbook*, at least through the 1994–95 edition, cautioned users on the hazards of trying to compare earnings among occupations.

The forthcoming 2000–01 edition of the *Handbook* will be the first to use a new, much more extensive and more appropriate, source of occupational earnings data. Prior to 1996, the national OES survey provided data only on wage and salary employment—since the early 1980s, the key source of data used by the Bureau in developing occupational employment projections. In 1996, the OES survey was redesigned to collect earnings data. The 2000–01 edition will present earnings data from that survey for virtually every occupation covered in the *Handbook*, making it easier than ever before for users to compare earnings among occupations.[17]

Outside contributors of material. Early editions of the *OOH* relied on material prepared outside the Bureau, largely due to a continuation of collaborative relationships that were forged during the preparation of the *1946 Occupational Outlook Information Manual* for the Veterans' Administration. Through the 1976–77 edition of the *Handbook*, the material on the agricultural industry and its occupations was prepared by, or in conjunction with, the U.S. Department of Agriculture. Through the 1961 edition, the Women's Bureau of the U.S. Department of Labor contributed as many as 14 reports to each *Handbook* on occupations in which women predominated, namely, beauty operators; dental hygienists; dietitians; home economists; hospital attendants; librarians; medical laboratory technicians; medical X-ray technicians; occupational therapists; physical therapists; practical nurses; public health nutritionists; registered professional nurses; secretaries, stenographers, and typists; and social workers. Through the 1972–73 edition, the U.S. Office of Education supplied a chapter dealing with the use of the *Handbook* in career guidance activities. In the 1957 through 1961 editions, the Bureau of Employment Security of the U.S. Department of Labor prepared a section on services for jobseekers at public employment offices. Since the 1978–79 edition, staff from the Bureau's Division of Occupational Outlook have produced all material presented in the *Handbook*.

Introductory letters. The 1949 through 1978–79 editions of the *OOH* contained introductory letters attesting to the value

and usefulness of material in the *Handbook* to different constituencies. The National Vocational Guidance Association (later renamed the National Career Development Association), which had adopted a resolution at its 1947 annual convention requesting that the *Handbook* be made available for public sale, was the first endorsee. Subsequent editions also contained separate endorsement letters from various Federal Government Agencies whose missions encompassed counseling activities. The Veterans' Administration, which also provided financial support in the early years, wrote that the *Handbook* satisfied the need for current and reliable occupational information for use in the Agency's counseling and training activities. The Bureau of Employment Security of the U.S. Department of Labor championed the *Handbook* as a necessary tool for carrying out counseling functions in local employment service offices. The U.S. Department of Defense's education branch called attention to the value of the publication in preparing members of the Armed Forces for their return to civilian life. The Vocational Rehabilitation Administration called the *Handbook* an invaluable reference to counselors in the rehabilitation process, where the ultimate goal is suitable employment for the counselee. And the U.S. Office of Education said that school counselors had come to regard the book as the basic publication on occupational information. During the 1950s and 1960s, these individual accolades were not only welcomed, but unabashedly sought.

As the *Handbook*'s popularity increased, and as sales surpassed the 100,000 mark in the early 1970s, the Bureau felt that six separate endorsements were unwarranted. Accordingly, the 1974–75 through 1980-81 editions contained only a single letter of endorsement attributable to the heads of the six supportive organizations. Subsequently, the Bureau decided to drop even this single "pat on the back" from the 1982–83 edition, not out of ingratitude, but because the *Handbook*, by then a nationally recognized source of information regarding careers, could stand alone.[18]

Distribution

In his article in this issue, Harold Goldstein points out that sales of the *Handbook* by the Government Printing Office rose from an "astonishing" 40,000 copies for the 1949 edition to a peak of 153,000 for the 1982–83 edition.[19] A number of factors—all of which helped expand the user base of the *OOH*—contributed to this rise. The Bureau vigorously promoted the *Handbook* by giving presentations on various job outlooks at conferences attended by guidance counselors and librarians and to groups of students and members of professional associations and business and industry organizations. The development of career guidance information courses in counselor education programs also served to introduce succeeding generations of new counselors to the *Handbook*.

Last, but not least, was cost. Through the mid-1980s, the pricing guidelines of the Government Printing Office generally favored publications with hundreds of pages at the expense of publications with only a few pages. In 1983, a task force from the Agency recommended the adoption of a new pricing policy that distributed costs and overhead on the basis of a publication's size and number of pages. The incorporation of these recommendations shocked the Bureau when the Government Printing Office announced prices of $20 and $23, respectively, for the paper and cloth versions of the 1986–87 *OOH*—increases of more than 230 percent above the $8.50 and $10 prices charged for the previous 1984–85 edition. BLS protests were to no avail, and sales of the 1986–87 edition plummeted, to 90,000 from 147,000 for the 1984–85 *OOH*.

Under the public domain, private publishers could purchase negatives of the *OOH* for only a couple of thousand dollars, but prior to 1986, they opted not to because of unacceptable profit margins when the Government's price was under $10. The large jump in price of the *Handbook* opened a window of opportunity for private publishers to print the publication themselves, beat the Government's price, and make money. Over the past 10 years, the Government Printing Office's share of total sales continued to decline with each subsequent edition as the price spread between the Government and private vendors widened. Despite this trend, as Goldstein points out, total sales of the *Handbook* by all publishers increased well beyond the 150,000 level, as estimated sales by private vendors more than offset the Government Printing Office's losses.[20] Currently, the Agency likely accounts for only 10 percent to 15 percent of *OOH*-based publication sales.

Availability on the Internet. It is unlikely that the authors of the 1949 *Handbook* entertained dreams of technologies wherein users would eventually gain access to information in the book in other than print form. The BLS World Wide Web site went online Labor Day, 1995. In March 1996, the 1996–97 *Occupational Outlook Handbook* went online. Within one-half year, monthly "hits" at the *Handbook* website surpassed the 100,000 mark. Pre-Web users of the Internet tended to be professionals seeking primary data. Besides these professionals, post-Web users include other adults, as well as children, seeking interpreted data—especially the type of career information presented in the *Handbook*. An increasing number of schools that provide student access to computers in career centers have bookmarked the *OOH* site. This changing user base and focus is reflected, in part, in a July 1997 report, conducted for the Bureau, which indicated that the *Handbook* is used more frequently than all other BLS services by all users except those from the .com and .gov domains.[21]

In October 1998, monthly user requests for the online version of the 1998–99 edition of the *OOH*, which first became accessible in January 1998, surpassed the 1 million mark.[22]

Interestingly, analyses of user activity on the *Handbook* website allow the compilation of a "top 10 occupations" listing each month. Five occupations—computer scientists and systems analysts; administrative services managers; kindergarten, elementary, and secondary school teachers; computer programmers; and lawyers and judges—placed in top 10 spots all 12 months of 1998. Four occupations—psychologists; accountants and auditors; marketing, advertising, and public relations managers; and biological and medical scientists—consistently placed in the top 15. Two occupations—physicians and registered nurses—missed the latter category only once during the year (each placing in the 16th spot in a different month).

Through a set of four databases called America's Career Kit, the U.S. Department of Labor is expanding the Internet career services it offers to jobseekers and employers.[23] One of these databases is the Career InfoNet, a source of information for exploring careers. Users can search the database and learn about the job duties, earnings, training, and employment outlook of a given occupation. Much of the information is condensed from the *OOH* and related job outlook publications.

K-12 Educational Resources, another Department of Labor website, has a component developed by the Bureau that extracts information contained in the *Handbook*. The site presents career information on selected "jobs for kids who like" various school subjects or activities.[24]

In the near future, Yahoo.com, which, in February 1999, ranked first among most visited websites from home and work, plans to replicate the 1998–99 *Handbook* on its site and periodically furnish the Bureau with statistics on user activity.[25]

Availability on compact disk. For users who want electronic access, but do not have connections to the Internet, the *Handbook* is available for sale on CD-ROM by the Superintendent of Documents of the U.S. Government Printing Office. Like the Internet version, the *OOH* on CD-ROM is searchable and allows users to print facsimile (pdf) pages. The CD-ROM version is probably faster to load than the Internet version is. The 1992–93 through 1996–97 versions could by used only on IBM-compatible computers; the 1998–99 edition can run on Windows, Macintosh, and Unix computers. Sales of this edition are approaching the 1,000 mark. Private publishers also produce their own versions.

Use in career information delivery systems and by other career information developers. State agencies and nonprofit organizations that operate career information delivery systems rely heavily on national job outlook information presented in the *Handbook* and related publications produced by the Office of Employment Projections.[26] These systems exist in 43 States and Puerto Rico, at nearly 25,000 sites serving upwards of 10 million users.[27] Senior high schools account for 2 out of 5 user sites. Other users include other education settings, employment service offices, rehabilitation agencies, libraries, correctional institutions, and military bases.

FEW GOVERNMENT PUBLICATIONS have weathered the onslaught of time as well as the *OOH*. Although the first and the current, 23rd, editions are highly similar in content, the *Handbook* confronted and coped with changing sources of employment data, projection methods, program resources, and philosophical and societal attitudes. The *OOH* has stood like a "stone wall" during the tenure of 16 Secretaries of Labor and six Commissioners of Labor Statistics; under the stewardship of four Associate Commissioners of Employment Projections and six Division of Occupational Outlook Chiefs; and because of the dedicated efforts of hundreds of economists, statisticians, and support personnel. After 50 years, it is still a nationally recognized source of comprehensive, up-to-date, and reliable career information.

Rapid technological advances, growing foreign competition, and changing business practices will continue to confront tomorrow's workers. Resources permitting, the Division of Occupational Outlook will continue producing products like the *Handbook* and related publications, as well as making them accessible in user-friendly fashion on the Internet. The Bureau looks forward to challenges that it may face over the next 50 years in providing tomorrow's workers with essential information about prospective changes in the world of work and the skills that they will need. □

Notes

[1] *Occupational Outlook Handbook*, Bulletin 940 (Bureau of Labor Statistics, 1949), p. ii.

[2] For additional information, see Harold Goldstein, "The early history of the *Occupational Outlook Handbook*," this issue, pp. 3–7.

[3] The Wagner–Peyser Act of 1933, which created a need for a reliable source of occupational information for personnel of the newly formed U.S. Employment Service and affiliated State employment services, was the impetus for development of the *D.O.T.* First published in 1939, the volume provided standardized occupational information for use in classifying and placing jobseekers. The U.S. Department of Labor published revisions of the *D.O.T.* in 1949, 1965, 1977, and 1991.

[4] Ten years later, under more favorable budget conditions, the Bureau of Labor Statistics produced the *Career Guide to Industries*, Bulletin 2403 (Bureau of Labor Statistics, September 1992), a companion publication to the 1992–93 *OOH* that provides information on careers from an industry perspective. A second, 1994–95, edition, Bulletin 2453, was issued December 1994; beginning with the third (1998–99) edition, Bulletin 2503, in January 1998, the Bureau began producing the *Career Guide* on the same biennial production schedule as the *Handbook*.

[5] U.S. Department of Commerce, Office of Federal Statistical Policy and Standards, 1980. The *SOC* provided "a coding system and nomenclature for identifying and classifying occupations within a framework suitable for use in and out of government" (p. 8). Nevertheless, the Occupational Classification Committee members recognized that it was not possible to con-

struct a system that would meet the specific needs of all organizations. Although the 1980 and 1990 Census of Population classification structures and the Occupational Employment Statistics survey—eventually to become the principal source of occupational employment data used by the BLS Office of Employment Projections—adhered in principle to the *SOC*, each deviated in practice because of individual program considerations.

[6] See Neal Rosenthal, "The quality of BLS projections: a historical account," this issue, pp. 27–35, for a brief examination of the shift to OES survey data. See also Chester Levine, Laurie Salmon, and Daniel H. Weinberg, "Revising the Standard Occupational Classification System," this issue, pp. 36–45.

[7] The decision to drop occupations included three exceptions: Protestant ministers, rabbis, and Roman Catholic priests.

[8] The *SOC* manual was revised in 1998. The volume now has more occupational details in managerial, professional specialty, and technical occupations and fewer in clerical and production fields. Employment data under this revised classification system will not be available for use in the *Handbook* until the 2004–05 edition. Information about the 1998 *SOC* manual is available on the Internet at **http://stats.bls.gov/soc/soc_home.htm**.

[9] The forthcoming 2000–01 *Career Guide to Industries* will cover agricultural production. (Agriculture services already are covered.) There are no plans to cover railroad transportation.

[10] The computer was invented in 1946 by Presper Eckert and Jon Muchly. See Richard B. Morris, ed., *The U.S. Department of Labor Bicentennial History of the American Worker* (Washington, DC, U.S. Government Printing Office, 1976), p. 317.

[11] *OOH*, 1976–77 ed., p. 104.

[12] *Job Title Revisions to Eliminate Sex- and Age-Referent Language from the* Dictionary of Occupational Titles, 3rd ed., (U.S. Department of Labor, 1975). Curiously, the agency that produced this publication was the Manpower Administration.

[13] There are 11 categories, ranging from short-term on-the-job training to the first professional degree. For more information, see Darrel Patrick Wash, "A New Way to Classify Occupations by Education and Training," *Occupational Outlook Quarterly*, winter 1995–96, pp. 28–44; and Chapter II, "Selected Occupational Data, 1996 and Projected 2006," *Occupational Projections and Training Data*, 1998–99 ed., Bulletin 2501 (Bureau of Labor Statistics, January 1998), pp. 4–31. To conduct an online search of this new database, visit **http://stats.bls.gov/asp/oep/noeted/empoptd.asp**.

[14] The Bureau of the Census eventually would officially define the "baby boom" years to be 1946–64.

[15] For more information about the changes in procedures used to develop projections over the past 50 years, see Rosenthal, "The quality of BLS projections."

[16] The CES survey collects monthly data on employment, hours, and earnings from a sample of nonfarm establishments. The survey's average-hours and average-earnings data are derived from reports of payrolls and hours for production and related workers in manufacturing and mining, construction workers in construction, and nonsupervisory employees in private service-producing industries.

[17] For more information on the new occupational earnings data, as well as how they compare with occupational earnings data collected through the CPS, see *Occupational Projections and Training Data*, 1998–99 ed., Bulletin 2501 (Bureau of Labor Statistics, January 1998), chapter 1, pp. 1–3. Additional technical information about the OES survey, as well as 1997 OES national and State data, by occupation, are available on the Internet at **http: //stats.bls.gov/oeshome.htm**.

[18] A report published in 1981 found that the "*OOH* is the most widely used resource nationally for the greatest variety of purposes and topics. It is also probably the least expensive of all resources. If a school could not afford anything else, the one indispensable affordable resource would be the *OOH*." (See Warren Chapman and Martin R. Katz, *Survey of Career Information Systems in Secondary Schools*, Final Report of Study 1 (Princeton, NJ, Educational Testing Service, 1981), p. 98.

[19] Goldstein, "The early history."

[20] *Ibid.*

[21] Carol A. Hert and Gary Marchionini, *Seeking Statistical Information in Federal Websites: Users, Tasks, Strategies, and Design Recommendations*, final report to the Bureau of Labor Statistics, July 18, 1997, pp. 50, 53.

[22] A request is a "hit" that successfully retrieves material from the publication.

[23] For more information on the kit, see Megan Barkume, "Career Guidance from the Federal Government: Helping Workers Help Themselves," *Occupational Outlook Quarterly*, winter 1998–99, pp. 8–11 (also available on the Internet at **http://www.acinet.org/acinet/**.

[24] See http://**stats.bls.gov/k12/html/edu_over.htm.**

[25] Yahoo's ranking is reported by Media Metrix in a chart titled "Seeing the Sites," *The Washington Post*, Mar. 25, 1999, p. E11.

[26] For more information, see Matthew Mariani, "Computers and Career Guidance: Ride the Rising Tide," *Occupational Outlook Quarterly*, winter 1995–96, pp. 16–27.

[27] *1998 Directory of State-Based Career Information Systems* (Alexandria, VA, Association of Computer-Based Systems for Career Information, 1998).