Evidence From Census 2000 About Earnings by Detailed Occupation for Men and Women

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This report looks at the distribution of earnings by occupation for all workers and separately for men and women as reported on the Census 2000 long form. Earnings include wages, salaries, and self-employment income (see Text Box: *What is "Earnings"?* for more details). Whereas income questions have been asked on the decennial census only since 1940, occupation questions have been asked since 1850.[1] Census 2000 classified occupations into 509 categories, including four special codes for uniquely military occupations, based on the 2000 Standard Occupational Classification which contains 821 detailed occupations (see Text Box: *What is the Standard Occupational Classification*?).

It is not easy to describe the earnings distribution thoroughly. This report focuses on two threads to ease explication — median

[1] For the occupational classification used in the 1850 Census, see Chester Levine, Laurie Salmon, and Daniel H. Weinberg, "Revising the Standard Occupational Classification System," *Monthly Labor Review*, May 1999.

WHAT IS "EARNINGS"?

"Earnings" is the sum of wage and salary income and self-employment income. Wages are sometimes distinguished from salaries by the time period that is the basis for payment. Wage earners are often hourly employees while salaried individuals are usually paid an annual salary. This distinction between wage and salary income is not universally applied, so the Census Bureau treats them the same. Ignoring self-employment income and focusing on wages and salaries alone could skew understanding of the income distribution for occupations where self-employment income is important, so earnings are the focus of this report. See Appendix B for more details on occupations where self-employment income is important.

The text of the two Census 2000 questions used to determine earnings follows:

31. INCOME IN 1999 — Mark the "Yes" box for each income source received during 1999 and enter the total amount received during 1999 to a maximum of $999,999. Mark the "No" box if the income source was not received. If net income was a loss, enter the amount and mark the "Loss" box next to the dollar amount...If the exact amount is not known, please give best estimate.

a. **Wages, salary, commissions, bonuses, or tips from all jobs** — *Report amount before deductions for taxes, bonds, dues, or other items.*

b. **Self-employment income from own nonfarm business or farm business, including proprietorships and partnerships** — *Report NET income after business expenses.*

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earnings (earnings at the 50th percentile) and earnings dispersion (as measured by the ratio of earnings at the 90th percentile to earnings at the 10th percentile) — for all year-round, full-time (YRFT) workers by selected characteristics and across occupations.

WHAT IS THE STANDARD OCCUPATIONAL CLASSIFICATION?

The Standard Occupational Classification (SOC) is a system for classifying all occupations in the economy in which work is performed for pay or profit. The occupations in the SOC are classified at four levels of aggregation. Each occupation is classified in exactly one of 23 major groups, 96 minor groups, 449 broad occupations, and 821 detailed occupations (the 23 major groups are listed below). Each occupation is given a six-digit code. The first two digits (those preceding the hyphen) represent the major group, the third represents the minor group, the fourth and fifth represent the broad occupation, and the sixth digit represents the detailed occupation. For example, major group 19-0000 *Life, physical, and social science occupations* contains minor group 19-2000 *Physical Scientists*, which contains broad occupation 19-2010 *Astronomers and Physicists*, which in turn contains the detailed occupation 19-2012 *Physicists*. A detailed description of each occupation and the SOC principles can be found in Executive Office of the President, Office of Management and Budget, *Standard Occupational Classification Manual: 2000*, Washington, DC: Bernan Associates/National Technical Information Service, October 2000.

The major groups are:

11 Management Occupations
13 Business and Financial Operations Occupations
15 Computer and Mathematical Occupations
17 Architecture and Engineering Occupations
19 Life, Physical, and Social Science Occupations
21 Community and Social Services Occupations
23 Legal Occupations
25 Education, Training, and Library Occupations
27 Arts, Design, Entertainment, Sports, and Media Occupations
29 Healthcare Practitioner and Technical Occupations
31 Healthcare Support Occupations
33 Protective Service Occupations
35 Food Preparation and Serving Related Occupations
37 Building and Grounds Cleaning and Maintenance Occupations
39 Personal Care and Service Occupations
41 Sales and Related Occupations
43 Office and Administrative Support Occupations
45 Farming, Fishing, and Forestry Occupations
47 Construction and Extraction Occupations
49 Installation, Maintenance, and Repair Occupations
51 Production Occupations
53 Transportation and Material Moving Occupations
55 Military Specific Occupations

The Census Bureau codes the 821 SOC detailed occupations into 509 combinations, four of which are military.

The text of the Census 2000 questions on occupation follows:

28. Occupation

a. **What kind of work was this person doing?** (For example: registered nurse, personnel manager, supervisor of order department, auto mechanic, accountant)

b. **What were this person's most important activities or duties?** (For example: patient care, directing hiring policies, supervising order clerks, repairing automobiles, reconciling financial records)

Table 1.
Earnings of Year-Round, Full-Time Workers by Selected Characteristics: 1999

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/docs/sf3.pdf)*

Characteristics	Number	Percentile of the earnings distribution (dollars)					Average earnings (dollars)
		10th	25th	Median (50th)	75th	90th	
All year-round, full-time workers	82,977,500	15,000	22,000	33,000	50,000	75,000	43,000
Race/Ethnicity							
White alone, not Hispanic	63,307,780	16,000	23,000	35,000	52,000	80,000	46,000
Black alone or in combination	8,208,130	13,000	19,000	28,000	40,000	56,000	33,000
Asian alone or in combination	3,196,790	15,000	23,000	36,000	57,000	85,000	47,000
American Indian and Alaska Native alone or in combination	981,860	13,000	18,000	28,000	40,000	59,000	34,000
Native Hawaiian and Other Pacific Islander alone or in combination	197,990	14,000	20,000	30,000	42,000	60,000	36,000
Hispanic (of any race)	7,302,530	12,000	16,000	24,000	36,000	53,000	31,000
Age							
16 to 34	25,981,290	13,000	19,000	27,000	39,000	55,000	32,000
35 to 54	46,316,270	16,000	25,000	37,000	55,000	82,000	48,000
55 and older	10,679,950	14,000	22,000	35,000	55,000	87,000	49,000
Educational Attainment (aged 25 and older)							
Less than high school	7,425,330	11,000	15,000	22,000	32,000	46,000	28,000
High school graduate, no college	20,354,400	14,000	20,000	28,000	40,000	54,000	33,000
Some college	24,394,920	17,000	24,000	33,000	48,000	65,000	40,000
Bachelor's degree or higher	24,831,020	24,000	33,000	49,000	72,000	110,000	65,000
Sex							
Male	48,814,790	16,000	25,000	38,000	57,000	87,000	50,000
Female	34,162,710	13,000	19,000	28,000	40,000	56,000	33,000
Citizenship/Length of Stay							
Native	73,710,480	15,000	22,000	33,000	50,000	75,000	44,000
Naturalized and 10 or more years in United States	3,963,440	15,000	23,000	35,000	55,000	85,000	48,000
Naturalized and less than 10 years in United States	488,400	12,000	18,000	26,000	40,000	60,000	35,000
Not a citizen and 10 or more years in United States	2,258,750	12,000	17,000	25,000	40,000	65,000	36,000
Not a citizen and less than 10 years in United States	2,556,430	11,000	15,000	22,000	38,000	66,000	34,000

Source: U.S. Census Bureau, Census 2000.

EARNINGS FOR YEAR-ROUND, FULL-TIME CIVILIAN WORKERS[2]

The median earnings of the 83.0 million YRFT workers in 1999 was $33,000; average (mean) earnings was $43,000. Table 1 presents the distribution of earnings for YRFT civilian workers 16 years old or older; see Text Box:

Why does this report focus only on year-round, full-time workers?

Also presented in the table are earnings at the 10th, 25th, 75th, and 90th percentiles of earnings. Those at the 90th percentile earned $75,000, five times those at the 10th percentile.

Figures 1 and 2 present complementary illustrations of the distribution of earnings. As was indicated by the fact that average earnings exceeded median earnings by a substantial amount,

[2] The estimates in this report are based on responses from a sample of the population. As with all surveys, estimates may vary from the actual values because of sampling variation or other factors (see *Accuracy of the Estimates* on page 22). All statements made in this report have undergone statistical testing including adjustments for multiple comparisons and are significant at the 90-percent confidence level, unless otherwise noted. Differences that are not statistically different may still reflect "real" differences, especially since the width of confidence interval depends on the size of the sample and the size of the occupation considered; uncertainty remains in the magnitude and direction of the difference. To protect confidentiality, all earnings figures are reported to two significant digits only and the number of workers is rounded to the nearest 10. All calculations of derived ratios and percentages are done using unrounded estimates. Standard errors and confidence intervals are not presented because they are often within rounding error.

both figures show that earnings are "rightward skewed" — of that half of workers with earnings above the median, many workers have earnings many times the median. Of all year-round, full-time workers, 10 percent earned $15,000 or less, and 1 percent earned $5,600 or less (this group includes workers with losses from self-employment). At the top end of the distribution, 10 percent earned $75,000 or more, 5 percent earned $100,000 or more, 2 percent earned $150,000 or more,

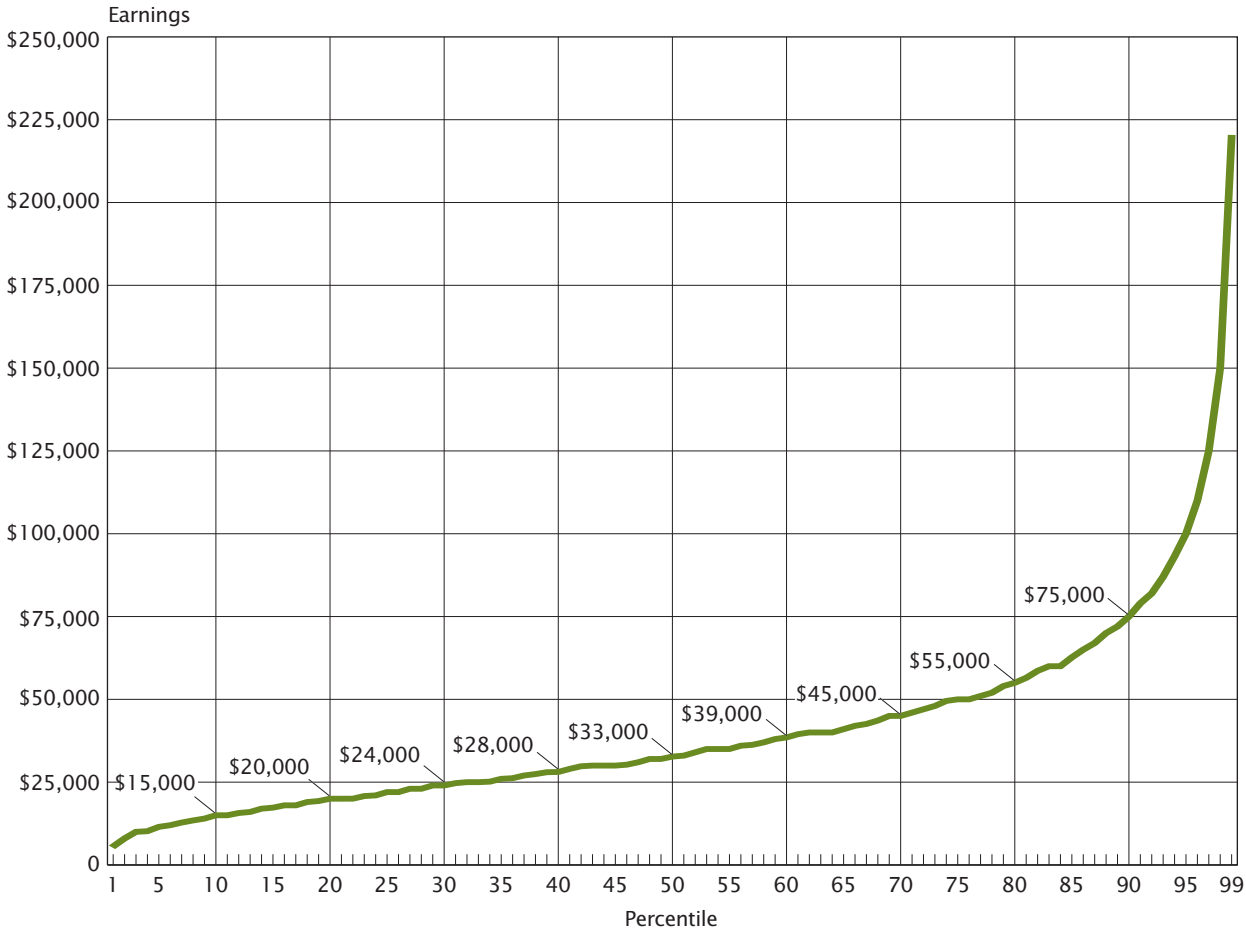
WHY DOES THIS REPORT FOCUS ONLY ON YEAR-ROUND, FULL-TIME WORKERS?

This report concentrates on *year-round, full-time workers in the civilian labor force 16 years of age or older*. Year-round means an individual worked 50 or more weeks in 1999 (or is an elementary or secondary school teacher who worked 37 or more weeks).[3] Full-time means the individual worked 35 or more hours a week. Workers in the armed forces are excluded. If this limitation had not been imposed, occupations where part-time or part-year work is prevalent would have lower earnings and higher earnings dispersion simply because of the fewer hours worked by some each year, not because of variation within the occupation for comparably employed individuals.

[3] Paid vacations count as weeks worked.

Figure 1.
Distribution of Earnings: 1999

(All civilian noninstitutionalized year-round, full-time workers. Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf*)



Note: Dollar figures indicate earnings for each decile for the 10th through the 90th percentile.
Source: U.S. Census Bureau, Census 2000.

and 1 percent earned $220,000 or more.[4]

A few findings, most of which confirm conventional wisdom, are apparent from Table 1. Asians followed by non-Hispanic Whites earn more than any other racial or ethnic group.[5] People in their prime earning years (35 to 54) earn more than those younger at all points in the earnings distribution, and earn more than those older for much of the distribution.[6] Of people aged 25 and older, those with a Bachelor's degree or higher educational attainment earn the most.[7] Men earn more than women at all points in

[4] Figure 2 also illustrates the tendency of survey respondents to report rounded numbers; note the "heaping" of responses at $100,000, $150,000, and $200,000.

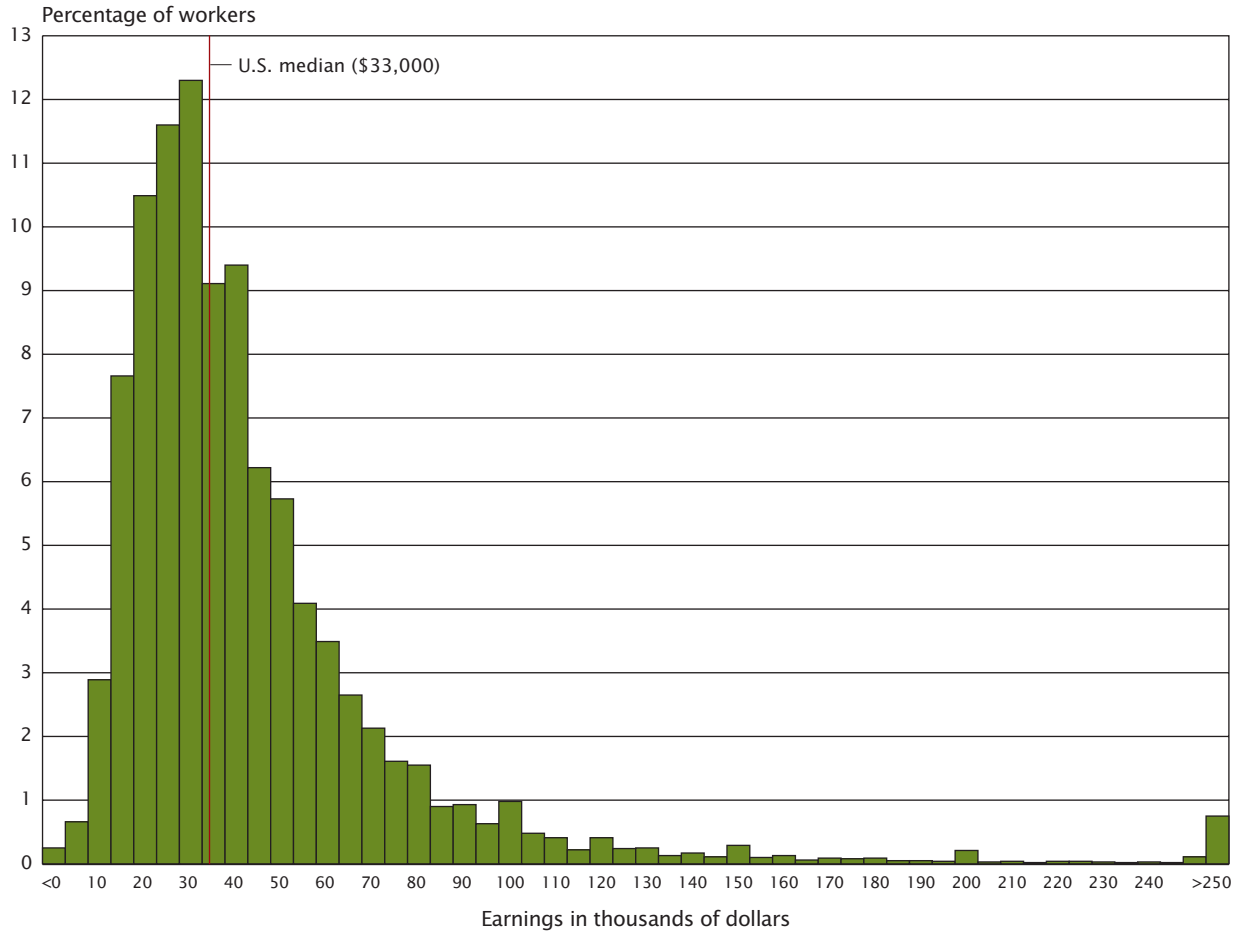
[5] Census 2000 allowed respondents to choose more than one race. With the exception of Whites, all the race groups discussed in this report refer to people who chose a particular single racial identity *or* that race in combination with one or more other races. Statistics for comparison purposes are computed for non-Hispanic Whites — people who did not indicate a Hispanic or Latino ethnicity and chose only one race, White. The use of this categorization does not imply that it is the preferred method of presenting or analyzing race-based data. The Census Bureau uses a variety of approaches. In Census 2000, 2.4 percent of people reported more than one race.

[6] Those aged 55 and older who are below the 80th percentile of the earnings distribution of their age group earn less than those younger; it is the earnings of those at the 80th percentile and above which make the average earnings of the older group exceed that of the younger.

[7] Educational attainment is used here only for those 25 and older as many aged under 25 have not yet completed schooling.

Figure 2.
Distribution of Workers by Earnings Category: 1999

(All civilian noninstitutionalized year-round, full-time workers. Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf*)



Source: U.S. Census Bureau, Census 2000.

Table 2.
Earnings of Year-Round, Full-Time Workers by Major Industry Group: 1999

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/docs/sf3.pdf)*

Major industry group	Number	Percentile of the earnings distribution (dollars)					Average earnings (dollars)
		10th	25th	Median (50th)	75th	90th	
All year-round, full-time workers	**82,977,500**	**15,000**	**22,000**	**33,000**	**50,000**	**75,000**	**43,000**
Agriculture, forestry, fishing, and hunting	1,073,970	6,000	13,000	22,000	36,000	59,000	31,000
Mining	371,310	20,000	30,000	42,000	59,000	83,000	51,000
Utilities	1,009,910	22,000	32,000	45,000	62,000	80,000	50,000
Construction	5,771,660	15,000	22,000	32,000	49,000	70,000	41,000
Manufacturing	14,229,970	17,000	24,000	35,000	52,000	76,000	44,000
Wholesale trade	3,479,860	17,000	24,000	35,000	50,000	80,000	46,000
Retail trade	8,396,580	12,000	18,000	26,000	40,000	65,000	36,000
Transportation and warehousing	3,927,470	18,000	26,000	37,000	49,000	65,000	42,000
Information	2,781,490	19,000	28,000	40,000	61,000	90,000	53,000
Finance and insurance	4,932,420	18,000	25,000	36,000	60,000	100,000	56,000
Real estate and rental and leasing	1,552,940	14,000	21,000	32,000	51,000	93,000	49,000
Professional, scientific, and technical services	5,325,960	20,000	30,000	47,000	75,000	120,000	66,000
Management of companies and enterprises	57,720	21,000	30,000	45,000	73,000	120,000	67,000
Administrative and support and waste management services	2,388,830	12,000	18,000	26,000	40,000	60,000	34,000
Educational services	6,104,670	17,000	25,000	35,000	48,000	63,000	39,000
Health care and social assistance	8,704,040	14,000	20,000	30,000	45,000	70,000	42,000
Arts, entertainment, and recreation	1,128,050	12,000	19,000	28,000	40,000	60,000	36,000
Accommodation and food services	3,198,290	10,000	13,000	20,000	30,000	46,000	27,000
Other services (except public administration)	3,549,200	11,000	17,000	26,000	40,000	56,000	32,000
Public administration	4,993,160	20,000	27,000	38,000	53,000	70,000	43,000

Note: Major industry groups are presented in North American Industry Classification System (NAICS) order.

Source: U.S. Census Bureau, Census 2000.

the earnings distribution — the ratio rises from 23 percent higher at the 10th percentile, to 36 percent higher at the median, to 54 percent higher at the 90th percentile. Naturalized citizens who have been in the United States 10 or more years earn more than natives, who in turn earn more than other naturalized citizens and non-citizens. Not surprisingly, non-citizens who have been in the country less than 10 years earn the least.

Table 2 shows the distribution of earnings by major industry group.[8] Again, there are few surprises in this list. Median earnings are lowest in *Accommodation and food services* ($20,000), followed by *Agriculture, forestry, fishing, and hunting* ($22,000). Also low are *Retail trade; Administrative and support and waste management services*; and *Other services (except public administration*), all at $26,000. The industries with the highest median earnings are *Professional, scientific, and technical services* ($47,000), and *Utilities* and *Management of companies and enterprises* ($45,000), followed by *Mining* ($42,000), and *Information* ($40,000).[9] But this grouping of earners by industry group conflates the wage of a receptionist with the salary of a company president, the wage of a hospital janitor with the chief of surgery, and so forth. So now we turn to the main foci of this report — how wages and earnings differ by occupation, and how they further differ by gender. Additional discussion of occupational differences by industry is presented in Appendix A.

EARNINGS BY OCCUPATION

The most populous occupational category among the 505 civilian occupations coded by the Census Bureau is *Secretaries and administrative assistants*, with 2.4 million YRFT workers. Their median earnings in 1999 was $26,000, or 21 percent below the national median. One of the smallest

[8] To make distinctions among major industry groups (industries) and occupations clearer for the reader, especially given the embedded commas in some titles, only the first letter of each industry or occupation is capitalized, the title is shown in italics, and, when helpful because of embedded commas, a series of titles is separated by semicolons.

[9] All comparisons between median earnings for industries are statistically significant except among *Manufacturing, Educational services*, and *Wholesale trade*; among *Retail trade, Administrative and support and waste management services*, and *Other services (except public administration)*; between *Construction* and *Real estate and rental and leasing*; and between *Utilities* and *Management of companies and enterprises.*

occupations coded by the Census Bureau is *Media and communication equipment workers, all other*, with just 500 workers in the United States, and median earnings of $45,000 — 38 percent above the national median.[10]

Figure 3 presents the full earnings distribution for the 50 detailed occupations with the highest median earnings, ordered by median earnings.[11] The only two occupations whose median earnings are $100,000 or higher are *Physicians and surgeons* (median earnings of $120,000) and *Dentists* ($100,000). Seven additional occupations have median earnings in the $75,000-$90,000 range; they are *Chief executives* ($88,000), *Podiatrists* ($84,000), *Lawyers* ($82,000), *Engineering managers* and *Optometrists* ($80,000), and *Petroleum engineers* and *Natural sciences managers* ($75,000).[12]

Figure 4 shows the 50 occupations with the lowest median earnings.[13] Occupations with low median earnings are *Dishwashers* (median earnings of $13,000); *Counter attendants, cafeteria, food concession, and coffee shop* and *Child care workers* (both at $14,000); *Maids and housekeeping cleaners*; *Dining room and cafeteria attendants and bartender helpers; Food preparation workers; Teacher assistants; Hosts and hostesses, restaurant, lounge, and coffee shop*; and *Combined food preparation and serving workers, including fast food* (all at $15,000).[14] Interestingly, seven of these nine (and three of the next five — *Waiters and waitresses; Personal and home care aides; Food preparation and serving related workers, all other; Cooks;* and *Cashiers* — all at $16,000) are in the retail food services business (restaurants).[15]

Only the largest occupations can support more detailed analysis. In order to present reasonably reliable results, the remaining sections present estimates only for occupations with at least 10,000 workers and only for demographic groups with at least 1,000 workers.

EARNINGS BY OCCUPATION AND DEMOGRAPHIC CHARACTERISTIC

The familiar relationship between female and male earnings is illustrated in Figure 5, where it is clear that women at every percentile level of their earnings distribution earn less than men at the same percentile level. But these comparisons do not control for other differences — differences in age, education, and occupation. In other words, do women of comparable experience (as measured by age and education) earn the same as men in the same occupation? If differences do exist, they are not necessarily due to discrimination in hiring or promotion, though that may well be a contributing factor. Other underlying processes, such as free choice, geographic location, educational opportunities, industrial growth, culture, marriage and employment practices, gender-based preferences, the presence of unions, work history and experience, and many other factors may contribute to differences in remuneration.[16]

The General Accounting Office has recently studied the gender gap in earnings using the Panel Study of Income Dynamics and concluded:

> Of the many factors that account for difference in earnings between men and women, our model indicated that work patterns are key. Specifically, women have fewer years of work experience, work fewer hours per year, are less likely to work a full-time schedule, and leave the labor force for longer periods of time than men. Other factors that account for earnings differences include industry, occupation, race, marital status, and job tenure. When we account for difference between male and female work patterns as well as other key factors, women earned, on average, 80 percent of what men earned in 2000....Even after accounting for key factors that affect

[10] The full earnings distribution for all detailed occupations by sex is available at *www.census.gov/population/www/cen2000/phc-t33.html*. The number of *Media and communication equipment workers, all other* is not statistically different from the number of *Transit and railroad police* or *Hunters and trappers*.

[11] The 50 occupations with the highest median earnings account for 9.9 percent of YRFT workers and 20.0 percent of earnings.

[12] The earnings of the following occupations are not different from the others listed: *Podiatrists* from all others listed except *Physicians and surgeons; Engineering managers* from *Optometrists* and *Natural sciences managers; Natural sciences managers* from *Optometrists* and *Petroleum engineers*. Also, the median earnings of *Petroleum engineers* and *Natural sciences managers* are not different from *Actuaries*.

[13] The 50 occupations with the lowest median earnings account for 9.8 percent of YRFT workers and 4.9 percent of earnings.

[14] The earnings of the following occupations are not statistically different from the others listed: *Hosts and hostesses, restaurant, lounge, and coffee shop* from the other eight occupations; *Teacher assistants, Maids and housekeeping cleaners, Dining room and cafeteria attendants and bartender helpers*, and *Food preparation workers* from each other.

[15] Some 15 percent of *Cashiers* work in the *Accommodation and food services* industry group as well. The earnings of the following occupations are not statistically different from the others listed: *Food preparation and serving related workers, all other* and *Hosts and hostesses, restaurant, lounge, and coffee shop* from all occupations listed in this paragraph; *Waiters and waitresses* and *Cooks* from *Personal and home care aides*.

[16] See Francine D. Blau, Marianne A. Ferber, and Anne E Winkler, *The Economics of Women, Men, and Work (Fourth Edition)*, Prentice-Hall, 2001, for further information on the possible sources of occupational differences in earnings between men and women.

Figure 3.

Fifty Occupations With the Highest Median Earnings for Year-Round, Full-Time Workers: 1999

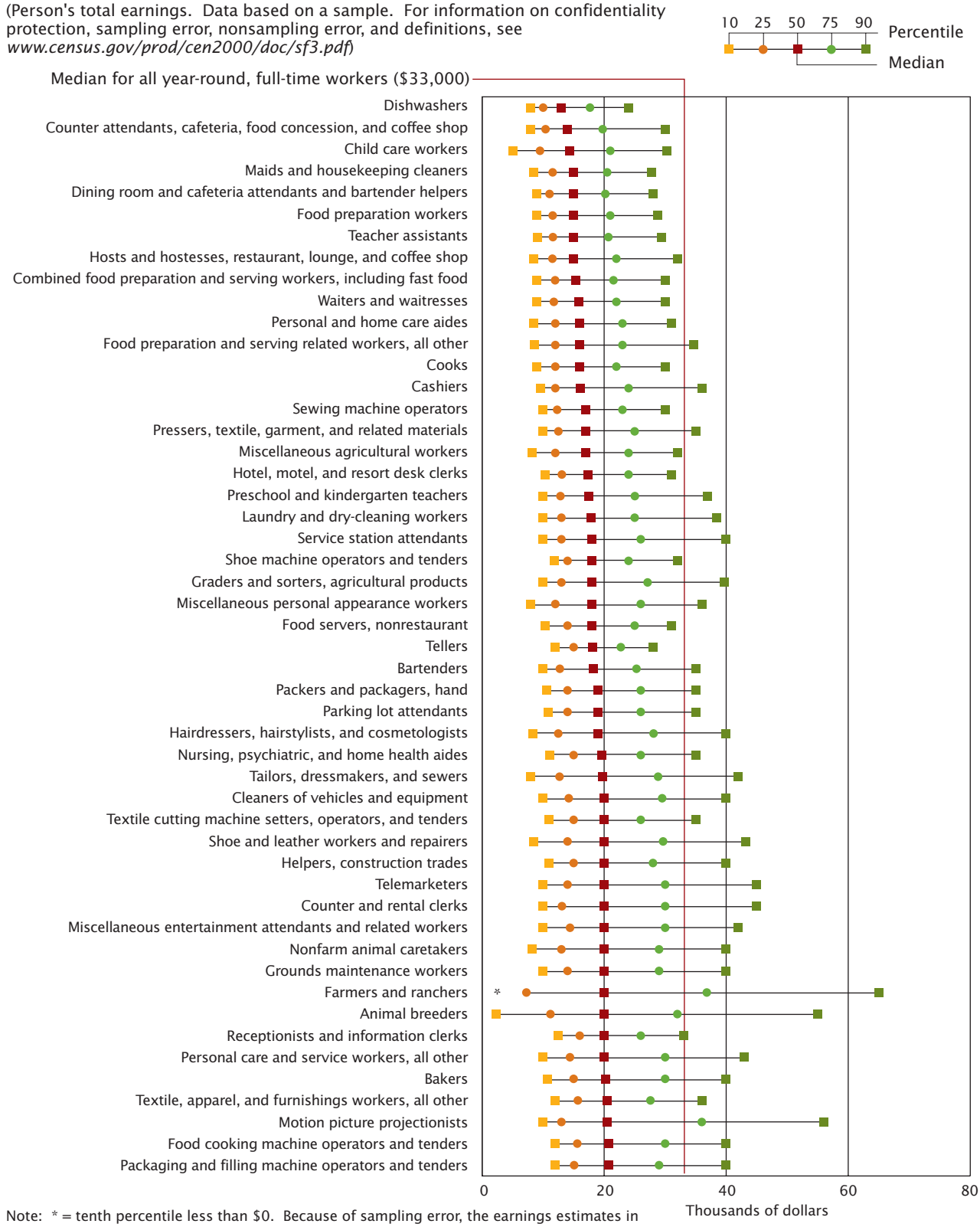
(Person's total earnings. Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf*)

Note: FLSM = First-line supervisors/managers. Because of sampling error, the earnings estimates in this figure may not be significantly different from one another or from other occupations not listed.
Source: U.S. Census Bureau, Census 2000.

Figure 4.

Fifty Occupations With the Lowest Median Earnings for Year-Round, Full-Time Workers: 1999

(Person's total earnings. Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf*)

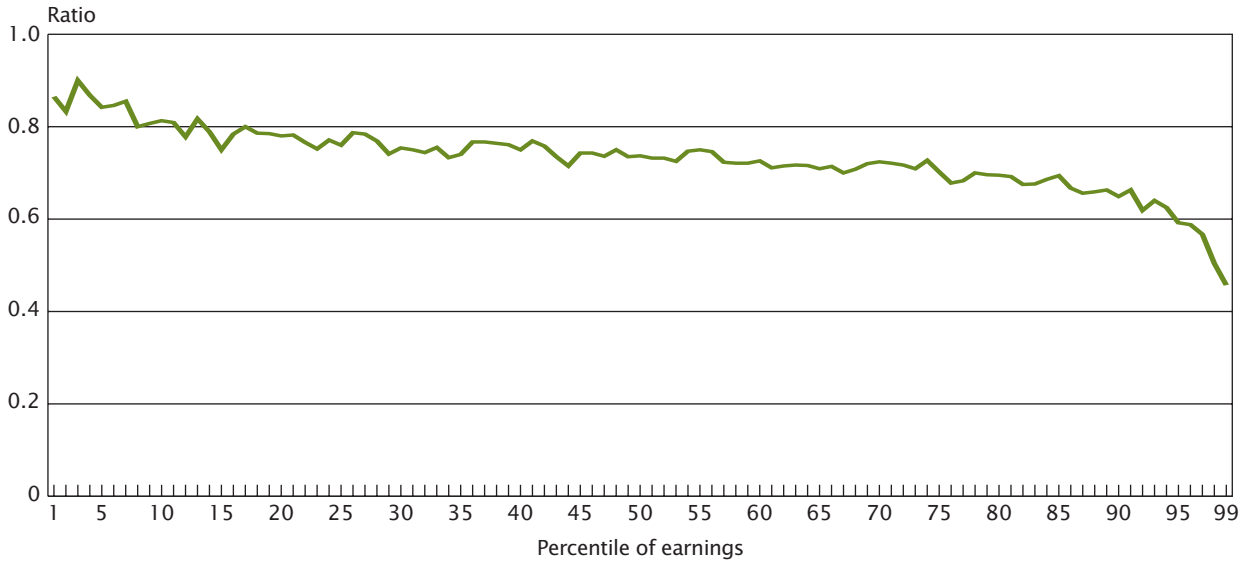


Note: * = tenth percentile less than $0. Because of sampling error, the earnings estimates in this figure may not be significantly different from one another or from other occupations not listed.
Source: U.S. Census Bureau, Census 2000.

Figure 5.

Ratio of Women's Earnings to Men's Earnings by Earnings Percentile: 1999

(All civilian noninstitutionalized year-round, full-time workers. Data based on a sample.
For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf*)



Source: U.S. Census Bureau, Census 2000.

Table 3.

Twenty Occupations With the Lowest Percentage of Female Workers: 1999

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/docs/sf3.pdf)*

Occupation	Standard Occupational Classification code	Number of year-round, full-time workers	Percent female
Heavy vehicle and mobile equipment service technicians and mechanics	49-3040	143,610	0.7
Bus and truck mechanics and diesel engine specialists	49-3031	244,690	1.0
Brickmasons, blockmasons, and stonemasons	47-2020	101,810	1.0
Carpenters	47-2031	803,840	1.5
Pipelayers, plumbers, pipefitters, and steamfitters	47-2150	380,780	1.5
Heating, air conditioning, and refrigeration mechanics and installers	49-9021	232,880	1.5
Automotive body and related repairers	49-3021	131,780	1.5
Automotive service technicians and mechanics	49-3023	738,290	1.6
Operating engineers and other construction equipment operators	47-2073	224,000	1.7
Roofers	47-2181	98,760	1.7
Electrical power-line installers and repairers	49-9051	87,740	2.0
Millwrights	49-9044	58,110	2.0
Carpet, floor, and tile installers and finishers	47-2040	129,130	2.1
Electricians	47-2111	533,790	2.2
Drywall installers, ceiling tile installers, and tapers	47-2080	98,850	2.2
FLSM of construction trades and extraction workers	47-1011	720,740	2.4
Logging workers	45-4020	52,930	2.6
Construction laborers	47-2061	578,650	2.7
Stationary engineers and boiler operators	51-8021	82,740	2.8
Tool and die makers	51-4111	103,800	2.9
FLSM of fire fighting and prevention workers	33-1021	41,910	2.9

Note: FLSM = First-line supervisors/managers. Includes only occupations with 10,000 or more year-round, full-time workers, at least 1,000 male workers, and at least 1,000 female workers. Ties in estimated percentage female are listed in decreasing order of size. Because of sampling error, the estimates in this table may not be significantly different from one another or from other occupations not listed in this table.

Source: U.S. Census Bureau, Census 2000.

earnings, our model could not explain all of the differences in earnings between men and women.[17]

Of 422 detailed occupations with 10,000 or more YRFT workers, there are 97 where 10 percent or less of the workers are women; 61 occupations have 5 percent or less, 20 have 2 percent or less, and 3 have 1 percent or less. Table 3 lists the 20 occupations with the lowest percentage of workers who are women.[18] The occupations with the lowest percentage female (with only a few exceptions) are in just four major occupation groups, sometimes called "hard hat" occupations: [47] *Construction and extraction occupations*; [49] *Installation, maintenance, and repair occupations;* [51] *Production occupations;* and [53] *Transportation and material moving occupations*.[19]

The 20 occupations with the highest percentage female are similarly concentrated in just a few major groups — 14 of the 20 are in just two: [29] *Healthcare practitioner and technical occupations*, and [43] *Office and administrative support occupations* (see Table 4).

In only 13 occupations were women 90 percent or more of the YRFT workforce.[20]

Median Earnings by Sex

According to the Current Population Survey, the female-to-male earnings ratio at the median for year-round, full-time workers was 77 percent in 2002, an increase of 5 percentage points since 1999, the vintage of data used in this report. This report focuses on 1999 since the detail from the decennial census long form is needed to analyze earnings by detailed occupation, age, education, and sex.

[17] U.S. General Accounting Office, "Women's Earnings: Work Patterns Partially Explain Difference Between Men's and Women's Earnings," GAO-04-35, October 2003, page 2.

[18] Confidence intervals for the percentage female for some occupations with estimates different from the specified percentage may include that percentage.

[19] The numbers in brackets represent the occupational "major group."

[20] Not included in this list are some occupations whose confidence intervals for the percentage of female workers include 90 percent although their estimated percentages female fall below 90 percent.

Table 4.
Twenty Occupations With the Highest Percentage of Female Workers: 1999

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/docs/sf3.pdf)*

Occupation	Standard Occupational Classification code	Number of year-round, full-time workers	Percent female
Preschool and kindergarten teachers	25-2010	224,730	97.5
Dental assistants	31-9091	100,140	97.3
Secretaries and administrative assistants	43-6010	2,409,830	96.7
Dental hygienists	29-2021	37,400	96.1
Child care workers	39-9011	464,100	95.5
Word processors and typists	43-9022	97,090	94.3
Receptionists and information clerks	43-4171	476,580	93.7
Speech-language pathologists	29-1127	35,680	93.6
Tellers	43-3071	200,360	92.2
Licensed practical and licensed vocational nurses	29-2061	353,090	92.1
Medical records and health information technicians	29-2071	59,770	91.0
Registered nurses	29-1111	1,384,630	90.6
Payroll and timekeeping clerks	43-3051	148,710	90.0
Teacher assistants	25-9041	175,770	89.4
Bookkeeping, accounting, and auditing clerks	43-3031	1,080,270	89.3
Dietitians and nutritionists	29-1031	45,910	88.7
Medical assistants and other healthcare support occupations	31-9092 through 31-9099	307,590	88.3
Billing and posting clerks and machine operators	43-3021	262,290	88.3
Switchboard operators, including answering service	43-2011	41,040	87.8
Paralegals and legal assistants	23-2011	202,450	87.6

Note: Includes only occupations with 10,000 or more year-round, full-time workers, at least 1,000 male workers, and at least 1,000 female workers. Ties in estimated percentage female are listed in decreasing order of size. Because of sampling error, the estimates in this table may not be significantly different from one another or from other occupations not listed in this table.

Source: U.S. Census Bureau, Census 2000.

Table 5.
Twenty Occupations With the Highest Median Earnings by Sex: 1999

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf)*

Men	Median (dollars)	Women	Median (dollars)
All year-round, full-time workers	**38,000**	**All year-round, full-time workers**	**28,000**
Physicians and surgeons	140,000	Physicians and surgeons	88,000
Dentists	110,000	Engineering managers	75,000
Chief executives	95,000	Dentists	68,000
Lawyers	90,000	Lawyers	66,000
Judges, magistrates, and other judicial workers	88,000	Optometrists	65,000
Natural sciences managers	84,000	Pharmacists	63,000
Optometrists	84,000	Chief executives	60,000
Actuaries	80,000	Economists	60,000
Engineering managers	80,000	Computer and information systems managers	58,000
Economists	73,000	Sales engineers	57,000
Astronomers and physicists	71,000	Actuaries	56,000
Chemical engineers	70,000	Air traffic controllers and airfield operations specialists	56,000
Computer and information systems managers	70,000	Chemical engineers	56,000
Financial analysts	70,000	Computer software engineers	55,000
Marketing and sales managers	70,000	Natural sciences managers	55,000
Pharmacists	70,000	Aerospace engineers	54,000
Veterinarians	70,000	Electrical and electronics engineers	54,000
Personal financial advisors	69,000	Astronomers and physicists	51,000
Air traffic controllers and airfield operations specialists	67,000	Engineers, all other	51,000
Management analysts	67,000	Computer programmers	50,000
		Environmental engineers	50,000
		Judges, magistrates, and other judicial workers	50,000
		Materials engineers	50,000
		Mechanical engineers	50,000

Note: Occupations with 10,000 or more year-round, full-time workers, at least 1,000 male workers, and at least 1,000 female workers. Ties in estimated median earnings are listed alphabetically. Because of sampling error, the estimates in this table may not be significantly different from one another or from other occupations not listed in this table.

Source: U.S. Census Bureau, Census 2000.

Table 5 shows the 20 occupations (and ties) with the highest median earnings for men and for women. The highest-paid occupation for men and for women is *Physicians and surgeons*, but the female median ($88,000) is only 63 percent of the male median ($140,000). Different degrees of specialization within an occupation and different choices of industry or business organization may affect the ratio. For example, women might choose more frequently than men to practice in lower-paid medical specialties (such as pediatrics) or in lower-paid institutional settings (such as health maintenance organizations).

Fifteen of the 20 listed occupations for men appear on the list for women, and in all cases, the female median is less than that for men. In fact, the occupation third on the list for women makes the same as the occupation last on the list for men ($67,000). A similar pattern is shown for the lowest-paid occupations (Table 6). Sixteen occupations appear on both lists, and in all cases but one (*Dining room and cafeteria attendants and bartender helpers*), women make less than men in the same occupation.

In only five occupations are female median earnings at least 100 percent of male median earnings (see Table 7), but the ratios for an additional six occupations — *Highway maintenance workers* (0.986), *Dieticians and nutritionists* (0.943), *Engineering managers* (0.938), *Other transportation workers* (0.936), *Electronic home entertainment equipment installers and repairers* (0.926), and *Tire builders* (0.925) — are not statistically different from 1.000. Perhaps surprisingly, women are a majority of the workforce in only two of those eleven — *Meeting and convention planners* and *Dieticians and nutritionists*. Only four more occupations fall in the range 95-99 percent.[21] Interestingly, five of the nine occupations listed in Table 7 are in the same major occupation groups as those with the lowest percent

[21] A number of occupations have ratios not statistically different from 0.950, including all those with ratios 0.920 to 0.949 except *Special education teachers*.

Table 6.
Twenty Occupations With the Lowest Median Earnings by Sex: 1999

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf)*

Men	Median (dollars)	Women	Median (dollars)
All year-round, full-time workers	**38,000**	**All year-round, full-time workers**	**28,000**
Dishwashers	14,000	Dishwashers	12,000
Dining room and cafeteria attendants and bartender helpers	15,000	Farmers and ranchers	12,000
Counter attendants, cafeteria, food concession, and coffee		Counter attendants, cafeteria, food concession, and coffee shop	13,000
Food preparation workers	16,000	Child care workers	14,000
Combined food preparation and serving workers, including fast food	17,000	Miscellaneous agricultural workers	14,000
		Cashiers	15,000
Cooks	17,000	Combined food preparation and serving workers, including fast food	15,000
Miscellaneous agricultural workers	18,000		
Maids and housekeeping cleaners	19,000	Cooks	15,000
Miscellaneous personal appearance workers	19,000	Dining room and cafeteria attendants and bartender helpers	15,000
Parking lot attendants	19,000		
Personal and home care aides	19,000	Food preparation workers	15,000
Service station attendants	19,000	Graders and sorters, agricultural products	15,000
Waiters and waitresses	19,000	Host and hostesses, restaurant, lounge, and coffee shop	15,000
Cleaners of vehicles and equipment	20,000	Laundry and dry-cleaning workers	15,000
Farmers and ranchers	20,000	Maids and housekeeping cleaners	15,000
Grounds maintenance workers	20,000	Pressers, textile, garment, and related materials	15,000
Helpers, construction trades	20,000	Service station attendants	15,000
Hosts and hostesses, restaurant, lounge, and coffee shop	20,000	Teacher assistants	15,000
Hotel, motel, and resort desk clerks	20,000	Waiters and waitresses	15,000
Teacher assistants	20,000	Bartenders	16,000
Tellers	20,000	Counter and rental clerks	16,000
		Hotel, motel, and resort desk clerks	16,000
		Parking lot attendants	16,000
		Personal and home care aides	16,000
		Sewing machine operators	16,000

Note: Occupations with 10,000 or more year-round, full-time workers, at least 1,000 male workers, and at least 1,000 female workers. Ties in estimated median earnings are listed alphabetically. Because of sampling error, the estimates in this table may not be significantly different from one another or from other occupations not listed in this table.

Source: U.S. Census Bureau, Census 2000.

Table 7.
Occupations Where Median Earnings of Women are at Least 95 Percent of Median Earnings of Men: 1999

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf)*

Occupation	Number of year-round, full-time workers	Percent female	Ratio of female-to-male median earnings
All year-round, full-time workers	**82,977,500**	**41.2**	**0.737**
Hazardous materials removal workers	12,060	9.9	1.094
Telecommunications line installers and repairers	134,360	6.3	1.004
Meeting and convention planners	22,620	76.5	1.000
Dining room and cafeteria attendants and bartender helpers	53,100	38.6	1.000
Helpers, construction trades	28,780	4.3	1.000
Highway maintenance workers	70,700	3.6	0.986
Radio and telecommunications equipment installers and repairers	185,460	12.9	0.971
Postal service clerks	127,010	49.2	0.968
Postal service mail sorters, processors, and processing machine operators	97,120	45.2	0.950

Note: Occupations with 10,000 or more year-round, full-time workers, at least 1,000 male workers, and at least 1,000 female workers. Because of sampling error, the estimates in this table may not be significantly different from one another or from other occupations not listed in this table.

Source: U.S. Census Bureau, Census 2000.

female — *Construction and extraction occupations*, and *Installation, maintenance, and repair occupations*. On the other hand, in only four occupations (the first four listed in Table 8) do women earn statistically less than 60 percent of men, and the nine occupations listed in the table with point estimates 0.60 or lower are spread across six different major occupational groups.

The Effect of Education and Age

Choice of occupation, age (an imperfect proxy for work experience), and education also affect earnings. To see how much effect these factors have on earnings, the next part of this analysis focuses on YRFT workers aged 35 to 54, and examines the effects of education.[22]

Compared to all women versus all men, women aged 35 to 54 have a lower earnings ratio than men 35 to 54 at all points in the distribution — at the median, women aged 35 to 54 earn 71.4 percent of similar men at the median, compared to 73.7 percent for all women compared to all men (Table 9). Education has mixed effects on this difference. The only women aged 35 to 54 to earn more than 71.4 percent of men at the median are those with some college education, but only a bit more, 72.1 percent. The lowest ratio in the table is for women aged 35 to 54 with a college education at the 90th percentile of earnings — they earn just 55.1 percent of comparable men. So education alone contributes little toward equality between men's and women's median earnings.

Table 8.
Occupations Where Median Earnings of Women are 60 Percent or Less of Median Earnings of Men: 1999

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf)*

Occupations	Number of year-round, full-time workers	Percent female	Ratio of female-to-male median earnings
All year-round, full-time workers	**82,977,500**	**41.2**	**0.737**
Paper goods machine setters, operators, and tenders	32,700	21.2	0.548
Securities, commodities, and financial services sales agents	290,550	30.8	0.560
Personal financial advisors	188,690	29.8	0.565
Judges, magistrates, and other judicial workers	46,590	35.8	0.568
Models, demonstrators, and product promoters	11,870	57.8	0.575
Physician assistants	37,660	58.3	0.583
Financial specialists, all other	34,580	56.7	0.597
Farmers and ranchers	362,670	10.6	0.600
Insurance sales agents	385,520	40.1	0.600

Note: Occupations with 10,000 or more year-round, full-time workers, at least 1,000 male workers, and at least 1,000 female workers. Because of sampling error, the estimates in this table may not be significantly different from one another or from other occupations not listed in this table.

Source: U.S. Census Bureau, Census 2000.

The Effect of Education, Age, and Occupation

Turning now to detailed occupation differences by education for 35 to 54-year olds, Table 10 presents median earnings ratios for the 43 largest occupations (those with 500,000 YRFT workers or more).[23] There aren't many "success stories" for women in this table — only a few demonstrate an earnings ratio of 90 percent or more. These are the top three *Registered nurses* education categories (those with a high school education or more); *Bookkeeping, accounting, and auditing clerks* with less than a high school education; *Automotive service technicians and mechanics* with some college; and *Police and sheriff's patrol officers* with a Bachelor's degree or more.[24]

Turning now to all education-occupation combinations, there are only 16 (out of 623 combinations where the number of YRFT workers 35-54 equals 10,000 or more, and the number of male and female such workers equals 1,000 or more) in which women at some education level earn 95 percent or more of comparable men.[25] The occupations with a 95 percent ratio for multiple education levels are *Paralegals and*

[22] Some younger workers (those aged 16-34) tend to lack workforce and job experience, and may not have completed their education, while workers older than 54 may see some erosion of job skills, face some age-related discrimination, or take post-retirement jobs in lower-paid occupations to supplement pensions.

[23] This 500,000 threshold was established to keep the discussion manageable, not for any statistical reason. These 43 occupations account for about half (50.2 percent) of all YRFT workers.

[24] The following education-occupation combinations have ratios not statistically different from 0.900: *Electricians* with some college (0.889), *Stock clerks and order fillers* with a Bachelor's degree or more (0.889), *Computer scientists and systems analysts* with less than a high school education (0.878), *Police and sheriff's patrol officers* with a high school education (0.875), and *Driver/sales workers and truck drivers* with a Bachelor's degree or more (0.869). Most of these are due to relatively low numbers of male or female workers leading to relatively large standard errors. For example, there are fewer than 1,100 male and female *Computer scientists and systems analysts* with less than a high school education.

[25] There are another 21 combinations with a point estimate of 0.900 to 0.949 which cannot be distinguished statistically from 0.950.

Table 9.
Ratio of Female-to-Male Earnings by Education: 1999

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf)*

Education	Number	Percent female	Ratio at specified earnings percentile				
			10th	25th	50th	75th	90th
All year-round, full-time workers	**82,977,500**	**41.2**	**0.813**	**0.760**	**0.737**	**0.702**	**0.649**
All year-round, full-time workers aged 35-54	**46,316,270**	**41.4**	**0.705**	**0.690**	**0.714**	**0.683**	**0.616**
Less than high school	4,035,080	34.5	0.769	0.704	0.667	0.658	0.673
High school graduate, no college	12,329,920	41.7	0.674	0.680	0.686	0.667	0.667
Some college	15,015,010	44.9	0.730	0.700	0.721	0.694	0.679
Bachelor's degree or more	14,936,260	39.5	0.784	0.751	0.694	0.652	0.551

Source: U.S. Census Bureau, Census 2000.

WHAT MEASURE OF EARNINGS DISPERSION IS USED?

This report uses a common measure of dispersion — the ratio of the value at the 90th percentile of earnings to that at the 10th percentile, denoted P90/10, computed only for those with positive earnings.[26] The higher the value, the more the earnings dispersion (sometimes called earnings inequality) present in that occupation.

The author also examined a second measure of dispersion — the interquartile range (the difference in values between the 75th and 25th percentiles of earnings) as a percent of the median (the 50th percentile), denoted IQR/M. The overall level of earnings dispersion for all year-round, full-time workers when measured by the IQR/M is 0.849, that is, the interquartile range is 85 percent of the median. Of the 20 occupations whose earnings were most similar when measured by the IQR/M measure, 16 were also among the 20 most similar by the P90/10 measure. Of the 20 occupations whose earnings were most dissimilar when measured by the IQR/M measure, 14 were also among the 20 most dissimilar by the P90/10 measure. Because of this substantial overlap and to ease presentation of results, only the P90/10 measure is used in the text.

[26] See Carmen DeNavas-Walt, Robert W. Cleveland, and Marc I. Roemer, *Income in the United States: 2000*, U.S. Census Bureau, Current Population Reports P60-213, September 2001, for another use of this dispersion measure in the context of discussing income inequality.

legal assistants; Postal service clerks; and *Postal service mail sorters, processors, and processing machine operators.*[27]

On the other hand, there are only 17 of 623 education-occupation combinations where women earn 60 percent or less that of comparable men.[28] Among the lowest ratios of female-to-male earnings were 52.8 percent for *Farmers and ranchers* with some college, 53.8 percent for *Elementary and secondary school teachers* with some college, and 54.5 percent for *Farmers and ranchers* who are high school graduates.[29] The occupations with a 60 percent or lower ratio for multiple education levels are *Farmers and ranchers* (all four education levels) and *Other teachers and instructors.*[30]

EARNINGS DISPERSION

The median indicates only one property of the earnings distribution. Also of interest are measures of earnings dispersion. This report uses a common measure of

[27] The following education-occupation combinations have a ratio not different from 1.000 (equal male and female median earnings): *Bookkeeping, accounting, and auditing clerks* with less than a high school education; *Postal service clerks, Social workers,* and *Registered nurses* with a high school education; *Paralegals and legal assistants, Pipelayers, plumbers, pipefitters, and steamfitters, Postal service clerks*, and *Postal service mail sorters, processors, and processing machine operators* with some college; and *Archivists, curators, and museum technicians, First-line supervisors/managers of mechanics, installers, and repairers, Radio and telecommunications equipment installers and repairers, Security guards and gaming surveillance officers*, and *Surveyors, cartographers, and photogrammetrists* with a Bachelor's degree or more.

[28] There are another 13 combinations with a point estimate of 0.601 to 0.650 which cannot be distinguished statistically from 0.600.

[29] These three ratios are not statistically different from one another.

[30] *Other teachers and instructors* include adult literary, remedial education, GED, self-enrichment, and miscellaneous teachers.

Table 10.

Ratio of Female-to-Male Median Earnings for Large Occupations for Workers Aged 35-54 by Education: 1999

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf)*

Large occupations (occupations with 500,000 year-round, full-time workers or more)	Number of year-round, full-time workers (any age)	Year-round, full-time workers aged 35-54									
		Number of year-round, full-time workers	Any education		Less than high school		High school graduate		Some college		Bachelor's degree or more	
			Percent female	Female-to-male median earnings ratio	Percent female	Female-to-male median earnings ratio	Percent female	Female-to-male median earnings ratio	Percent female	Female-to-male median earnings ratio	Percent female	Female-to-male median earnings ratio
All year-round, full-time workers	**82,977,500**	**46,316,270**	**41.4**	**0.714**	**34.5**	**0.667**	**41.7**	**0.686**	**44.9**	**0.721**	**39.5**	**0.694**
All year-round, full-time workers in large occupations	**41,644,820**	**23,527,300**	**43.2**	**0.760**	**47.1**	**0.724**	**51.4**	**0.662**	**47.7**	**0.718**	**37.4**	**0.783**
Secretaries and administrative assistants	2,409,830	1,376,650	96.7	0.825	97.2	0.847	98.6	0.803	97.8	0.845	90.6	0.714
FLSM of retail sales workers	2,167,180	1,175,340	37.9	0.668	47.3	0.645	45.9	0.635	34.6	0.662	26.6	0.680
Elementary and middle school teachers	2,143,750	1,275,570	77.1	0.875	81.1	*	86.4	*	80.2	0.538	77.3	0.875
Driver/sales workers and truck drivers	2,130,980	1,204,370	4.2	0.695	3.5	0.667	4.2	0.686	5.3	0.724	5.8	0.869
Managers, all other	1,607,220	1,021,680	32.4	0.683	26.1	0.750	35.2	0.733	36.8	0.732	28.3	0.779
Retail salespersons	1,536,280	731,350	39.2	0.645	47.7	0.607	48.1	0.600	36.4	0.654	28.5	0.655
Registered nurses	1,384,630	912,310	90.6	0.933	88.6	*	91.8	0.990	91.7	0.911	89.6	0.923
FLSM of office and administrative support workers	1,335,860	812,280	66.0	0.750	57.7	0.813	74.1	0.808	72.1	0.762	51.6	0.727
Accountants and auditors	1,327,040	730,730	54.0	0.720	53.9	*	88.1	0.805	79.8	0.800	42.6	0.729
Customer service representatives	1,248,770	590,620	69.3	0.806	74.8	0.846	80.2	0.731	72.3	0.757	52.1	0.756
Sales representatives, wholesale and manufacturing	1,109,620	636,050	22.4	0.737	28.8	0.686	26.6	0.750	22.3	0.726	18.1	0.838
FLSM of production and operating workers	1,094,900	687,740	19.3	0.714	24.8	0.657	21.5	0.685	16.9	0.732	18.9	0.846
Bookkeeping, accounting, and auditing clerks	1,080,270	597,260	89.3	0.833	92.2	0.960	95.7	0.833	91.4	0.855	73.8	0.744
Janitors and building cleaners	983,990	561,020	22.0	0.726	29.8	0.774	23.4	0.720	17.2	0.714	14.7	0.683
Chief executives	965,440	638,770	17.4	0.632	18.4	0.642	22.2	0.683	22.8	0.654	15.7	0.733
Laborers and freight, stock, and material movers, hand	952,880	471,360	17.0	0.769	20.6	0.762	20.3	0.733	16.6	0.758	14.2	0.826
Production workers, all other	889,550	483,730	30.8	0.700	38.2	0.720	34.5	0.676	26.7	0.669	25.4	0.692
Marketing and sales managers	861,770	500,650	39.2	0.607	46.3	0.609	49.1	0.654	41.1	0.648	29.8	0.710
Nursing, psychiatric, and home health aides	853,210	446,130	85.6	0.810	91.5	0.818	88.9	0.818	82.8	0.808	66.8	0.743
Carpenters	803,840	427,440	1.5	0.815	1.6	0.769	1.3	0.791	1.6	0.765	1.8	*
Financial managers	801,160	492,830	51.4	0.615	72.8	0.698	84.6	0.661	72.9	0.714	33.9	0.741
Miscellaneous assemblers and fabricators	795,820	415,650	41.0	0.739	50.0	0.760	47.1	0.702	36.5	0.674	29.7	0.686
General and operations managers	790,670	514,040	24.7	0.712	24.1	0.711	27.7	0.720	25.7	0.750	21.5	0.769
Cashiers	770,520	331,160	73.2	0.732	79.6	0.789	81.5	0.660	70.4	0.632	47.7	0.612
FLSM of non-retail sales workers	768,420	462,640	30.5	0.723	28.3	0.667	35.2	0.750	33.2	0.758	24.3	0.764
Automotive service technicians and mechanics	738,290	388,920	1.6	0.845	1.5	0.785	1.6	0.813	1.8	0.907	2.4	*
Office clerks, general	736,160	404,080	85.0	0.857	85.4	0.838	90.8	0.802	88.2	0.809	69.8	0.736
FLSM of construction trades and extraction workers	720,740	458,640	2.4	0.781	1.8	0.740	1.7	0.762	2.7	0.731	4.4	0.802
Lawyers	702,480	440,790	25.7	0.733	47.6	*	68.9	*	100.0	*	24.6	0.730
Human resources, training, and labor relations specialists	660,750	366,590	65.5	0.745	60.6	0.779	71.7	0.689	70.8	0.745	57.5	0.767
Cooks	646,890	279,490	41.2	0.847	49.5	0.778	58.1	0.750	48.3	0.762	36.1	0.750
Inspectors, testers, sorters, samplers, and weighers	637,750	366,430	41.9	0.660	62.0	0.686	49.5	0.661	31.5	0.700	31.9	0.822
Stock clerks and order fillers	605,170	292,360	36.7	0.833	46.1	0.818	46.2	0.750	39.0	0.800	30.7	0.889
Computer software engineers	580,590	325,300	23.1	0.833	29.3	*	43.1	0.789	31.3	0.820	21.9	0.867
Construction laborers	578,650	267,250	2.7	0.880	2.6	0.791	3.3	0.818	3.9	0.794	3.8	*
Secondary school teachers	563,090	328,630	55.8	0.899	67.6	*	84.4	*	57.1	0.543	55.7	0.889
Computer scientists and systems analysts	537,310	310,620	32.4	0.845	50.2	0.878	51.4	0.833	37.7	0.834	30.9	0.861
Postsecondary teachers	534,100	308,470	38.7	0.746	47.7	*	56.7	*	45.5	0.747	40.5	0.801
Electricians	533,790	286,210	2.2	0.797	3.4	*	2.2	0.775	2.2	0.889	3.4	*
Police and sheriff's patrol officers	519,840	261,460	12.3	0.907	19.9	*	12.7	0.875	12.1	0.856	13.8	0.909
Physicians and surgeons	515,500	322,730	23.7	0.628	33.5	*	52.0	*	95.8	*	23.0	0.686
Construction managers	514,560	339,420	6.1	0.800	2.5	*	4.6	0.729	6.4	0.769	6.9	0.775
Computer programmers	505,590	282,550	26.1	0.893	30.6	*	33.4	0.816	28.9	0.842	27.4	0.885

Notes: * = Fewer than 1,000 male or female workers. FLSM=First-line supervisors/managers.
Source: U.S. Census Bureau, Census 2000.

Table 11.
Twenty Occupations With the Most Similar and Most Dissimilar Earnings: 1999

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf)*

Occupations with the most similar earnings	P90/10	Occupations with the most dissimilar earnings	P90/10
All year-round, full-time workers	**5.00**	**All year-round, full-time workers**	**5.00**
Postal service clerks	1.89	Farmers and ranchers	14.29
Postal service mail carriers	1.92	Securities, commodities, and financial services sales agents	10.68
Occupational therapist assistants and aides	2.00	Animal breeders	10.55
Postal service mail sorters, processors, and processing machine operators	2.01	Health diagnosing and treating practitioners, all other	9.85
Radiation therapists	2.07	Financial analysts	9.05
Occupational therapists	2.13	Chiropractors	9.00
Respiratory therapists	2.16	Real estate brokers and sales agents	8.67
Roof bolters, mining	2.22	Physicians and surgeons	8.57
Postmasters and mail superintendents	2.25	Chief executives	8.33
Speech-language pathologists	2.25	Personal financial advisors	8.33
Nuclear engineers	2.27	Podiatrists	7.84
Aerospace engineers	2.32	Artists and related workers	7.56
Tellers	2.33	Animal trainers	7.50
Signal and track switch repairers	2.34	Musicians, singers, and related workers	7.24
Textile winding, twisting, and drawing out machine setters, operators, and tenders	2.36	Door-to-door sales workers, news and street vendors, and related workers	7.23
Pharmacists	2.37	Tax preparers	7.20
Payroll and timekeeping clerks	2.39	Models, demonstrators, and product promoters	6.96
Dental assistants	2.40	Entertainers and performers, sports and related workers, all other	6.90
Registered nurses	2.41	Writers and authors	6.88
Marine engineers and naval architects	2.42	Actors	6.87

Note: Dispersion measures include earners with positive earnings only. P90/10 is the ratio of earnings at the 90th percentile to earnings at the 10th percentile. Because of sampling error, the estimates in this table may not be significantly different from one another or from other occupations not listed in this table.

Source: U.S. Census Bureau, Census 2000.

dispersion — the ratio of the value at the 90th percentile of earnings to that at the 10th percentile, denoted P90/10, and computed only for those with positive earnings (see Text Box: *What measure of earnings dispersion is used?*). The higher the value, the more the earnings dispersion present in that occupation. As a basis for comparison, P90/10 for all (positive) earners is 5.00; that is, the earnings at the 90th percentile are five times the earnings at the 10th percentile. High dispersion (that is, a high ratio) can be interpreted as indicating the presence of substantial spread in earnings within the group being studied; low dispersion indicates substantial evenness.

As the population under study is disaggregated into more homogeneous groups with respect to their earnings, the earnings dispersion ratio will fall for each of those groups. If one disaggregates by sex, the weighted average ratio falls to 4.90, only a 2 percent reduction; this implies that there is about as much earnings dispersion among women as a whole as there is among men as a whole. (Disaggregating women into those with children at home and those with no children at home, an additional proxy for work experience, further reduces the ratio, but only to 4.87, suggesting little or no gain for accounting for that difference.[31])

Individual disaggregations by age (three categories), education (four categories), and occupation (505 categories) reduce the ratio from 5.00 to 4.87, 3.83, and 3.88, respectively, suggesting that much is to be gained by examining education and occupation (but not age) as sources of dispersion.

Table 11 presents the 20 occupations with the least and the most dispersed earnings.[32] Some of the occupations with the most similar earnings as measured by the P90/10 ratio are *Postal service clerks; Postal service mail carriers; Occupational therapist assistants and aides*; and

[31] The difference between 4.90 and 4.87 is however statistically significant.

[32] There is no mathematical relationship between the median and the measure of earnings dispersion used here.

Postal service mail sorters, processors, and processing machine operators.[33] Several other therapist occupations also appear on this list.

Partly because of self-employment expenses that offset income, *Farmers and ranchers* is one of the occupations with the most dissimilar earnings, even when those with net losses are excluded (as is done here), with a P90/10 ratio of 14.29. As noted in Appendix B, *Farmers and ranchers* is one of only six occupations where workers with losses exceeded 2 percent of all earners, and the only occupation where more than 10 percent lost money in 1999 (12.6 percent had negative earnings). (See Figure 4 to see a graphic illustration of dispersion for *Farmers and ranchers*.) Another occupation with high earnings dispersion is *Securities, commodities, and financial services sales agents*.[34]

Specialization within occupations can explain some of this measured dispersion. For example, the broad occupation *Physicians and surgeons* includes eight detailed occupations: *Anesthesiologists; Family and general practitioners; Internists, general; Obstetricians and gynecologists; Pediatricians, general; Psychiatrists; Surgeons*; and *Physicians and surgeons, all other*. It is likely that *Surgeons* earn more than *Internists*, but a mail-out/mail-back survey like the decennial census is unable to make the distinctions among these occupations, because so many doctors enter only "M.D." on their long form.

Table 12.
Earnings Dispersion by Sex and Education: 1999

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf)*

Age and education	Number of year-round, full-time workers	P90/10	
		All workers	Weighted average of occupation ratios
Men	48,684,640	5.27	4.10
Men aged 35-54	27,080,120	4.90	3.90
Men aged 35-54, less than a high school education	2,635,440	4.00	3.66
Men aged 35-54, high school graduate, no college	7,171,920	3.50	3.36
Men aged 35-54, some college	8,259,690	3.72	3.41
Men aged 35-54, Bachelor's degree or higher	9,013,080	5.24	4.32
Women	34,088,450	4.35	3.29
Women aged 35-54	19,128,510	4.20	3.28
Women aged 35-54, less than a high school education	1,389,490	3.50	3.24
Women aged 35-54, high school graduate, no college	5,125,400	3.39	3.01
Women aged 35-54, some college	6,717,800	3.46	3.01
Women aged 35-54, Bachelor's degree or higher	5,895,830	3.70	3.27
Women with no children at home	21,385,740	4.31	3.30
Women aged 35-54 with no children at home	10,801,660	4.07	3.25
Women aged 35-54 with no children at home, less than a high school education	793,710	3.60	3.24
Women aged 35-54 with no children at home, high school graduate, no college	3,016,970	3.31	2.99
Women aged 35-54 with no children at home, some college	3,760,330	3.43	2.99
Women aged 35-54 with no children at home, Bachelor's degree or higher	3,230,640	3.57	3.25
Women with children at home	12,702,710	4.23	3.25
Women aged 35-54 with children at home	8,326,850	4.29	3.32
Women aged 35-54 with children at home, less than a high school education	595,780	3.44	3.22
Women aged 35-54 with children at home, high school graduate, no college	2,108,420	3.40	3.04
Women aged 35-54 with children at home, some college	2,957,460	3.40	3.01
Women aged 35-54 with children at home, Bachelor's degree or higher	2,665,190	3.78	3.29

Note: Dispersion measures include earners with positive earnings only. P90/10 is the ratio of earnings at the 90th percentile to earnings at the 10th percentile.

Source: U.S. Census Bureau, Census 2000.

Self-employment income is important in 12 of the 20 occupations with the most dispersed earnings (see Table B-1 in Appendix B). It seems that in most if not all of these occupations, personal initiative or a special skill can result in substantial earnings rewards for the most successful. High variability of earnings within an occupation might also indicate occupational categories that are too broad (see the comment on *Physicians and surgeons*, above) or perhaps the inability of respondents to provide descriptions of their occupation that are unambiguous enough to allow consistent coding.

Dispersion Measures by Sex, Work Experience, Education, and Occupation

The next investigation is of dispersion measures by sex, to see if controlling for work experience, education, *and* occupation results in a more equal (less disperse) distribution of earnings between men

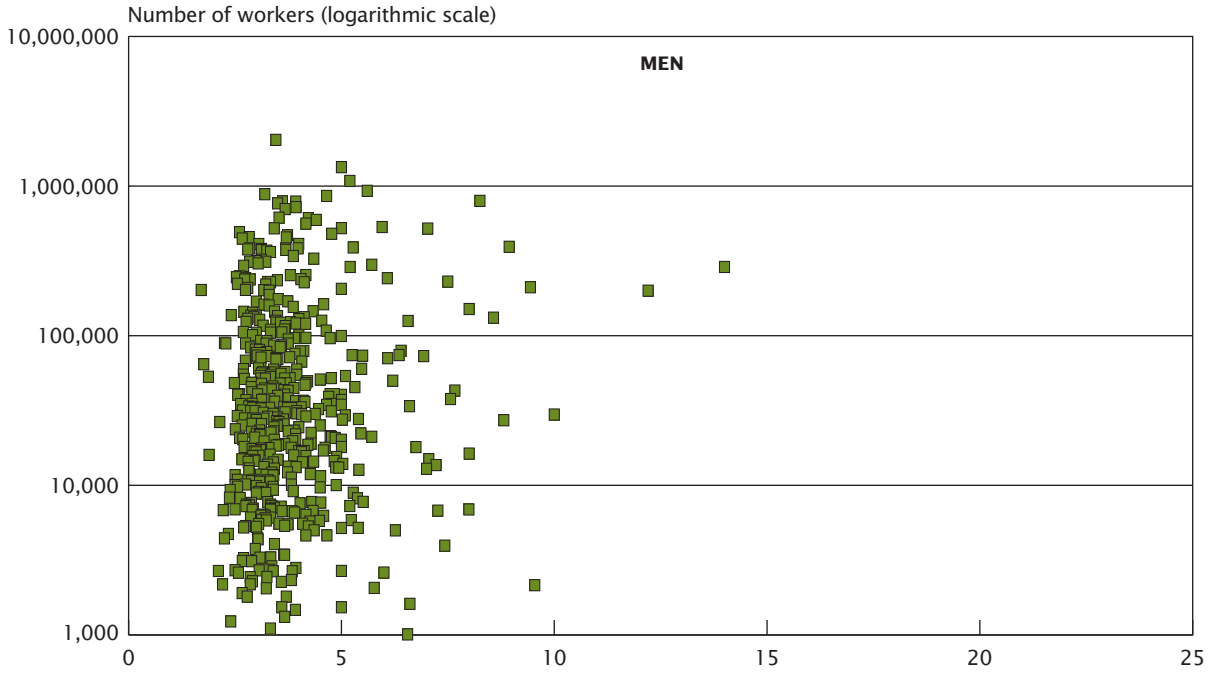
[33] Because of sampling error, many of these P90/10 ratio estimates are not significantly different from one another or from other occupations not listed.

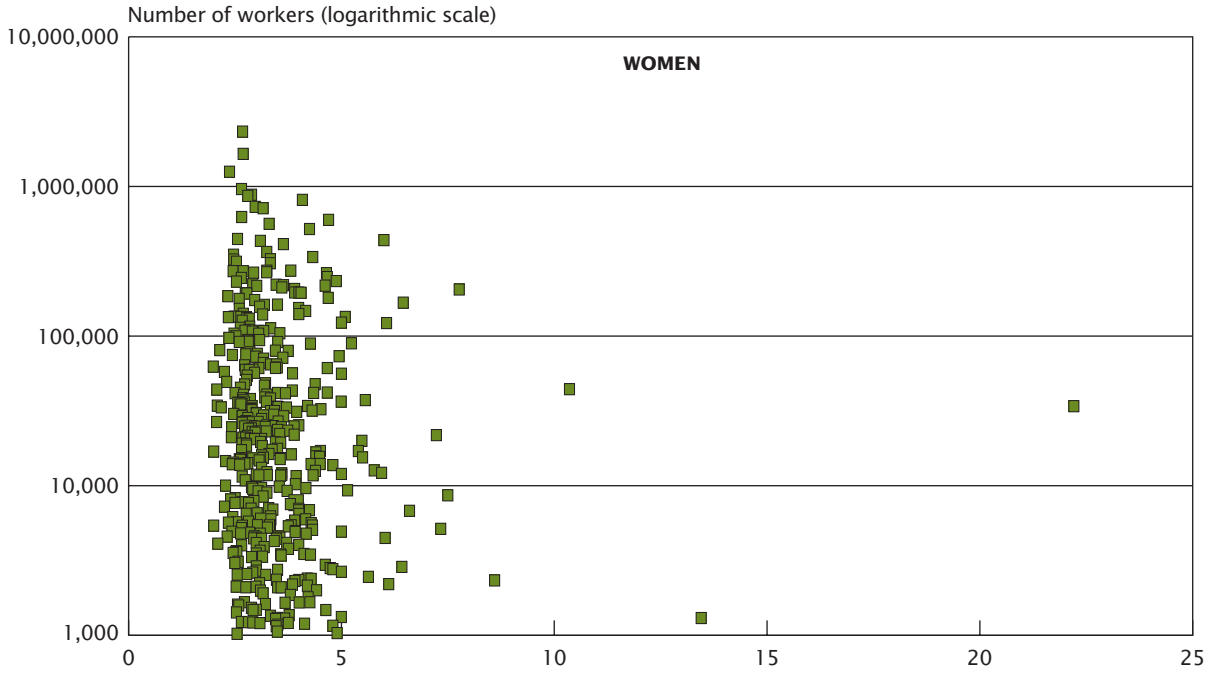
[34] The P90/10 ratio for *Securities, commodities, and financial services sales agents* is not statistically different from that of *Animal breeders* or *Health diagnosing and treating practitioners, all other* (no ratio for those listed as most dissimilar is different from that for *Animal breeders*).

Figure 6.

Earnings Dispersion for Year-Round, Full-Time Workers by Sex: 1999

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf*)



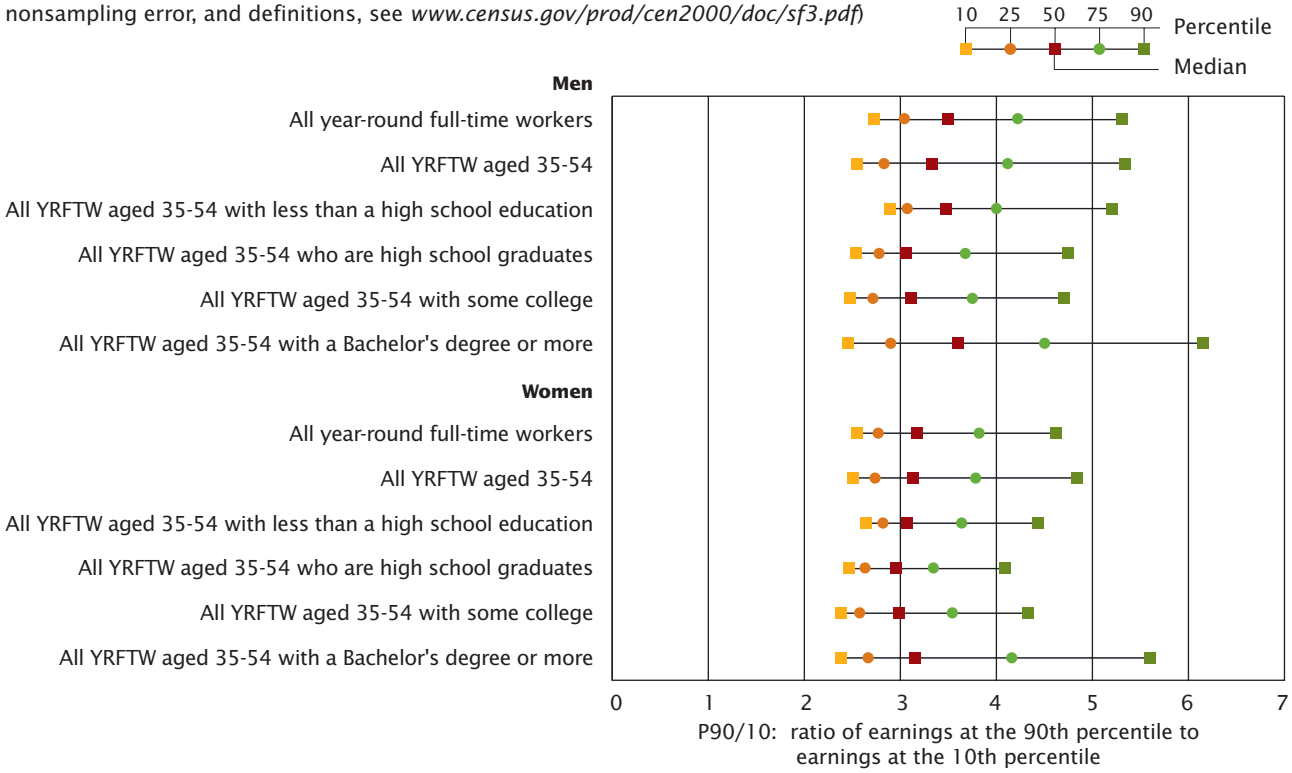


Note: Includes earners with positive earnings only. Each square represents one occupation. Includes only occupations with at least 1,000 male (top panel) or at least 1,000 female (bottom panel) year-round full-time workers.
Source: U.S. Census Bureau, Census 2000.

Figure 7.

Distribution of P90/10 Earnings Dispersion Measure Across Occupations for Year-Round, Full-Time Workers: 1999

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf*)



Note: YRFTW= year-round, full-time workers. Occupations and education-occupation combinations are included in this distribution only if there are at least 10,000 workers, at least 1,000 male workers, and at least 1,000 female workers.
Source: U.S. Census Bureau, Census 2000.

and women. Table 12 presents overall dispersion measures for men and women, for men and women aged 35 to 54, and for women aged 35 to 54 with and without children at home (an additional proxy for experience).[35] First, by examining the P90/10 ratios for all workers in a category (the next-to-last column of Table 12), it is clear that earnings dispersion is less for women than for men — an overall P90/10 ratio for all workers of 4.35 for women versus 5.27 for men.[36] This is also illustrated in Figure 6, which presents each occupation's P90/10 ratio as a point. The distribution for women is more concentrated in the lower levels of dispersion than is the men's.[37]

Returning to Table 12 column 3, dispersion as measured by P90/10 is reduced for men and women when the comparison is restricted to all workers aged 35 to 54. However, compared to women aged 35 to 54, dispersion is lower for

[35] Research has shown that work experience affects earnings (see, for example, Orley C. Ashenfelter and David Card, *Handbook of Labor Economics (Volume 3)*, North-Holland/Elsevier, 1999). Unfortunately, there is no measure of that on Census 2000. Age is a proxy for experience, but women who have given birth often spend some time out of the labor market. Fertility is not measured on Census 2000 either, so the presence of children aged 0-17 at home is used as a proxy for fewer years of work experience. Of course, some women with children at home spend little time out of the labor market, and some without children at home might well have spent significant time out of the labor market, so the measure is imperfect, but suggestive.

[36] The overall P90/10 ratio for all year-round, full-time workers aged 35 to 54 is 4.95. The weighted average when this group is disaggregated by sex is 4.61 (4.60 if women are further subdivided into those with and without children at home), the ratio when disaggregated by sex and education is 3.91, and the ratio when disaggregated by sex, education, and occupation is 3.47 (see Table 13, below).

[37] The outliers (ratio not statistically different from 10.00 or higher) for men are *Farmers and ranchers* (14.00); *Securities, commodities, and financial services sales agents* (12.20); *Financial analysts* (10.00); and *Health diagnosing and treating occupations, all other* (9.54). The outliers for women are *Farmers and ranchers* (22.21), *Animal breeders* (13.45), *Artists and related workers* (10.36); and *Health diagnosing and treating occupations, all other* (8.59). Many of these ratios are not significantly different from one another.

Table 13.
Summary of Earnings Dispersion by Age, Sex, Education, and Occupation: 1999

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf)*

Year-round, full-time workers	Ratio of earnings at the 90th percentile to earnings at the 10th percentile			
	All year-round, full-time workers	Men	Women	Weighted average across sexes
All year-round, full-time workers	**5.00**	**5.27**	**4.35**	**4.90**
Year-round, full-time workers aged 35-54	4.95	4.90	4.20	4.61
Weighted averages for year-round, full-time workers aged 35-54 using 4 education categories	(NA)	4.20	3.52	3.91
Weighted averages for year-round, full-time workers aged 35-54 using 4 education categories and 505 occupation categories	(NA)	3.72	3.11	3.47

NA Not applicable.

Note: Dispersion measures include earners with positive earnings only.

Source: U.S. Census Bureau, Census 2000.

women aged 35 to 54 with no children at home, but higher for women aged 35 to 54 with children at home. Controlling for education for the most part shows substantial further reductions in dispersion for each level of education except Bachelor's degree or more.[38]

The last column of Table 12 presents weighted averages of P90/10 across occupations within age-sex-education categories, thus allowing the ratios to differ *further* by occupation. By comparing these estimates with those in the third column, it is uniformly true that accounting for occupation further reduces measured dispersion.[39]

A graphical illustration of the effects of age and education on earnings dispersion across occupations is shown in Figure 7. When educational differences are examined, the range between the 10th percentile and the 90th percentile (and therefore the ratio between the two) for men with less than a complete college education is smaller than the range for those with a Bachelor's degree or more; the same apparent result for women is not statistically significant. Apparently, there is more variation in earnings among both men and possibly women aged 35 to 54 *within the same occupation* who have completed college than for those who have not. Controlling for sex and education for those aged 35 to 54 yields a weighted average 10.5 percent reduction in dispersion in the 43 largest occupations (those with 500,000 YRFT workers or more).

[38] Men 35 to 54 with a Bachelor's degree or more have a higher level of earnings dispersion than men 35 to 54, but a lower level of earnings dispersion than all men. The following combinations have P90/10 ratios that are not different from one another: women with less than a high school education compared to women who are high school graduates or those with some college; women with no children at home with less than a high school education with their counterparts with some college or a Bachelor's degree or more; women with children at home with less than a high school education with their counterparts who are high school graduates or those with some college; and women with children at home who are high school graduates with their counterparts with some college.

[39] Only the reduction for women with children at home with less than a high school education is not statistically significant.

CONCLUSION

There is a substantial gap in median earnings between men and women that is unexplained, even after controlling for work experience (to the extent it can be represented by age and presence of children), education, and occupation. Many reasons not studied here may help to explain the difference.

The starkest illustration is to compare the median earnings of men and women (1) in the highest paid occupation for men and women — *Physicians and surgeons* — for those aged 35 to 54 with the highest level of education (a Bachelor's degree or more), and (2) in one of the lowest paid occupations for each — *Dishwashers* — for those aged 35 to 54 with the lowest level of education (less than a high school education). Overall, female year-round, full-time workers have median earnings of $28,000, 74 percent of comparable male median earnings. For *Physicians and surgeons* aged 35 to 54 with a Bachelor's degree or more, this ratio is 69 percent; for *Dishwashers* aged 35 to 54 with less than a high school education, this ratio is 87 percent. Thus, after taking account of age, education, and occupation, some differentials remain, though they are reduced somewhat in some occupations.

Earnings dispersion, as measured by the ratio of earnings at the 90th percentile to earnings at the 10th percentile (P90/10), is also affected by sex, age, education, and occupation. P90/10 for all (positive) earners is 5.00; that is, the earnings at the 90th percentile are five times the earnings at the 10th percentile. Women's earnings are more similar than men's: 4.35 versus 5.27 (17 percent less dissimilar; see Table 13). This is also true for workers aged 35 to 54: the

overall P90/10 ratio for them is 4.95 — 4.90 for men and 4.20 for women (14 percent less dissimilar).

Computing ratios for all eight education-sex combinations (4 by 2) for those aged 35 to 54 yields a weighted average ratio of 3.91, a 21 percent reduction in dispersion. Finally, when age is controlled by restricting the universe to those aged 35 to 54, and sex, education, and occupation are taken into account (4040 categories, or 2 by 4 by 505), the ratio for year-round, full-time workers aged 35 to 54 is reduced from 4.95 to 3.47, a 30 percent reduction. Women's earnings at this greatest level of disaggregation still remain more similar than men's — a ratio of 3.11, 84 percent of the ratio for men, 3.72.

In sum, women have lower median earnings than men, and the range of their earnings is narrower than that for men.

ACCURACY OF THE ESTIMATES

The data contained in this report are based on the sample of households who responded to the Census 2000 long form. Nationally, approximately one out of every six housing units was included in this sample. As a result, the sample estimates may differ somewhat from the 100-percent figures that would have been obtained if all housing units, people within those housing units, and people living in group quarters had been enumerated using the same questionnaires, instructions, enumerators, and so forth. The sample estimates also differ from the values that would have been obtained from different samples of housing units, and hence of people living in those housing units, and people living in group quarters. The deviation of a sample estimate from the average of all possible samples is called the sampling error.

In addition to the variability that arises from the sampling procedures, both sample data and 100-percent data are subject to nonsampling error. Nonsampling error may be introduced during any of the various complex operations used to collect and process data. Such errors may include: not enumerating every household or every person in the population, failing to obtain all required information from the respondents, obtaining incorrect or inconsistent information, and recording information incorrectly. In addition, errors can occur during the field review of the enumerators' work, during clerical handling of the census questionnaires, or during the electronic processing of the questionnaires.

While it is impossible to completely eliminate error from an operation as large and complex as the decennial census, the Census Bureau attempts to control the sources of such error during the data collection and processing operations. The primary sources of error and the programs instituted to control error in Census 2000 are described in detail in *Summary File 3 Technical Documentation* under Chapter 8, "Accuracy of the Data," located at *www.census.gov /prod/cen2000/doc/sf3.pdf.*

Nonsampling error may affect the data in two ways: (1) errors that are introduced randomly will increase the variability of the data and, therefore, should be reflected in the standard errors; and (2) errors that tend to be consistent in one direction will bias both sample and 100-percent data in that direction. For example, if respondents consistently tend to underreport their earnings, then the resulting proportions of earners by income category will tend to be understated for the higher income categories and overstated for the lower income categories. Such biases are not reflected in the standard errors.

The obvious source of potential error is misreporting by the respondent — either misreporting of their occupation, their earnings, or one of their classifying variables. According to the Census 2000 Content Reinterview Study, questions about wages and salaries and self-employment income showed only "moderate" inconsistency.[40]

Another potential source of measurement error is not a mistake on the part of the respondent, but rather the presence of complicating factors. Not everyone has just one job and one occupation. Others might have part-time jobs to help bring in extra money — such as a schoolteacher working part-time as a retail salesperson during the holiday season. Yet others might report certain occupations for historical reasons — for example, a full-time factory wage earner might also be self-employed part-time as a farmer, and report farming as his occupation since his father and grandfather were farmers. Since the decennial census long form asked for the total of all earnings but only for the primary occupation, if multiple job holding was common, the earnings of schoolteachers

[40] Phyllis Singer and Sharon R. Ennis, "Census 2000 Content Reinterview Survey: Accuracy of Data for Selected Population and Housing Characteristics as Measured by Reinterview," Census 2000 Evaluation B.5, September 24, 2003, at *www.census.gov /pred/www/eal_toprpts.htm#CONTENT*>. The authors note that "[Content Reinterview Survey] respondents were asked if the sample person received any wages, salary, commissions, bonuses, or tips in 1999. ...Households with female sample persons showed less inconsistency (low) than households with male sample persons (moderate)." [page 45]

and farmers, in the examples above, would be over-estimated.

There are other sources of nonsampling error as well. Some coding of write-ins for occupation (and industry) was undoubtedly in error. People who did not respond to particular items on the long form were "allocated" (imputed) a response, and this would have introduced additional uncertainty in the estimates presented here (14.9 percent of all occupation data, 20.0 percent of all wage and salary data, and 9.9 percent of all self-employment data in Census 2000 were imputed).[41]

[41] Earnings was imputed based on 18 major groups of occupations (collapsing some of the Standard Occupational Classification major groups), so some, albeit not perfect, association between occupation and earnings was maintained.

All statements in this Census 2000 Special Report have undergone statistical testing and all comparisons are statistically significant at the 90-percent confidence level, unless otherwise noted. The estimates in tables, maps, and other figures may vary from actual values due to sampling and nonsampling errors. As a result, estimates in one category used to summarize statistics in the maps and figures may not be significantly different from estimates assigned to a different category. Further information on the accuracy of the data is located at *www.census.gov/prod/cen2000/doc/sf3.pdf*. For further information on the computation and use of standard errors, contact the Decennial Statistical Studies Division at 301-763-4242.

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APPENDIX A.
EARNINGS BY OCCUPATION AND INDUSTRY

As noted above in the discussion of Table 2, earnings differ among major industry groups (called industries below). Yet this was not a surprise, as traditional service industries like *Accommodation and food services* typically employ workers in lower-paid occupations such as *Dishwashers* and *Cashiers*, while industries like *Professional, scientific, and technical services* employ workers in higher-paid occupations such as *Engineers* and *Scientists*. Obviously, workers in different occupations in the same industry are likely to be paid differently because they carry out different tasks, but do these differences persist for workers in the same occupation in different industries?

Table A-1 presents a summary of differences across occupations for the 20 major industry groups. The *Utilities* and *Manufacturing* industries seem particularly generous to their workers, place more demands on their employees and reward them accordingly, or pay more for other reasons. In *Utilities* and *Manufacturing*, 20 percent or more of the occupations with 10,000 or more workers pay more than 10 percent above the national median for that occupation.[42] The next high-paid industry is *Public administration,* followed by *Professional, scientific, and technical services*; *Transportation and warehousing;* and *Information*, all with 10 percent or more of occupations getting 10 percent more. The industries most notable for paying 90 percent or less of the national median are *Retail trade* (21 percent of occupations), followed by *Other services (except public administration); Educational services; Health care and social assistance; Administrative and support and waste management services;* and *Arts, entertainment, and recreation* (all 10 percent or more of occupations).

Table A-1.
Differences Among Major Industry Groups in the Level of Median Earnings for All Occupations: 1999

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/docs/sf3.pdf)*

Major industry group	Percent of occupations where industry median earnings exceeds national median for that occupation by 10 percent or more	Percent of occupations where industry median earnings falls short of national median for that occupation by 10 percent or more
Agriculture, forestry, fishing, and hunting	0.5	6.6
Mining	9.7	0.2
Utilities	22.3	0.0
Construction	3.8	4.3
Manufacturing	26.8	2.4
Wholesale trade	3.3	8.5
Retail trade	3.3	20.6
Transportation and warehousing	14.7	1.7
Information	13.7	2.4
Finance and insurance	6.4	2.8
Real estate and rental and leasing	2.6	7.8
Professional, scientific, and technical services	15.4	2.6
Management of companies and enterprises	2.8	0.0
Administrative and support and waste management services	1.9	14.9
Educational services	5.0	16.4
Health care and social assistance	3.1	15.4
Arts, entertainment, and recreation	5.5	10.9
Accommodation and food services	1.2	14.2
Other services (except public administration)	1.9	18.5
Public administration	18.0	4.7

Note: Includes only the 422 occupations with 10,000 or more year-round, full-time workers. To be included in the industry-level calculations, occupations must also have 1,000 or more workers. Major industry groups presented in North American Industry Classification System order.

Source: U.S. Census Bureau, Census 2000.

Table A-2 presents the basic information on the levels and distribution of earnings in the 43 largest occupations — those with 500,000 YRFT workers or more — across the 20 major industry groups examined here. Of the 43 occupations, 29 have 1,000 or more workers in 15 or more of the 20 industries. Three occupations — *Elementary and middle school teachers*; *Secondary school teachers;* and *Police and sheriff's patrol officers* — work in one industry group only and are not discussed further.

Figure A-1 illustrates the range of median earnings across major industry groups for the occupations with 500,000 workers or more. While the differences for

[42] There are other possible explanations for the disparity across industries, such as the extent of unionization, their geographic location, etc. This report makes no attempt to determine the reasons, just to document the differences.

Table A-2.

Level and Distribution of Earnings for Large Occupations by Major Industry Group: 1999

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/docs/sf3.pdf)*

Occupations with 500,000 year-round, full-time workers or more	Number of year-round, full-time workers	Number of major industry groups with 1,000 workers or more (of 20)	National median earnings (dollars)	Range of median earnings (dollars)*		National P90/10 ratio	Range of P90/10 ratios*	
				Low	High		Low	High
Secretaries and administrative assistants	2,409,830	20	26,000	23,000	33,000	2.67	2.29	3.33
FLSM of retail sales workers	2,167,180	17	30,000	28,000	46,000	5.03	3.35	6.43
Elementary and middle school teachers	2,143,750	1	36,000	36,000	36,000	2.71	2.71	2.71
Driver/sales workers and truck drivers	2,130,980	19	32,000	19,000	35,000	3.54	2.83	4.22
Managers, all other	1,607,220	19	52,000	36,000	67,000	4.96	3.60	6.33
Retail salespersons	1,536,280	6	26,000	22,000	38,000	5.67	4.00	6.17
Registered nurses	1,384,630	10	43,000	38,000	48,000	2.41	1.71	6.16
FLSM of office and administrative support workers	1,335,860	20	33,000	26,000	45,000	3.24	2.59	3.75
Accountants and auditors	1,327,040	20	41,000	32,000	50,000	3.94	2.85	5.22
Customer service representatives	1,248,770	19	26,000	19,000	41,000	3.33	2.38	4.44
Sales representatives, wholesale and manufacturing	1,109,620	4	45,000	35,000	50,000	4.81	3.35	6.07
FLSM of production and operating workers	1,094,900	19	39,000	18,000	52,000	3.50	2.82	5.25
Bookkeeping, accounting, and auditing clerks	1,080,270	20	25,000	22,000	30,000	2.71	2.36	4.76
Janitors and building cleaners	983,990	19	22,000	17,000	32,000	3.44	2.85	4.08
Chief executives	965,440	20	88,000	56,000	131,000	8.33	4.41	10.80
Laborers and freight, stock, and material movers, hand	952,880	18	25,000	19,000	33,000	3.57	2.90	4.58
Production workers, all other	889,550	18	26,000	20,000	40,000	3.57	2.78	4.42
Marketing and sales managers	861,770	20	57,000	40,000	73,000	5.20	3.30	5.76
Nursing, psychiatric, and home health aides	853,210	9	20,000	18,000	25,000	3.14	3.11	4.15
Carpenters	803,840	16	29,000	25,000	40,000	4.90	2.58	4.40
Financial managers	801,160	20	50,000	43,000	78,000	3.93	3.19	5.65
Miscellaneous assemblers and fabricators	795,820	13	25,000	16,000	31,000	3.92	2.90	4.90
General and operations managers	790,670	20	53,000	40,000	73,000	4.55	3.20	5.50
Cashiers	770,520	15	16,000	14,000	30,000	3.75	2.50	8.08
FLSM of non-retail sales workers	768,420	16	42,000	24,000	61,000	5.53	3.14	6.55
Automotive service technicians and mechanics	738,290	13	29,000	25,000	45,000	2.77	2.50	4.24
Office clerks, general	736,160	19	24,000	20,000	31,000	3.95	2.48	3.62
FLSM of construction trades and extraction workers	720,740	17	40,000	33,000	54,000	3.75	2.42	3.86
Lawyers	702,480	15	82,000	65,000	130,000	6.57	2.78	7.81
Human resources, training, and labor relations specialists	660,750	20	38,000	31,000	54,000	3.56	2.87	4.60
Cooks	646,890	10	16,000	15,000	24,000	3.30	2.82	3.86
Inspectors, testers, sorters, samplers, and weighers	637,750	18	30,000	24,000	45,000	3.73	2.83	4.33
Stock clerks and order fillers	605,170	19	22,000	19,000	40,000	3.42	2.43	4.31
Computer software engineers	580,590	17	64,000	48,000	69,000	2.72	2.22	3.03
Construction laborers	578,650	12	25,000	19,000	40,000	4.17	2.78	4.58
Secondary school teachers	563,090	1	38,000	38,000	38,000	2.50	2.50	2.50
Computer scientists and systems analysts	537,310	19	53,000	40,000	60,000	3.36	2.25	3.88
Postsecondary teachers	534,100	14	49,000	27,000	50,000	4.52	2.59	5.91
Electricians	533,790	17	37,000	32,000	50,000	3.42	2.12	3.90
Police and sheriff's patrol officers	519,840	1	42,000	42,000	42,000	2.92	2.92	2.92
Physicians and surgeons	515,500	5	120,000	80,000	150,000	8.57	3.75	8.57
Construction managers	514,560	12	50,000	47,000	62,000	4.83	2.67	5.40
Computer programmers	505,590	18	54,000	43,000	60,000	3.00	2.27	3.68

Notes: FLSM = First-line supervisors/managers. Dispersion measures computed using only workers with positive earnings. P90/10 is the ratio of earnings at the 90th percentile to earnings at the 10th percentile. * Includes only industries with 1,000 or more workers.

Source: U.S. Census Bureau, Census 2000.

Figure A-1.

Distribution of Median Earnings Across Industries for Year-Round, Full-Time Workers in the 43 Largest Occupations: 1999

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf*)

Note: FLSM = First-line supervisors/managers. Occupations of 500,000 or more workers listed in decreasing order of size.
Source: U.S. Census Bureau, Census 2000.

Chief executives, *Lawyers*, and *Physicians and surgeons* look large, as a percentage of their national median earnings, they are not stand-outs (all three are in the top five for the level of median earnings). One of the largest percentage differences among industries in the level of median earnings is for *Cashiers*. *Cashiers* working in *Transportation and warehousing* have median earnings of $30,000, while they earn $14,000 at the median in *Accommodation and food services*. The ratio for *Cashiers* (2.13 for the industry with the highest median earnings to the lowest) is however not statistically different from the ratio for *Stock clerks and order fillers* (2.09), whose median earnings in *Utilities* were $40,000 versus $19,000 in *Retail trade*. One of the occupations with the most even median earnings across industries is *Registered nurses*, with a range across 10 industries of only $38,000 to $48,000. The ratio for *Registered nurses* (1.26 from highest to lowest) is not different from the ratio for *Construction managers* (1.33).[43]

Table A-2 shows that despite the fact that the median earnings of *Registered nurses* are fairly similar across industries, when the earnings dispersion measure is examined within industries, it is *Registered nurses* whose within-industry earnings distribution shows one of the *widest* ranges (percentage-wise) of earnings dispersion — from a P90/10 ratio of 1.71 in *Finance and insurance*, to a P90/10 ratio of 3.26 in *Retail trade* and 6.16 in *Administrative and support and waste management services* (the latter a 259 percent difference).[44] *Cashiers* also has a large range of within-industry earnings dispersion (as a percentage of the national ratio), consistent with the finding above of large median earnings differentials; the percentage difference between highest and lowest (223 percent) is not significantly below that for *Registered nurses*. The occupations with some of the most even distributions of dispersion measures across industries are *Computer software engineers* and *Cooks* (both at a 37 percent difference).[45]

[43] The ranges mentioned in the paragraph may not be statistically different from the ranges for other occupations not specifically noted.

[44] The highest level of dispersion is not a statistical artifact of small numbers in that industry, as there are 21,070 *Registered nurses* in *Administrative and support and waste management services*.

[45] The percentage differences mentioned in the paragraph may not be statistically different from the differences for other occupations not specifically noted.

APPENDIX B.
OCCUPATIONS WHERE A SUBSTANTIAL PROPORTION OF EARNINGS IS FROM SELF-EMPLOYMENT

"Earnings" is the sum of wage and salary income and self-employment income. Table B-1 presents the 35 (of 505 civilian) occupations where the number of year-round, full-time workers reporting any earnings (including a loss) is 25 percent or more higher than the number of such workers with positive wage and salary income. This identifies the occupations where self-employment income is particularly important.

Self-employment also carries with it the possibility of losses, and all but one of the occupations where the number with any earnings (positive or negative) exceeds the number with positive earnings by 2 percent or more are in this table — *Farmers and ranchers* (12.6 percent have losses), *Animal breeders* (6.2 percent), *Animal trainers* (5.1 percent), *Hunters and trappers* (3.4 percent), and *Artists and related workers* (2.4 percent); *Miscellaneous agricultural workers* also had a 2.4 percent difference.[46]

Thus, while self-employment is not widespread for most occupations, for a few it is important, and thus earnings rather than wages and salaries is used in this report.

[46] The percentages for the following occupations are not statistically different: *Animal breeders* from *Animal trainers, Hunters and trappers*, and *Roustabouts, oil and gas; Animal trainers* from *Roustabouts, oil and gas; Hunters and trappers* from *Artists and related workers, Miscellaneous agricultural workers, Roustabouts, oil and gas, Health diagnosing and treating practitioners, all other* and several others not mentioned; and both *Artists and related workers* and *Miscellaneous agricultural workers* from both *Roustabouts, oil and gas* and *Health diagnosing and treating practitioners, all other.*

Table B-1.
Occupations With the Highest Ratio of Earners to Wage and Salary Workers: 1999

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/prod/cen2000/doc/sf3.pdf)*

Occupation	Ratio
Farmers and ranchers	7.511
Barbers	2.141
Paperhangers	1.931
Fishers and related fishing workers	1.905
Animal trainers	1.749
Child care workers	1.742
Health diagnosing and treating practitioners, all other	1.740
Chiropractors	1.722
Massage therapists	1.608
Podiatrists	1.606
Dentists	1.533
Hairdressers, hairstylists, and cosmetologists	1.520
Shoe and leather workers and repairers	1.472
Entertainers and performers, sports and related workers, all other	1.436
Artists and related workers	1.426
Miscellaneous personal appearance workers	1.424
Animal breeders	1.415
Carpet, floor, and tile installers and finishers	1.401
Optometrists	1.400
Photographers	1.390
Door-to-door sales workers, news and street vendors, and related workers	1.375
Nonfarm animal caretakers	1.374
Real estate brokers and sales agents	1.366
Musicians, singers, and related workers	1.361
Writers and authors	1.339
Logging workers	1.322
Tailors, dressmakers, and sewers	1.312
Painters, construction and maintenance	1.303
Appraisers and assessors of real estate	1.303
Veterinarians	1.299
Lawyers	1.284
Carpenters	1.275
Upholsterers	1.272
Woodworkers, all other	1.271
Hunters and trappers	1.250

Note: Includes all occupations where the number of year-round, full-time earners exceeds the number of year-round, full-time wage and salary workers by 25 percent or more.

Source: U.S. Census Bureau, Census 2000.