**FURTHER EVIDENCE FROM CENSUS 2000 ABOUT EARNINGS
BY DETAILED OCCUPATION FOR MEN AND WOMEN:
THE ROLE OF RACE AND HISPANIC ORIGIN**

by

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Abstract

A 2004 report by the author reviewed data from Census 2000 and concluded “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.” This paper extends the analysis and concludes that once those characteristics are controlled for, no further explanatory power is attributable to race or Hispanic origin.

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INTRODUCTION

People are curious as to what others earn in their jobs. Career counselors need to tell their clients what wage or salary to expect from a particular occupation; those concerned about gender discrimination in hiring and promotions need to know what others earn so they can investigate claims; and workers claiming loss of wages due to injuries need to know the profile of earnings by age and occupation. The list of those wanting to know more about wages and earnings seems endless.

Of particular interest is the ratio of women's earnings to men's earnings. The U.S. Census Bureau recently reported that, "In 2010, the female-to-male earnings ratio of full-time, year-round workers was 0.77." While unchanged from 2009, this ratio was well above the ratio of 0.64 recorded for 1955, the first year for which the Census Bureau calculated the ratio.¹

This paper extends an earlier analysis of the ratio of female-to-male median earnings, as reported on the Census 2000 long form. It uses the same methodology as Census 2000 Special Report CENSR-15, *Evidence from Census 2000 about Earnings by Detailed Occupation for Men and Women*.² This paper examines occupational differences in median earnings for men and women by race and Hispanic Origin as reported in Census 2000.³ Earnings include wages,

1. Carmen DeNavas-Walt, Bernadette D. Proctor, and Jessica C. Smith. *Income, Poverty, and Health Insurance Coverage in the United States: 2010*. (U.S. Census Bureau Current Population Reports P60-239, September 2011), at < <http://www.census.gov/prod/2011pubs/p60-239.pdf> >.

2. Daniel H. Weinberg, *Evidence from Census 2000 about Earnings by Detailed Occupation for Men and Women*. U.S. Census Bureau Census 2000 *Special Report* CENSR-15, May 2004, at <<http://www.census.gov/prod/2004pubs/censr-15.pdf>>.

3. Questions about earnings and occupation are no longer asked on the decennial census. Instead, starting in 2005, they are asked monthly on the American Community Survey, and aggregated into 1-, 3-, and 5-year period estimates depending on the level of detail and geographic level needed.

salaries, and self-employment income.⁴ Census 2000 classified occupations into 509 categories based on the 2000 Standard Occupational Classification (which contains 821 detailed occupations).⁵

Race is a complex social construct about which much has been written. In 1977, the Office of Management and Budget (OMB) issued its Statistical Policy Directive 15, which provided the framework for federal data collection on race and ethnicity to federal agencies, including the Census Bureau for the 1980 and 1990 decennial censuses. The OMB directed agencies to focus on data collection for four racial groups in that year– White; Negro or Black; American Indian, Eskimo, or Aleut; and Asian or Pacific Islander – and one ethnicity – Hispanic, Latino, or Spanish origin. The questions on the 1980 and 1990 censuses asked individuals to self-identify with one of these four racial groups and whether they were Hispanic or not.⁶

4. 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. Earnings is but one component of income, which includes other sources such as interest, dividends, transfer program benefits, and so forth.

5. 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 2000 SOC were 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. 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 2010 SOC system contains 840 detailed occupations, aggregated into 23 major groups, 97 minor groups, and 461 broad occupations (see *2010 SOC User Guide*, U.S. Bureau of Labor Statistics, February 2010 at <http://www.bls.gov/soc/soc_2010_user_guide.pdf>.) This analysis excludes four Census occupations that are uniquely military occupations.

6. The Population Censuses have a special dispensation from OMB to allow individuals to designate “Some Other Race” rather than one of those specifically listed. The vast majority of individuals choosing that option are Hispanic (Grieco and Cassidy 2001). Because of Congressional directives, the decennial census questions also ask about specific Asian and Pacific Islander races (e.g., Chinese).

OMB undertook a major effort in the 1990s to reexamine America's concept of race. After much research and public comment; it revised the Nation's racial classification to include *five* categories – White, Black or African American, American Indian or Alaska Native, Asian, and Native Hawaiian or other Pacific Islander. An additional major change was to permit the self-identification of individuals as “one or more races.” While a small fraction of the population had already been doing so on previous census forms, this new directive made this practice permissible in data collection activities. Census 2000 figures indicated that 6.8 million, or 2.4 percent of the population, designated themselves as multiracial.⁷

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; thus, some individuals can be in multiple groups. 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.⁸

OMB did not change the question or the basic self-identification approach to identifying individuals of Hispanic origin, though it did direct that such a question be placed before the question on race because scientific testing showed that such a placement reduced non-response. Individuals of Hispanic origin may be of any race. In Census 2000, 8.0 percent of single-race

7. *Census 2000 Summary File 1*, Table P3. In 2010, 9.0 million (2.9 percent) designated themselves as multiracial (Table DP-1, *Profile of General Population and Housing Characteristics: 2010*).

8. 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. This paper does not investigate alternate classifications.

Whites, 2.8 percent of Blacks, 16.4 percent of American Indians and Alaska Natives, 2.7 percent of Asians, and 14.4 percent of Native Hawaiians or other Pacific Islanders self-identified as Hispanic.⁹

Figure 1 presents a comparison of minority group earnings to the earnings of non-Hispanic Whites at each percentile of the earnings distribution in 1999. Asians had an earnings level at or above that for non-Hispanic Whites for most of the earnings distribution. In contrast, the other four groups – Blacks or African-Americans, Native Hawaiians and other Pacific Islanders, American Indians and Alaska Natives, and Hispanics – had earnings levels substantially below that for non-Hispanic Whites, with Hispanics having noticeably the lowest ratio over most of the distribution (between roughly the 5th and 95th percentiles). The remainder of the paper will focus on median earnings.

9. *Census 2000 Summary File 1*, Tables P8 and P10. In 2010, the figures were 12.0, 3.2, 12.4, 1.4, and 10.8 percent, respectively (Table DP-1, *Profile of General Population and Housing Characteristics: 2010*).

THE RATIO OF FEMALE-TO-MALE MEDIAN EARNINGS FOR YEAR-ROUND FULL-TIME CIVILIAN WORKERS¹⁰

Table 1 presents the percent female and the median earnings for year-round full-time civilian workers 16 years old or older (hereinafter termed YRFT workers or just workers). 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).¹¹ Full-time means the individual worked 35 or more hours a week. If these limitations had not been imposed, occupations where part-time or part-year work is prevalent would have lower earnings simply because of the fewer hours worked by some each year, not because of variation within the occupation for comparably employed individuals. Workers in the armed forces are excluded.

The median earnings of the 83.0 million YRFT workers in 1999 was \$33,000. Of all YRFT workers in 1999, 41.2 percent were women. The median woman earned \$28,000, 73.7 percent of the median man (\$38,000). Of YRFT workers in their prime earnings years (35 to 54), the median woman earned \$30,000, 71.4 percent of the median man (\$42,000).

The racial or ethnic group with the highest proportion of female YRFT workers was

10. 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*). 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 as the width of confidence intervals 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 smaller than rounding error.

11. Paid vacations count as weeks worked.

Blacks, at 51.6 percent (the only group with a majority of workers as female); the lowest was Hispanics, at 37.3 percent. These estimates are quite similar for prime-age workers (ages 35 to 54).

The only racial or ethnic group to have a female-to-male median earnings ratio below the ratio for all workers was non-Hispanic Whites, at 72.3 percent overall and 67.8 percent for those aged 35-54. In contrast, all the other groups, with the exception of Asians (at 75.0 percent), had an earnings ratio at or above 80 percent for all workers. Hispanics had the highest ratio, at 88.0 percent. In contrast, for workers aged 35-54, Blacks had the highest ratio, at 84.1 percent.

EARNINGS BY OCCUPATION¹²

The most highly paid occupation overall, for men and women, and for men and women in each race (except American Indians and Alaska Natives) and for Hispanics is *Physicians and surgeons* (see Table 2).¹³ Median earnings appear to differ markedly between men and women – more so than among the race-ethnicity groups. The other occupations to appear frequently on the “top five” lists for non-Hispanic Whites, Blacks, Asians, and Hispanics for men and women are *Chief executives; Lawyers; and Dentists*.

In contrast, there is much more comparability in the levels of median earnings of the

12. To make distinctions among occupations clearer for the reader, especially given the embedded commas in some titles, only the first letter of each occupation is capitalized, the title is shown in italics, and a series of titles is separated by semicolons. Only occupations with 10,000 or more year-round full-time workers and at least 1,000 male and 1,000 female workers appear in the tables. There were no occupations for Native Hawaiians and other Pacific Islanders that met this criterion, and only three for American Indians and Alaska Natives (*Elementary and middle school teachers, First-line supervisors/managers of retail sales workers, and Driver/sales workers and truck drivers*).

13. There were fewer than 10,000 American Indian and Alaska Native *Physicians and surgeons* so it was not possible to determine if indeed this statement is also true for that racial group.

lowest-paid occupations across the sexes and among the race-ethnicity groups (see Table 3).

Cooks is the most common occupation to appear on the “bottom five” lists for non-Hispanic Whites, Blacks, Asians, American Indians and Alaska Natives, and Hispanics, for both men and women (appearing for eight of ten lists).

THE EFFECT OF DEMOGRAPHIC CHARACTERISTICS

As noted in the earlier Census 2000 special report, education and occupation are likely to have a significant impact on earnings and consequently on the earnings ratio. Table 4 presents one perspective on the contributions of demographic characteristics to differences in median earnings between men and women. As noted earlier, the ratio of median earnings for women to median earnings for men, the female-to-male earnings ratio (FMER), is 0.737 for all year-round full-time workers. This ratio reflects differences in the characteristics of these men and women – differences in age, education, occupation, and race and Hispanic origin.

To take account of the different distributions by age, education, race, ethnicity, and occupation, the FMER is calculated at the most disaggregated level appropriate for the analysis, and then aggregated to a total using the share of the total number of workers (that is, by taking a weighted average). If differences in age are taken into account (by taking a weighted average using three age categories – 16 to 34, 35 to 54, and 55 and older), the FMER rises to 0.743. This relatively small (but nonetheless statistically significant) increase suggests that the age distribution of men and women workers is not very different. If, instead, differences in education are taken into account (a different weighted average using four education categories – less than a high school education, high school diploma, some college, a Bachelor’s degree or more), the

FMER rises from 0.737 to 0.782, a large enough increase to suggest that there are important differences between men and women workers in educational attainment.

A similar increase to that for education is seen when differences across the 505 occupations are taken into account – the FMER rises from 0.737 to 0.778 – suggesting that the distribution of workers across occupations is different for men than for women.

Finally, there is an intermediate increase when race and Hispanic origin is taken into account, from 0.737 to 0.751. This stems from the fact that the percentage of the workforce that is female is different among the six race-ethnicity groups.

Some younger workers (those aged 16 to 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. Accordingly, since the decennial census lacks a direct measure of work experience, the remainder of the paper focuses on prime-age workers (those aged 35 to 54). Their FMER is 0.714, lower than that for all YRFT workers.

Taking education (4 categories), occupation (505 categories), and race-ethnicity (6 categories) into account serially reduces the FMER in two cases, suggesting unevenness in earnings within education (FMER of 0.697) and race-ethnicity (FMER of 0.707) exacerbates the differences between men and women; on the other hand the FMER for workers aged 35 to 54 when accounting for occupation alone is 0.754. When education and occupation are accounted for (a weighted average across 2,020 categories), the FMER rises to 0.777 from 0.714. When one further accounts for race and Hispanic origin (a weighted average across 12,120 categories), there is no further increase.¹⁴

14. The latter (0.779) is not significantly different from 0.777.

More detail on earnings ratios for the largest occupations for each race-ethnicity group is shown in the Appendix tables.

CONCLUDING COMMENT

There is a substantial gap in median earnings between men and women that is only partially explained by age (an imperfect proxy for work experience), education, occupation, race, and Hispanic origin. However, *once the other demographic characteristics are taken into account, there is no effect of race and ethnicity on the female-to-male earnings ratio*. Many reasons not studied here may help to explain the difference.¹⁵

15. The General Accounting Office (“Women’s Earnings: Work Patterns Partially Explain Difference Between Men’s and Women’s Earnings,” GAO-04-35, October 2003) 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 differences 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 earnings, our model could not explain all of the differences in earnings between men and women. [page 2]

See also 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.

Table 1. Ratio of Female-to-Male Median Earnings by Race and Hispanic Origin: 1999

	Number	Percent Female	Median Earnings (\$)		Ratio	Standard error of ratio
			Men	Women		
All Year-round Full-Time Workers	82,977,500	41.2	38,000	28,000	0.737	0.0003
Non-Hispanic White	63,307,780	40.2	40,000	29,000	0.723	0.0003
Black	8,208,130	51.6	30,000	26,000	0.854	0.0010
Asian	3,196,790	43.1	40,000	30,000	0.750	0.0018
American Indian or Alaska Native	981,860	43.7	30,000	24,000	0.800	0.0028
Native Hawaiian or other Pacific Islander	197,990	44.1	32,000	26,000	0.813	0.0075
Hispanic (of any race)	7,302,530	37.3	25,000	22,000	0.880	0.0014
All Year-round Full-Time Workers Aged 35-54	46,316,270	41.4	42,000	30,000	0.714	0.0004
Non-Hispanic White	36,051,090	40.1	45,000	31,000	0.678	0.0005
Black	4,568,020	52.1	33,000	28,000	0.841	0.0015
Asian	1,750,990	43.7	44,000	32,000	0.727	0.0030
American Indian or Alaska Native	547,260	45.2	35,000	26,000	0.743	0.0038
Native Hawaiian or other Pacific Islander	101,600	44.9	37,000	28,000	0.757	0.0077
Hispanic (of any race)	3,371,474	39.8	30,000	24,000	0.800	0.0018

Note: The year-round full-time workers selecting two non-White races and those Hispanics selecting a non-White race are double-counted.

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

Table 2. Occupations with the Highest Median Earnings by Sex, Race, and Hispanic Origin: 1999

Men	Median Earnings (\$)	Women	Median Earnings (\$)
All Year-Round Full-Time Workers			
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
White alone, Not Hispanic			
Physicians and surgeons	150,000	Physicians and surgeons	90,000
Dentists	110,000	Engineering managers	75,000
Chief executives	98,000	Dentists	69,000
Lawyers	91,000	Lawyers	68,000
Judges, magistrates, and other judicial workers	90,000	Optometrists	65,000
Black or African American alone or in combination			
Physicians and surgeons	110,000	Physicians and surgeons	79,000
Chief executives	72,000	Pharmacists	60,000
Lawyers	68,000	Dentists	60,000
Computer and Information Systems managers	65,000	Lawyers	57,000
Computer software engineers	60,000	Chief executives	55,000
Asian alone or in combination			
Physicians and surgeons	120,000	Physicians and surgeons	82,000
Chief executives	85,000	Computer and Information Systems managers	66,000
Lawyers	80,000	Lawyers	66,000
Computer and Information Systems managers	75,000	Pharmacists	65,000
Pharmacists	73,000	Electrical and electronics engineers	62,000
American Indian or Alaska Native alone or in combination			
Managers, all other	48,000	Registered nurses	40,000
Registered nurses	48,000	Managers, all other	35,000
Accountants and auditors	42,000	Accountants and auditors	32,000
First-line supervisors/managers of office and administrative support workers	37,000	Elementary and middle school teachers	32,000
First-line supervisors/managers of production and operating workers	36,000	First-line supervisors/managers of office and administrative support workers	28,000

Hispanic or Latino (of any race)			
Physicians and surgeons	120,000	Physicians and surgeons	79,000
Chief executives	75,000	Lawyers	60,000
Lawyers	74,000	Electrical and electronics engineers	53,000
Computer software engineers	60,000	Chief executives	52,000
Electrical and electronics engineers	60,000	Computer software engineers	50,000

Note: Occupations with 10,000 or more year-round full-time workers with at least 1,000 male and 1,000 female workers (there are no occupations with more than 10,000 Native Hawaiian or Other Pacific Islanders alone or in combination). Because of sampling error, the estimates in this table may not be significantly different from one another or from other occupations that are not listed in this table. Occupations with the same (rounded) median earnings are listed alphabetically.

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

Table 3. Occupations with the Lowest Median Earnings by Sex, Race, and Hispanic Origin: 1999

Men	Median Earnings (\$)	Women	Median Earnings (\$)
All Year-Round Full-Time Workers			
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 shop	16,000	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
Cooks	17,000		
White alone, Not Hispanic			
Dishwashers	13,000	Farmers and Ranchers	12,000
Dining room and cafeteria attendants and bartender helpers	16,000	Counter attendants, cafeteria, food concession, and coffee shop	13,000
Counter attendants, cafeteria, food concession, and coffee shop	17,000	Dishwashers	13,000
Combined food preparation and serving workers, including fast food	18,000	Child care workers	14,000
Cooks	18,000	Teacher assistants	14,000
Food preparation workers	18,000		
Black or African American alone or in combination			
Miscellaneous agricultural workers	15,000	Dishwashers	12,000
Combined food preparation and serving workers, including fast food	16,000	Waiters and waitresses	14,000
Food preparation workers	17,000	Bartenders	15,000
Cashiers	18,000	Butchers and other meat, poultry, and fish processing workers	15,000
Cooks	18,000	Cashiers	15,000
		Combined food preparation and serving workers, including fast food	15,000
		Cooks	15,000
		Dining room and cafeteria attendants and bartender helpers	15,000
		Food preparation workers	15,000
		Laundry and dry-cleaning workers	15,000
		Maids and housekeeping cleaners	15,000
		Miscellaneous agricultural workers	15,000
		Pressers, textile, garment, and related materials	15,000

Asian alone or in combination			
Cooks	18,000	Sewing machine operators	15,000
Food preparation workers	18,000	Food preparation workers	16,000
Miscellaneous personal appearance workers	18,000	Miscellaneous personal appearance workers	16,000
Sewing machine operators	18,000	Cashiers	17,000
Waiters and waitresses	19,000	Cooks	17,000
		Waiters and waitresses	17,000
American Indian or Alaska Native alone or in combination			
Cooks	16,000	Cooks	14,000
Cashiers	17,000	Cashiers	15,000
Janitors and building cleaners	20,000	Janitors and building cleaners	15,000
Nursing, psychiatric, and home health aides	20,000	Nursing, psychiatric, and home health aides	18,000
Bookkeeping, accounting, and auditing clerks	24,000	Retail salespersons	18,000
Laborers and freight, stock, and material movers, hand	24,000		
Hispanic or Latino (of any race)			
Dishwashers	13,000	Dishwashers	12,000
Combined food preparation and serving workers, including fast food	15,000	Child care workers	13,000
Dining room and cafeteria attendants and bartender helpers	15,000	Cooks	13,000
Food preparation workers	15,000	Dining room and cafeteria attendants and bartender helpers	13,000
Miscellaneous agricultural workers	15,000	Miscellaneous agricultural workers	13,000
Sewing machine operators	15,000		

Note: Occupations with 10,000 or more year-round full-time workers with at least 1,000 male and 1,000 female workers (there are no occupations with more than 10,000 Native Hawaiian or Other Pacific Islanders alone or in combination). Because of sampling error, the estimates in this table may not be significantly different from one another or from other occupations that are not listed in this table. Occupations with the same (rounded) median earnings are listed alphabetically.

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

Table 4. Ratio of Female-to-Male Median Earnings, Controlling for Age, Education, Occupation, Race, and Hispanic Origin: 1999

	Ratio		Ratio
All Year-round Full-time workers	0.737	All Year-round Full-time workers Aged 35-54	0.714
Controlling for ...		Controlling for ...	
Age	0.743		
Race and Hispanic origin	0.751	Race and Hispanic origin	0.707
Education (ages 25 and older)	0.782	Education	0.697
Occupation	0.778	Occupation	0.754
		Education and Occupation	0.777
		Education, Occupation, Race and Hispanic origin	0.779

Note: Controls for race and Hispanic origin double-count individuals selecting two non-White races and those Hispanics selecting a non-White race.

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

Figure 1.

Ratio of Earnings of Race Groups and Hispanics to Earnings for Non-Hispanic Whites 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)

Note: White = White alone; Black = Black or African American alone or in combination; Asian = Asian alone or in combination; Pacific Islander = Native Hawaiian or other Pacific Islander alone or in combination; American Indian = American Indian or Alaska Native alone or in combination; Hispanic = Hispanic or Latino (of any race).
Source: U.S. Census Bureau, Census 2000.

Appendix Table A1. Female-to-Male Median Earnings Ratio for Large Occupations for Non-Hispanic White Workers Aged 35-54, by Education: 1999

	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
Workers Aged 35-54											
All workers	46,316,270	41.4	0.714	34.5	0.667	41.7	0.686	44.9	0.721	39.5	0.694
All Non-Hispanic White workers	36,051,090	40.1	0.678	31.8	0.667	40.6	0.667	43.2	0.698	38.0	0.674
Non-Hispanic Whites in 10 largest occupations (all races)											
Secretaries and administrative assistants	1,121,820	97.4	0.730	97.7	*	98.0	0.789	98.7	0.793	90.3	0.682
FLSM of retail sales workers	980,330	36.7	0.610	49.9	0.591	33.8	0.659	45.6	0.618	26.1	0.700
Elementary and middle school teachers	1,074,370	77.2	0.859	79.9	*	78.8	0.480	78.9	*	77.1	0.855
Driver/sales workers and truck drivers	914,940	4.4	0.714	3.6	0.657	5.2	0.711	4.2	0.686	5.9	0.865
Managers, all other	862,810	30.5	0.708	25.2	0.750	35.0	0.727	34.3	0.719	26.8	0.759
Retail salespersons	593,850	37.2	0.564	46.6	0.567	34.8	0.633	46.8	0.582	27.1	0.700
Registered nurses	728,750	90.5	0.887	96.0	*	91.7	0.894	92.9	*	89.3	0.904
FLSM of office and administrative support workers	642,890	67.7	0.696	63.7	0.765	73.1	0.744	75.8	0.776	49.7	0.702
Accountants and auditors	580,110	51.3	0.633	45.2	*	80.2	0.800	89.3	0.779	39.4	0.703
Customer service representatives	442,790	69.7	0.683	76.6	0.734	70.7	0.718	80.1	0.694	49.2	0.719
Non-Hispanic Whites in 10 largest occupations for Non-Hispanic Whites											
Secretaries and administrative assistants	1,121,820	97.4	0.730	97.7	*	98.0	0.789	98.7	0.793	90.3	0.682
Elementary and middle school teachers	1,074,370	77.2	0.859	79.9	*	78.8	0.480	78.9	*	77.1	0.855

FLSM of retail sales workers	980,330	36.7	0.610	49.9	0.591	33.8	0.659	45.6	0.618	26.1	0.700
Driver/sales workers and truck drivers	914,940	4.4	0.714	3.6	0.657	5.2	0.711	4.2	0.686	5.9	0.865
Managers, all other	862,810	30.5	0.708	25.2	0.750	35.0	0.727	34.3	0.719	26.8	0.759
Registered nurses	728,750	90.5	0.887	96.0	*	91.7	0.894	92.9	*	89.3	0.904
FLSM of office and administrative support workers	642,890	67.7	0.696	63.7	0.765	73.1	0.744	75.8	0.776	49.7	0.702
Retail salespersons	593,850	37.2	0.564	46.6	0.567	34.8	0.633	46.8	0.582	27.1	0.700
Accountants and auditors	580,110	51.3	0.633	45.2	*	80.2	0.800	89.3	0.779	39.4	0.703
Chief executives	575,290	17.5	0.663	16.5	0.667	22.0	0.650	21.4	0.662	15.1	0.732

NOTES: * = fewer than 1,000 male or female workers. FLSM=First-line supervisors/managers. Occupations listed in order of size.

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

Appendix Table A2. Female-to-Male Median Earnings Ratio for Large Occupations for Black Workers Aged 35-54, by Education: 1999

	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
Workers Aged 35-54											
All workers	46,316,270	41.4	0.714	34.5	0.667	41.7	0.686	44.9	0.721	39.5	0.694
All Black workers	4,568,020	52.1	0.841	43.5	0.750	48.1	0.759	55.9	0.825	55.5	0.837
Blacks in 10 largest occupations (all races)											
Secretaries and administrative assistants	131,890	96.9	0.913	96.1	*	97.5	0.946	97.9	*	92.7	0.855
FLSM of retail sales workers	62,140	47.5	0.727	53.0	0.808	48.5	0.735	54.1	0.717	34.6	0.825
Elementary and middle school teachers	113,380	80.0	0.950	84.2	*	83.5	0.703	90.6	*	79.6	0.984
Driver/sales workers and truck drivers	145,770	4.8	0.781	3.9	0.621	6.0	0.800	4.5	0.806	4.8	*
Managers, all other	63,440	48.8	0.835	35.6	*	53.5	0.867	46.2	0.815	46.9	0.826
Retail salespersons	53,320	47.7	0.667	55.5	0.759	45.3	0.685	56.0	0.629	34.6	0.738
Registered nurses	91,620	92.2	0.982	87.1	*	92.7	0.995	90.0	*	92.0	1.000
FLSM of office and administrative support workers	87,400	66.1	0.866	45.2	0.964	70.1	0.840	64.2	0.909	63.3	0.833
Accountants and auditors	59,900	66.3	0.783	59.0	*	79.4	0.859	85.1	*	58.3	0.840
Customer service representatives	85,070	78.3	0.875	75.0	*	79.8	0.875	82.9	0.871	68.8	0.914
Blacks in 10 largest occupations for Blacks											
Nursing, psychiatric, and home health aides	157,180	86.7	0.800	91.8	0.853	82.8	0.846	88.3	0.839	66.7	0.792
Driver/sales workers and truck drivers	145,770	4.8	0.781	3.9	0.621	6.0	0.800	4.5	0.806	4.8	*
Secretaries and administrative assistants	131,890	96.9	0.913	96.1	*	97.5	0.946	97.9	*	92.7	0.855

Elementary and middle school teachers	113,380	80.0	0.950	84.2	*	83.5	0.703	90.6	*	79.6	0.984
Janitors and building cleaners	103,260	27.7	0.756	31.4	0.781	23.4	0.760	27.8	0.772	15.7	*
Registered nurses	91,620	92.2	0.982	87.1	*	92.7	0.995	90.0	*	92.0	1.000
FLSM of office and administrative support workers	87,400	66.1	0.866	45.2	0.964	70.1	0.840	64.2	0.909	63.3	0.833
Customer service representatives	85,070	78.3	0.875	75.0	*	79.8	0.875	82.9	0.871	68.8	0.914
Production workers, all other	75,900	37.8	0.734	40.9	0.720	36.1	0.735	38.5	0.767	22.6	*
Laborers and freight, stock, and material movers, hand	75,150	19.4	0.852	15.7	0.827	21.7	0.936	19.7	0.836	19.3	*

NOTES: * = fewer than 1,000 male or female workers. FLSM=First-line supervisors/managers. Occupations listed in order of size.

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

Appendix Table A3. Female-to-Male Median Earnings Ratio for Large Occupations for Asian Workers Aged 35-54, by Education: 1999

	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
Workers Aged 35-54											
All workers	46,316,270	41.4	0.714	34.5	0.667	41.7	0.686	44.9	0.721	39.5	0.694
All Asian workers	1,750,990	43.7	0.727	48.9	0.764	48.5	0.762	46.0	0.777	40.2	0.750
Asians in 10 largest occupations (all races)											
Secretaries and administrative assistants	27,240	93.9	0.914	92.1	*	95.6	*	96.2	*	90.9	*
FLSM of retail sales workers	54,170	32.3	0.722	37.5	0.700	31.3	0.787	43.5	0.766	26.7	0.750
Elementary and middle school teachers	17,480	77.6	0.952	61.7	*	77.8	*	100.0	*	77.7	0.914
Driver/sales workers and truck drivers	14,480	4.1	*	2.6	*	4.2	*	5.0	*	4.3	*
Managers, all other	37,630	31.7	0.721	34.0	*	38.6	0.820	41.7	0.750	29.1	0.769
Retail salespersons	25,890	49.4	0.667	54.3	0.750	48.3	0.675	58.8	0.747	42.6	0.657
Registered nurses	54,800	91.5	1.000	99.2	*	91.8	*	95.4	*	91.3	1.000
FLSM of office and administrative support workers	21,460	60.6	0.837	54.5	*	64.9	0.854	59.9	*	58.2	0.792
Accountants and auditors	53,060	62.4	0.803	65.1	*	77.9	0.919	82.5	*	59.2	0.840
Customer service representatives	15,600	65.7	0.841	70.7	*	70.6	0.938	74.0	*	57.3	0.811
Asians in 10 largest occupations for Asians											
Registered nurses	54,800	91.5	1.000	99.2	*	91.8	*	95.4	*	91.3	1.000
FLSM of retail sales workers	54,170	32.3	0.722	37.5	0.700	31.3	0.787	43.5	0.766	26.7	0.750
Accountants and auditors	53,060	62.4	0.803	65.1	*	77.9	0.919	82.5	*	59.2	0.840
Computer software engineers	43,390	26.3	0.875	100.0	*	24.8	*	42.1	*	26.2	0.875
Physicians and surgeons	41,040	29.7	0.750	20.8	*	84.8	*	50.0	*	29.7	0.750
Managers, all other	37,630	31.7	0.721	34.0	*	38.6	0.820	41.7	0.750	29.1	0.769

Cooks	29,080	32.4	0.944	30.6	1.000	35.1	0.801	33.8	0.952	34.7	*
Cashiers	28,740	62.4	0.818	62.6	0.835	63.8	0.795	66.7	0.833	56.8	0.740
Computer programmers	27,350	35.5	0.908	22.8	*	34.2	*	31.6	*	35.8	0.896
Secretaries and administrative assistants	27,240	93.9	0.914	92.1	*	95.6	*	96.2	*	90.9	*

NOTES: * = fewer than 1,000 male or female workers. FLSM=First-line supervisors/managers. Occupations listed in order of size.

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

Appendix Table A4. Female-to-Male Median Earnings Ratio for Large Occupations for American Indian and Alaska Native Workers Aged 35-54, by Education: 1999

	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
Workers Aged 35-54											
All workers	46,316,270	41.4	0.714	34.5	0.667	41.7	0.686	44.9	0.721	39.5	0.694
All American Indian and Alaska Native workers	547,260	45.2	0.743	37.2	0.715	42.7	0.708	48.7	0.744	46.5	0.775
American Indians and Alaska Natives in 10 largest occupations (all races)											
Secretaries and administrative assistants	15,820	96.8	*	95.6	*	97.2	*	97.7	*	92.8	*
FLSM of retail sales workers	11,680	47.8	0.657	58.8	*	44.4	0.656	56.7	0.733	30.8	*
Elementary and middle school teachers	12,210	76.7	0.895	82.0	*	77.9	*	85.7	*	76.5	0.897
Driver/sales workers and truck drivers	17,200	7.1	0.607	4.5	*	9.4	*	6.6	*	10.8	*
Managers, all other	9,190	38.4	0.760	28.4	*	43.1	0.786	36.2	*	35.6	0.800
Retail salespersons	7,610	47.3	0.654	50.9	*	47.8	0.625	53.1	0.700	32.8	*
Registered nurses	9,440	89.1	0.840	93.8	*	91.5	*	91.5	*	85.8	*
FLSM of office and administrative support workers	8,670	67.0	0.750	77.0	*	70.3	0.750	67.2	*	56.2	*
Accountants and auditors	5,990	66.2	0.745	64.0	*	80.3	*	83.9	*	54.1	0.820
Customer service representatives	6,210	71.9	0.839	67.8	*	72.9	*	83.5	*	47.9	*
American Indians and Alaska Natives in 10 largest occupations for American Indians and Alaska Natives											
Driver/sales workers and truck drivers	17,200	7.1	0.607	4.5	*	9.4	*	6.6	*	10.8	*
Secretaries and administrative assistants	15,820	96.8	*	95.6	*	97.2	*	97.7	*	92.8	*
Elementary and middle school	12,210	76.7	0.895	82.0	*	77.9	*	85.7	*	76.5	0.897

teachers											
FLSM of retail sales workers	11,680	47.8	0.657	58.8	*	44.4	0.656	56.7	0.733	30.8	*
Janitors and building cleaners	9,520	25.6	0.696	35.4	*	19.6	*	24.7	*	13.6	*
Registered nurses	9,440	89.1	0.840	93.8	*	91.5	*	91.5	*	85.8	*
Managers, all other	9,190	38.4	0.760	28.4	*	43.1	0.786	36.2	*	35.6	0.800
Nursing, psychiatric, and home health aides	8,750	87.1	0.793	92.4	*	83.7	*	90.2	*	74.3	*
FLSM of office and administrative support workers	8,670	67.0	0.750	77.0	*	70.3	0.750	67.2	*	56.2	*
Retail salespersons	7,610	47.3	0.654	50.9	*	47.8	0.625	53.1	0.700	32.8	*

NOTES: * = fewer than 1,000 male or female workers. FLSM=First-line supervisors/managers. Occupations listed in order of size.

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

Appendix Table A5. Female-to-Male Median Earnings Ratio for Large Occupations for Native Hawaiian and Other Pacific Islander Workers Aged 35-54, by Education: 1999

	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
Workers Aged 35-54											
All workers	46,316,270	41.4	0.714	34.5	0.667	41.7	0.686	44.9	0.721	39.5	0.694
All Native Hawaiian and other Pacific Islander workers	101,600	44.9	0.757	42.3	0.731	45.3	0.746	46.4	0.755	43.2	0.784
Native Hawaiians and other Pacific Islanders in 10 largest occupations (all races)											
Secretaries and administrative assistants	2,590	96.1	*	100.0	*	95.6	*	99.7	*	89.3	*
FLSM of retail sales workers	2,260	45.4	0.718	39.4	*	44.4	*	51.8	*	40.0	*
Elementary and middle school teachers	1,460	76.2	*	100.0	*	80.2	*	100.0	*	75.8	*
Driver/sales workers and truck drivers	2,850	5.3	*	8.0	*	6.2	*	4.3	*	0.0	*
Managers, all other	1,570	39.8	*	12.8	*	45.2	*	48.1	*	33.0	*
Retail salespersons	1,360	53.2	*	61.8	*	47.8	*	62.5	*	40.8	*
Registered nurses	1,570	87.9	*	100.0	*	89.7	*	70.3	*	87.5	*
FLSM of office and administrative support workers	1,860	66.8	*	23.8	*	73.9	*	70.7	*	56.0	*
Accountants and auditors	1,330	68.5	*	100.0	*	91.2	*	88.3	*	48.2	*
Customer service representatives	1,560	80.6	*	85.0	*	78.0	*	86.7	*	68.8	*
Native Hawaiians and other Pacific Islanders in 10 largest occupations for Native Hawaiians and other Pacific Islanders											
Driver/sales workers and truck drivers	2,850	5.3	*	8.0	*	6.2	*	4.3	*	0.0	*
Secretaries and administrative assistants	2,590	96.1	*	100.0	*	95.6	*	99.7	*	89.3	*

FLSM of retail sales workers	2,260	45.4	0.718	39.4	*	44.4	*	51.8	*	40.0	*
Janitors and building cleaners	1,950	31.6	*	30.3	*	31.1	*	33.9	*	14.7	*
FLSM of office and administrative support workers	1,860	66.8	*	23.8	*	73.9	*	70.7	*	56.0	*
Registered nurses	1,570	87.9	*	100.0	*	89.7	*	70.3	*	87.5	*
Managers, all other	1,570	39.8	*	12.8	*	45.2	*	48.1	*	33.0	*
Customer service representatives	1,560	80.6	*	85.0	*	78.0	*	86.7	*	68.8	*
Elementary and middle school teachers	1,460	76.2	*	100.0	*	80.2	*	100.0	*	75.8	*
Cashiers	1,450	82.7	*	87.8	*	80.0	*	84.0	*	72.5	*

NOTES: * = fewer than 1,000 male or female workers (no occupation-education combination has more than 500 male and 500 female Native Hawaiian and other Pacific Islander workers). Occupations listed in order of size.

FLSM=First-line supervisors/managers.

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

Appendix Table A6. Female-to-Male Median Earnings Ratio for Large Occupations for Hispanic Workers Aged 35-54, by Education: 1999

	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
Workers Aged 35-54											
All workers	46,316,270	41.4	0.714	34.5	0.667	41.7	0.686	44.9	0.721	39.5	0.694
All Hispanic workers	3,371,470	39.8	0.800	32.4	0.709	42.2	0.734	44.8	0.737	42.2	0.800
Hispanics in 10 largest occupations (all races)											
Secretaries and administrative assistants	81,060	96.8	0.875	96.2	*	97.3	0.967	97.6	*	89.8	*
FLSM of retail sales workers	62,970	37.1	0.686	38.0	0.769	33.5	0.684	45.2	0.719	29.5	0.700
Elementary and middle school teachers	59,370	76.8	0.925	78.2	*	83.6	*	80.0	*	76.2	0.959
Driver/sales workers and truck drivers	110,840	3.6	0.667	2.9	0.630	4.9	0.686	3.4	0.660	6.1	*
Managers, all other	47,160	35.3	0.800	24.4	0.864	41.0	0.791	36.1	0.825	32.7	0.809
Retail salespersons	48,610	44.0	0.624	45.8	0.714	40.0	0.680	51.0	0.669	32.9	0.707
Registered nurses	28,660	87.0	0.934	80.0	*	87.8	0.918	89.8	*	86.1	0.960
FLSM of office and administrative support workers	52,400	61.5	0.808	45.5	0.833	66.5	0.800	67.7	0.909	48.8	0.760
Accountants and auditors	31,220	57.0	0.742	47.8	*	74.0	0.889	82.7	*	43.4	0.800
Customer service representatives	41,520	70.1	0.765	70.1	1.011	70.3	0.780	78.9	0.813	47.4	0.841
Hispanics in 10 largest occupations for Hispanics											
Driver/sales workers and truck drivers	110,840	3.6	0.667	2.9	0.630	4.9	0.686	3.4	0.660	6.1	*
Janitors and building cleaners	95,510	28.2	0.732	31.5	0.789	18.4	0.709	26.4	0.739	24.5	*
Secretaries and administrative assistants	81,060	96.8	0.875	96.2	*	97.3	0.967	97.6	*	89.8	*
Maids and housekeeping cleaners	66,920	86.6	0.743	88.2	0.747	80.7	0.727	85.0	0.750	79.6	*

FLSM of retail sales workers	62,970	37.1	0.686	38.0	0.769	33.5	0.684	45.2	0.719	29.5	0.700
Production workers, all other	62,810	35.0	0.680	36.4	0.727	26.4	0.656	36.6	0.662	30.5	*
Elementary and middle school teachers	59,370	76.8	0.925	78.2	*	83.6	*	80.0	*	76.2	0.959
FLSM of production and operating workers	57,840	23.6	0.676	25.7	0.620	21.0	0.721	24.3	0.732	19.1	*
Cooks	55,340	37.3	0.778	37.5	0.722	33.5	0.744	40.0	0.801	25.2	*
FLSM of office and administrative support workers	52,400	61.5	0.808	45.5	0.833	66.5	0.800	67.7	0.909	48.8	0.760

NOTES: * = fewer than 1,000 male or female workers. FLSM=First-line supervisors/managers. Occupations listed in order of size.

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

APPENDIX B: ACCURACY OF THE ESTIMATES

The data contained in this paper are based on the sample of households who responded to the Census 2000 long form. Nationally, approximately one out of every six housing units (15.9 percent of the final housing unit count) 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.¹⁶

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

16. 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 http://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]

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 and farmers, in the examples above, would be over-estimated.¹⁷

¹⁷ According to the Bureau of Labor Statistics web site, based on the Current Population Survey, in April 2000, 5.7 percent of the employed (16 years and older) held multiple jobs.