Current Population Reports

Household
Economic Studies
Series P-70, No. 10

Male-Female Differences in Work Experience, Occupation, and Earnings: 1984

Data from the
Survey of Income and
Program Participation

U.S. Department of Commerce
BUREAU OF THE CENSUS

Acknowledgments

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Issued August 1987

U.S. Department of Commerce
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SUGGESTED CITATION

U.S. Bureau of the Census, Current Population Reports, Series P-70, No. 10, *Male-Female Differences in Work Experience, Occupation, and Earnings: 1984,* U.S. Government Printing Office, Washington, D.C., 1987.

For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

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SYMBOLS USED IN TABLES

— Represents zero.
X Not applicable.
NA Not available.
B Base is less than 75,000.

Male-Female Differences in Work Experience, Occupation, and Earnings: 1984

INTRODUCTION

This report presents data on differences between men and women in lifetime labor force attachment, occupation, and earnings. The information was collected from a sample of approximately 20,000 households in May, June, July, and August 1984 as part of the Survey of Income Program Participation (SIPP).

The questions about work experience were asked only of persons 21 to 64 years old. Respondents were asked to remember and report on certain labor force statuses for a period covering the person's adult work life (21 years of age and older). In some instances, information was obtained from a proxy respondent rather than the sample person. In order to reduce the effect of recall error, respondents were asked to identify only those changes in status that persisted for 6 months or longer. The questions on work experience and job tenure are reproduced in appendix C. The data on differences between the sexes in work experience and earnings are for persons with wage or salary income. Data are also provided, for comparison, on characteristics of persons with no earnings, that is, persons who were not in the labor force or who were unemployed during the month preceeding the interview month.

HIGHLIGHTS

(Note: The figures in parentheses show the 90-percent confidence interval for the estimate.)

- Females were much more likely than males to have had periods of time during their adult life when they did not work at a job or business. Among wage and salary workers 21 to 64 years of age, 47.0 percent of females (±0.6) and 13.2 percent of males (±1.0) had spent 6 months or longer without a job or business since their 21st birthday.

- Females tended to have less time on their current job than males. The proportion of females with 5 or more years on their current job was 45.3 percent (±1.0); the comparable figure for males was 55.2 percent (±0.9).

- The mean earnings-per-hour figure for male wage and salary workers was $10.53 (±0.21) and the figure for females was $7.13 (±0.16), resulting in a female-to-male earnings ratio of .68 (±0.02). The female-to-male earnings ratio among persons with no work interruptions was .69 (±0.02), not different than the ratio for all workers.

- There were major differences between male and female college graduates in their college field of study. Among males, 57 percent (±1.9) had majored in one of the following fields: law, medicine, dentistry, science, mathematics, business, economics, and engineering. Among females, 28 percent (±2.1) had majored in one of these fields.

- Males and females work in occupations that are, to some degree, segregated by sex. Among high school graduates, for example, males worked in occupations that were, on average, 21 percent (±1.0) female. Female high school graduates worked in occupations that were, on average, 68 percent (±1.2) female.

- Working in an occupation that has a high proportion of women has a negative effect on earnings. Among female college graduates, for example, a 1-percent increase in the proportion of females in their occupation reduces earnings by 0.42 percent (±0.09).

SEX DIFFERENCES IN WORK EXPERIENCE, OCCUPATION, AND EARNINGS

The first part of this report presents a description of the differences between male and female workers in the frequency of work interruptions, the duration of lifetime work experience, the amount of time spent on current jobs, and in occupational patterns. The first section also compares the characteristics of male nonearners with those of female nonearners. The second part presents an earnings model that shows the relationship between variations in earnings and variations in a set of independent variables that are thought to be related to earnings. Much of the research on sex differences in earnings is based on the human capital theory that argues that wages are primarily determined by productivity-related characteristics such as formal education and general and specific work experience. Researchers have noted that because women are much more likely than men to experience family-related work interruptions, women are likely to invest less in developing human capital. In addition, some researchers have found that time away from the labor force results in a depreciation of existing human capital. The second section presents the earnings model and shows the proportion of the earnings gap accounted for by male-female differences in human capital characteristics and in selected job and occupation characteristics.

Work Interruptions and Lifetime Work Experience

Females were much more likely than males to have spent 6 months or longer without a job or business since their 21st

birthday. (The data are for persons 21 to 64 years old.) The reasons reported for the work interruptions were an inability to find work, family reasons, illness or disability, or other reason. Time spent not working for the purpose of attending school, which is more likely to occur for younger persons, was excluded from these interruptions. Among workers (persons with wage or salary income in the last month of the reference period), 13 percent of males had spent one or more 6-month periods without a job or business, compared with 47 percent of females. (See table A.)

Table A. Percent of Workers with One or More Work Interruptions, by Years of School Completed

(Spent 6 months or longer without a job since age 21)

Age by years of school completed	All workers		Full-time workers	
	Male	Female	Male	Female
Workers 21 to 64 years old	13.2	47.0	12.1	42.0
21 to 29 years old	11.5	19.9	10.4	16.5
Less than 12 years	22.3	34.5	19.9	29.0
12 to 15 years	11.0	21.6	9.7	18.0
16 years and over	5.0	8.1	5.0	7.4
30 to 44 years old	14.1	53.1	13.0	46.5
Less than 12 years	20.8	65.2	18.1	58.5
12 to 15 years	14.8	57.0	13.7	51.0
16 years and over	9.7	36.7	9.4	30.3
45 to 64 years old	13.6	69.2	12.5	65.5
Less than 12 years	16.2	65.7	15.3	62.2
12 to 15 years	13.8	72.0	12.4	68.2
16 years and over	9.8	63.2	9.5	61.3

Workers under 30 years of age were less likely to have experienced a work interruption than workers above that age, but the effect of age was much smaller for males than for females. About 12 percent of males under 30 years had experienced an interruption, and the figure rose to only 14 percent for those in the 30-44 and 45-64 age groups. The percentage of females with an interruption was 20 percent for the youngest group, 53 percent for the 30-44 age group, and 69 percent for those 45 to 64 years of age.

Within the younger age groups, the likelihood of an interruption was inversely related to years of school completed. Among female workers under 30, for example, 35 percent of those who did not finish high school had experienced a work interruption as compared with 22 percent of those who had finished high school (but not college), and 8 percent of those who had finished college. Among female workers 45 to 64, however, the relationship between schooling and interruptions did not hold. The proportion of high school graduates in this age group who had experienced a work interruption was 72 percent, a figure higher than the rates of 66 percent for those who did not finish high school or 63 percent for those who finished college. (The latter rates were not statistically different.)

The reasons for the reported work interruptions are shown in table B. Among males, the most common reason for a work interruption was an inability to find work; approximately 8 percent had an interruption for this reason. Other reasons were illness or disability (2 percent) and family reasons (less than 1 percent). Family reasons were by far the most frequent reason given by women for work interruptions. About 41 percent had interrupted work for family reasons, 4 percent because of an inability to find work, and 2 percent because of illness or disability. Among females under 30 years of age, 14 percent had experienced a work interruption for family reasons. The figure was 46 percent for females 30 to 44, and 64 percent for females 45 to 64.

Table B. Percent of Workers with One or More Work Interruptions, by Reason for Interruption

(Universe is all workers)

Age	Inability to find work	Family reasons	Illness or disability	Other reason
Males, 21 to 64 years	7.9	0.3	2.2	3.4
21 to 29 years	8.6	0.1	1.1	2.0
30 to 44 years	8.5	0.4	2.2	3.6
45 to 64 years	6.4	0.2	3.2	4.5
Females, 21 to 64 years	4.2	40.7	2.3	3.5
21 to 29 years	4.4	13.5	0.6	2.3
30 to 44 years	4.7	46.0	2.7	3.7
45 to 64 years	3.2	64.2	3.6	4.6

Table C presents data on the duration of work interruptions in the form of the percent of potential work-years spent away from work. Potential work-years were defined as age minus years of schooling minus 6 years. The number of work-years spent away from work was obtained by adding together the duration of all work interruptions.

Table C. Percent of Potential Work-Years Spent Away from Work

(Duration of all work interruptions as a percent of age minus years of schooling minus 6 years)

Age by years of school completed	All workers		Full-time workers	
	Male	Female	Male	Female
Workers 21 to 64 years	1.6	14.7	1.3	11.5
21 to 29 years old	2.3	5.3	1.8	3.7
Less than 12 years	3.3	8.8	2.2	6.5
12 to 15 years	2.2	5.7	1.8	3.8
16 years and over	2.0	2.6	1.6	2.3
30 to 44 years	1.6	16.6	1.2	12.3
Less than 12 years	2.6	20.2	1.8	16.3
12 to 15 years	1.5	17.6	1.3	12.8
16 years and over	1.2	12.1	1.0	9.5
45 to 64 years	0.9	22.7	0.7	19.5
Less than 12 years	1.0	19.2	0.7	16.9
12 to 15 years	0.8	24.1	0.6	20.3
16 years and over	0.9	23.0	0.9	20.4

Table D. Earnings Per Hour, by Whether Person Had One or More Work Interruptions

(Universe is all workers)

Age by years of school completed	No work interruptions			One or more work interruptions		
	Male	Female	Female to male ratio	Male	Female	Female to male ratio
Workers 21 to 64 years old	$10.76	$ 7.44	.69	$ 8.47	$ 6.71	.79
21 to 29 years old	7.98	6.64	.83	6.77	5.24	.77
Less than 12 years	6.59	5.30	.80	5.66	4.31	.76
12 to 15 years	7.70	6.15	.80	6.76	5.28	.78
16 years and over	9.91	8.54	.86	10.81	6.90	.64
30 to 44 years old	11.60	8.40	.72	8.93	6.85	.77
Less than 12 years	8.09	5.56	.69	7.13	5.26	.74
12 to 15 years	10.71	7.60	.71	8.65	6.61	.76
16 years and over	14.68	10.85	.74	11.44	9.29	.81
45 to 64 years old	12.60	7.57	.60	9.28	6.98	.75
Less than 12 years	9.01	5.54	.61	8.00	5.62	.70
12 to 15 years	12.07	7.62	.63	8.75	6.83	.78
16 years and over	18.03	11.10	.62	13.95	9.74	.70

Male workers had spent about 2 percent and female workers had spent about 15 percent of their potential work-years away from work. Young female workers had spent a smaller proportion of time away from work than female workers in the 30-44 or 45-64 age groups (5, 17, and 23 percent, respectively).

Human capital theory suggests that, other things being equal, persons with more experience should have higher earnings than persons with less experience. Table D shows earnings per hour by whether the person had experienced a work interruption. For both males and females, workers with no interruptions had higher earnings than those with one or more interruptions. Males without an interruption had mean earnings per hour of $10.76 and those with an interruption had earnings per hour of $8.47. The comparable figures for females were $7.44 and $6.71, respectively.

Because females were more likely than males to have had a work interruption, it might be supposed that male-female wage comparisons that are based only on persons who have had no work interruptions might show relatively close levels of earnings. The data in table D show that large differences exist even within the group with no interruptions. The female-to-male ratio was .69 for all workers (21 to 64 years of age), .83 for workers 21 to 29, .72 for workers 30 to 44, and .60 for workers 45 to 64.

Tenure on Current Job

The number of years spent on a current job is an important variable in human capital theory. Productivity and earnings are expected to increase with specific experience and on-the-job training. Earlier tables showed data on lifetime work experience. Table E shows data on the number of years with the current employer (job tenure) by itself and classified by lifetime work experience.

A major job tenure difference between males and females is in the proportion of persons with 10 or more years on their current job; 36 percent of males had such tenure, compared with 23 percent of females. Approximately 40 percent of male workers had 20 years or more of work experience, and 26 percent had that amount of work experience plus 10 years or more

Table E. Workers, by Tenure on Current Job

(Numbers in thousands. Universe is all workers)

Characteristic	Male		Female	
	Number	Percent	Number	Percent
Workers 21 to 64 years	44,195	100.0	35,576	100.0
Tenure on Current Job				
Less than 2 years	9,722	22.0	9,117	25.6
2 to 4 years	10,046	22.7	10,363	29.1
5 to 9 years	8,596	19.4	7,992	22.5
10 years or more	15,831	35.8	8,104	22.8
Years of Work Experience by Tenure on Current Job				
Experience less than 5 years	3,868	8.8	5,071	14.3
On job less than 2 years	2,174	4.9	2,980	8.4
On job 2 years or more	1,693	3.8	2,090	5.9
Experience 5 to 9 years	8,167	18.5	9,912	27.9
On job less than 2 years	2,835	6.4	2,947	8.3
On job 2 to 4 years	2,913	6.6	3,845	10.8
On job 5 years or more	2,419	5.5	3,120	8.8
Experience 10 to 19 years	14,286	32.3	12,479	35.1
On job less than 2 years	2,889	6.5	2,169	6.1
On job 2 to 4 years	3,189	7.2	3,219	9.0
On job 5 to 9 years	3,630	8.2	3,324	9.3
On job 10 years or more	4,577	10.4	3,767	10.6
Experience 20 years or more	17,875	40.4	8,114	22.8
On job less than 2 years	1,825	4.1	1,020	2.9
On job 2 to 4 years	2,250	5.1	1,209	3.4
On job 5 to 9 years	2,546	5.8	1,548	4.4
On job 10 years or more	11,254	25.5	4,337	12.2

of job tenure. The comparable figures for female workers were 23 percent and 12 percent, respectively. Table D provides earnings data for persons by work interruption history; table F provides earnings data by years of (lifetime) work experience by tenure on current job.

The data show that males earn more than females within each of the experience-tenure categories. Among persons with 20 years or more of experience and 10 years or more of job tenure, the earnings ratio was .68 ($8.81/$12.95).

Occupational Characteristics

Earnings vary by occupation, and male-female earnings differentials are influenced by differences in occupational patterns. Because there are 503 different occupations in the detailed classification system, it is necessary to conduct large scale surveys to measure the proportion of females in given occupations and the earnings levels of males and females in given occupations. The sample size of the SIPP is not large enough to provide data for most detailed occupation categories, and even the sample size of the Current Population Survey (approximately 60,000 households) is adequate only for those occupations with relatively large numbers of workers. Table 11 provides data from the 1980 census and the March 1987 Current Population Survey on the proportion of females and their relative earnings in each occupation that had at least 100,000 full-time workers in 1979. Data for a selected set of occupations are presented in table G.

The data in table G illustrate the difference in the occupational distributions for males and females, and show that the male-female earnings differential is present within occupational categories. The table also shows some of the changes that occurred between 1979 and 1986. The number of females as a percent of full-time workers rose in a number of professional, managerial, and technical occupations (e.g. accountants and auditors, computer programmers, managers and administrators, computer systems analysts, and lawyers) and the female-to-male earnings ratio also increased in a number of the occupations shown in table G. Changes in occupational composition are likely to be more pronounced for younger workers, but because of the limited sample size of the survey, detailed occupation data by age are not available. Data from the next decennial census could be used to examine this issue.

In spite of some recent progress, there is ample evidence that females are more likely to be in occupations that pay relatively low wages. In the earnings model that will be introduced later, the effect of differing occupational patterns will be tested by a variable that measures the percentage of persons in each occupation who are female. It is hypothesized that the earnings of a person, regardless of sex, will be lower the higher the proportion of females in his or her occupation.

Table F. Earnings Per Hour, by Tenure on Current Job

(Universe is all workers)

Characteristic	All workers			Full-time workers		
	Male	Female	Female to male ratio	Male	Female	Female to male ratio
Workers 21 to 64 years	$10.53	$7.13	.68	$10.82	$7.52	.70
Tenure on Current Job						
Less than 2 years	8.22	5.73	.70	8.46	6.03	.71
2 to 4 years	9.32	6.73	.72	9.38	6.78	.72
5 to 9 years	10.62	7.70	.73	10.42	7.56	.73
10 years or more	12.66	8.66	.68	12.38	7.91	.64
Years of Work Experience by Tenure on Current Job						
Experience less than 5 years.	6.83	5.48	.80	7.19	5.88	.82
On job less than 2 years	6.64	5.23	.79	7.07	5.72	.81
On job 2 years or more	7.07	5.85	.83	7.33	6.07	.83
Experience 5 to 9 years	8.15	6.62	.81	8.35	6.95	.83
On job less than 2 years	7.49	5.95	.79	7.74	6.36	.82
On job 2 to 4 years	8.33	6.67	.80	8.45	6.91	.82
On job 5 years or more	8.70	7.20	.83	8.89	7.45	.84
Experience 10 to 19 years	10.77	7.78	.72	10.95	8.07	.74
On job less than 2 years	9.17	6.17	.67	9.50	6.56	.69
On job 2 to 4 years	10.22	7.36	.72	10.39	7.69	.74
On job 5 to 9 years	11.07	8.43	.76	11.15	8.71	.78
On job 10 years or more	11.94	8.49	.71	12.01	8.53	.71
Experience 20 years or more	12.22	7.80	.64	12.41	8.15	.66
On job less than 2 years	9.73	5.65	.58	10.20	6.12	.60
On job 2 to 4 years	11.02	6.79	.62	11.27	6.92	.61
On job 5 to 9 years	11.82	7.16	.61	11.96	7.42	.62
On job 10 years or more	12.95	8.81	.68	13.02	9.10	.70

Table G. Characteristics of Selected Occupations in 1979 and 1986: Females As a Percent of All Full-Time Workers and Relative Earnings of Females

Occupation	Females as a percent of all full-time workers		Ratio of female to male earnings (full-time workers)	
	1979	1986	1979	1986
Secretaries	98.8	99.2	.58	(B)
Registered nurses	94.6	92.7	.82	(B)
Bookkeepers, accounting and auditing clerks	88.1	93.0	.66	.74
Nursing aides, orderlies, and attendants	85.1	88.3	.72	.81
Cashiers	77.7	79.8	.71	.75
Computer operators	56.6	63.8	.69	.73
Assemblers	47.2	42.1	.71	.75
Accountants and auditors	34.0	44.7	.60	.72
Computer programmers	28.0	39.7	.80	.81
Supervisors and proprietors, sales occupations	22.4	26.6	.57	.55
Managers and administrators, n.e.c.[1]	22.1	28.9	.51	.61
Computer systems analysts	20.4	29.7	.79	.83
Janitors and cleaners	15.3	21.0	.74	.69
Lawyers	10.4	15.2	.55	.63
Sales representatives, mining, manufacturing and wholesale	10.1	13.4	.62	.72
Electrical and electronic engineers	4.4	9.4	.75	(B)
Truck drivers, heavy	1.5	1.5	.71	(B)
Carpenters, except apprentices	1.1	0.5	.71	(B)
Automotive mechanics, except apprentices	0.9	0.6	.86	(B)

[1]Not elsewhere classified.
Note: Data for 1979 are from the 1980 census of population. Data for 1986 are from the March 1987 Current Population Survey.

Persons With No Earnings

Approximately 20 percent of the males and 43 percent of the females 21 to 64 years of age had no earnings in the last month of the reference period (the month prior to the interview). The proportion of persons with no earnings varied by age, marital status, and other characteristics. (See table H.) Persons in the 55-64 age group were less likely than younger persons to have earnings. About 38 percent of males and 62 percent of females in this age group were nonearners. Among those who were married with spouse present, 16 percent of males and 48 percent of females had no earnings. Among the never married, the proportion with no earnings was approximately 27 percent for males and 30 percent for females. Women with young children were less likely than other women to have earnings: 57 percent of those with a child under 3 years and 50 percent of those whose youngest child was between 3 and 5 years were nonearners.

Among males, Blacks were less likely to have earnings than Whites or persons of Hispanic origin (33 percent of Blacks had no earnings, compared with approximately 20 percent of Whites and Hispanics). Among women, 52 percent of persons of Hispanic origin were nonearners, compared with 43 percent of Whites and Blacks.

Persons not covered by private health insurance, persons receiving benefits from an assistance program, and persons with a work disability were less likely to receive earnings than other persons. Among males, for example, 47 percent of those not covered by private health insurance, 60 percent of those living in a household that received food stamps, and 56 percent of those who had a work disability received no earnings. (The latter figures were not statistically different.)

Table H. Percent of Persons With No Earnings
(No earnings in month prior to interview)

Characteristic	Male	Female
Persons 21 to 64 years	20.0	43.3
Age		
21 to 29 years	19.0	36.7
30 to 34 years	15.3	39.0
35 to 44 years	13.8	39.2
45 to 54 years	17.7	44.7
55 to 64 years	37.5	61.7
Marital Status		
Married, spouse present	16.2	48.1
Widowed	48.6	54.1
Divorced, separated, or married, spouse absent	26.5	32.1
Never married	27.2	29.8
Age of Youngest Child		
Less than 3 years	11.3	56.8
3 to 5 years	11.3	50.0
6 to 12 years	11.8	42.9
13 years and over	15.7	38.6
No children	25.3	39.8
Race and Hispanic Origin		
White	18.5	43.2
Black	32.8	43.5
Hispanic[1]	21.6	52.1
Selected Statuses		
Covered by private health insurance	13.6	37.6
Not covered by private health insurance	46.8	67.5
Lives in food stamp household	60.3	73.8
Lives in public or subsidized housing	48.1	62.4
With a work disability	55.5	73.6

[1]Persons of Hispanic origin may be of any race.

MULTIVARIATE ANALYSIS OF THE EARNINGS GAP

The preceeding discussion focused on lifetime work experience and earnings differentials between men and women. The descriptive material shows that females are more likely than males to have experienced a work interruption (primarily because of family reasons) and they tend to have less general and specific work experience. A substantial amount of research in the economic literature has examined earnings differentials by race and sex [Becker, 1971: Blinder, 1973; Corcoran and Duncan, 1979; Mincer and Polachek, 1975; Oxaca, 1973]. Much of the research is based on the human capital theory which argues that wages are primarily determined by productivity related characteristics such as formal education and on the job training [Becker, 1971; Mincer, 1974]. Researchers have argued that because women have more labor force interruptions because of childbearing and family reasons, women expect to be out of the labor force and invest less in human capital or defer investments until they reenter the labor force. In addition, time away from the labor force results in depreciation of existing human capital [Corcoran and Duncan, 1979; Mincer and Polachek, 1974].

Empirical studies have attempted to decompose the male-female earnings differential into several components: a portion attributable to differences in productivity related characteristics, such as education or experience, a portion attributable to differences in market rates of return to those characteristics, and a remaining unexplained residual. [Blinder, 1973; Corcoran and Duncan, 1979; Oxaca, 1973]. The results of any given study of the percent of the male-female differential explained by productivity related factors depends on the specification of the model and the information available to estimate the wage relationship. Several studies have taken advantage of improved or unique data on labor force experience and training available from the National Longitudinal Survey (NLS) and the Panel Study of Income Dynamics (PSID). For example, Corcoran and Duncan (1979) used the PSID retrospective data on experience, interruptions, and training or job choice to analyze wage differentials and the depreciation hypothesis. Mincer and Ofek (1982) used longitudinal data from the NLS to examine the depreciation hypothesis using reentrants to the labor force. Salvo and McNeil (1984) used data from Income Survey Development Program (ISDP) on lifetime labor force attachment to analyze wage differentials.[1] Stevens and Herriot (1975) examined the effect of lifetime work experience on earnings by matching data from the Current Population Survey with data from longitudinal Social Security earnings and employment records. Other studies have specified models which incorporate differences in preferences and preparation for various types of work. For example, Daymont and Andraisani (1984), used the NLS data on indicators of various dimensions of job content and rewards and on major field of study prior to labor market entry to examine the male-female wage differentials of recent college graduates.

The material below describes an earnings model that is based primarily on a human capital theory of earnings determination but which also includes certain variables related to the job or occupation at which the person works. The human capital variables include the experience variables described in the first section, a set of schooling variables, and certain other variables such as health status and marital status. The variables that are related to the job or occupation include firm size, whether covered by a union contract, whether employed in the private sector, and the proportion of females in the occupation at which the person works.

The earnings model that is presented here is not intended to be definitive. The determination of wages is a complex process that depends on factors that could not be fully captured in this model. For example, the model does not attempt to measure the effect of ability, preferences for certain types of nonmoney renumeration, or the effect of physical capital differences among industries.

An Earnings Model

The model presented in this section is based on personal history data from the third wave of the 1984 SIPP panel. The dependent variable of the model is the log of hourly earnings. The independent variables are primarily taken from the supplementary questions asked in the third wave of the 1984 panel. The universe for the study is full-time workers 21 to 64 years of age who received wage or salary income in the month prior to the interview. The material above describes the work experience data collected in those interviews, but information was also obtained on several dimensions of educational attainment (number of school years completed, types of courses taken in high school, whether a high school diploma was received, the highest college degree received, and the field of college study). In addition, data were obtained on other variables thought to be associated with earnings such as health status, firm size, and whether covered by a union contract.

The model was estimated separately for males and females, and, because there are likely to be interaction effects between education and other variables, the model was estimated separately for (a) persons who did not complete high school, (b) persons who completed high school but not college, and (c) persons who completed college.

Because occupation and earnings are jointly determined, occupation is not included as one of the independent variables that explain the levels of earnings. There are two aspects of occupation, however, that enter into the models. First, because education variables do not fully capture the training and skill required for certain trades (e.g. electrician, carpenter, plumber), a SKILL variable has been entered into the equations that were estimated for persons who did not complete high school. The SKILL variable differentiates between persons in precision production, craft, and repair occupations and persons in other occupations. A second variable related to occupation, PERCENT FEMALE, measures the percent of persons in each occupation who are

[1]The ISDP was a research panel for SIPP which collected similar information on work experience. There were, however, some differences between the two surveys. SIPP includes data on job tenure, occupational tenure and union membership not available in ISDP. In addition, there were changes in the questions regarding work interruptions. For a discussion of these differences, see Lamas, McNeil and Haber (1986).

female. Females have an occupational structure much different from males and they tend to be in occupations with low earnings. It is hypothesized that, regardless of sex, persons in female-dominated occupations will have lower earnings than persons in integrated or male-dominated occupations.

Table I shows the coefficients and "t" ratios for the model. The effect of experience is measured by (a) the number of years with a current employer, (b) the number of years spent in the same occupation with different employers, and (c) the number of years spent in the labor force outside a current occupation.

Table I. Coefficients of the Earnings Model

(Dependent variable is log of hourly earnings, universe is full-time workers, "t" statistics shown in parentheses)

Variable	Not a high school graduate		High school graduate		College graduate	
	Male	Female	Male	Female	Male	Female
1. JOBTENUR (number of years with current employer)	.0203 (4.8)	.0377 (5.8)	.0237 (10.2)	.0272 (11.3)	.0365 (7.3)	.0334 (5.7)
2. JOBTENURSQ	-.00029 (-2.6)	-.00097 (-4.7)	-.00037 (-5.7)	-.00039 (-5.6)	-.00060 (-3.6)	-.00062 (-2.9)
3. POCCEXP (years in current occupation less years with current employer)	.0143 (3.4)	-.0076 (-1.1)	.0186 (6.4)	.0122 (3.6)	.0214 (4.5)	.0197 (3.0)
4. POCCEXPSQ	-.00030 (-2.0)	.00031 (1.2)	-.00043 (-3.6)	-.00025 (-1.7)	-.00047 (-2.5)	-.00075 (-2.4)
5. PWORKEXP (years of work experience less years in current occupation)	.0063 (1.9)	-.0066 (-2.2)	.0069 (4.1)	.0071 (3.8)	.0106 (3.3)	.0002 (0.0)
6. PWORKEXPSQ	-.00026 (-2.6)	.00015 (2.2)	-.00008 (-1.9)	-.00014 (-2.9)	-.00021 (-2.4)	-.00005 (-0.6)
7. FT (has usually worked full time)	.0903 (1.3)	.0974 (1.7)	.0709 (1.4)	.1106 (3.8)	.0983 (1.6)	.0508 (1.2)
8. MS1 (married, spouse present)	.0288 (0.7)	-.0032 (-0.1)	.0378 (1.7)	.0167 (0.9)	.0363 (0.7)	-.0229 (-0.6)
9. MS3 (never married)	-.2065 (-4.2)	-.0327 (-0.5)	-.0907 (-3.4)	-.0198 (-0.8)	-.0993 (-1.8)	-.0306 (-0.7)
10. MET1 (metropolitan area of 1 million or more)	.2053 (6.9)	.1802 (4.4)	.1696 (9.4)	.2171 (11.1)	.1844 (5.0)	.1849 (4.9)
11. MET2 (metropolitan area of less than 1 million)	.0627 (2.2)	.0818 (2.1)	.0855 (4.8)	.1027 (5.3)	.0621 (1.7)	.0411 (1.1)
12. UNION (covered by a union contract)	.1766 (6.3)	.1300 (3.3)	.0909 (5.9)	.0851 (4.1)	-.0299 (0.8)	.0193 (0.5)
13. SKLBLUE (precision production, craft, or repair occupation)	.1913 (5.5)	.1023 (1.4)	(NA)	(NA)	(NA)	(NA)
14. OTHBLUE (other blue-collar category)	.0737 (2.5)	-.0430 (-1.2)	(NA)	(NA)	(NA)	(NA)
15. PCTFEM (percent of workers in occupation who were female)	-.2409 (-3.6)	-.3397 (-5.7)	-.2250 (-6.8)	-.2113 (-8.0)	-.1890 (-3.1)	-.4174 (-7.5)
16. FIRMSZ1 (25-99 persons employed by firm)	.0805 (2.2)	.2165 (3.7)	.1300 (5.3)	.0651 (2.4)	.1703 (3.6)	.0226 (0.4)
17. FIRMSZ2 (100-499 persons employed by firm)	.1048 (2.7)	.2091 (3.9)	.1512 (6.0)	.1347 (5.2)	.1508 (3.3)	.1478 (3.2)
18. FIRMSZ3 (500-999 persons employed by firm)	.0799 (1.5)	.2123 (3.1)	.2021 (6.1)	.1473 (4.5)	.1946 (3.4)	.1594 (2.9)
19. FIRMSZ4 (1,000 or more persons employed by firm)	.1434 (4.6)	.3315 (7.1)	.2291 (11.6)	.1659 (7.8)	.2245 (5.9)	.1626 (3.9)
20. PSECTOR (employed in private sector)	.0967 (2.3)	.0341 (0.5)	.0703 (3.1)	.0425 (1.9)	.0617 (1.8)	-.0713 (-2.0)
21. FED (employed by Federal government)	.2229 (2.2)	.1142 (0.8)	.0838 (2.2)	.0770 (1.9)	.0972 (1.8)	-.0526 (-0.8)
22. INVOL (involuntarily left last job)	-.0230 (-0.6)	.0645 (1.3)	-.0477 (-2.2)	-.0541 (-2.0)	-.0146 (-0.3)	.0005 (0.0)
23. BETWEEN (time spent between current and last job)	.0008 (0.1)	.0013 (0.2)	-.0538 (-4.4)	-.0100 (-3.6)	-.0269 (-1.6)	-.0043 (-0.9)

Table I. Coefficients of the Earnings Model—Continued

(Dependent variable is log of hourly earnings, universe is full-time workers, "t" statistics shown in parentheses)

Variable	Not a high school graduate		High school graduate		College graduate	
	Male	Female	Male	Female	Male	Female
24. BLACK	-.1671 (-4.8)	-.1366 (-3.0)	-.2156 (-9.1)	-.0793 (-3.5)	-.0756 (-1.3)	-.0309 (-0.7)
25. OTHER	-.2247 (-3.3)	.0517 (0.7)	-.0630 (-1.5)	-.0077 (-0.2)	-.0904 (-1.4)	.0104 (0.2)
26. SPAN	-.1074 (-2.9)	-.0206 (-0.4)	-.0508 (-1.5)	-.1136 (-3.2)	-.1044 (-0.7)	.0111 (0.1)
27. DISAB (with a work disability)	-.0528 (-1.5)	-.0963 (-1.9)	-.0694 (-2.5)	-.0689 (-2.0)	-.0622 (-1.0)	-.2004 (-2.9)
28. HEALTH (perceived health status is very good or excellent)	.0831 (3.5)	.0714 (2.2)	.0519 (3.4)	.1127 (7.0)	.0390 (1.1)	.0440 (1.4)
29. KLT6 (youngest child less than 6)	.0294 (1.3)	-.0111 (-0.3)	-.0219 (-1.6)	.0107 (0.6)	-.0006 (0.0)	.0391 (1.3)
30. K6T17 (youngest child 7 to 17)	.0060 (0.5)	-.0162 (-1.0)	.0228 (2.9)	.0021 (0.2)	.0212 (1.6)	-.0161 (-1.0)
31. CURRIC (took academic program in high school)	(NA)	(NA)	.0367 (2.2)	-.0047 (-0.3)	.0572 (1.8)	.0645 (1.8)
32. HSCOURSES (number of math, science, and foreign language classes in high school)	(NA)	(NA)	.0281 (4.9)	.0364 (5.8)	.0365 (2.6)	.0243 (1.8)
33. PRVTHS (attended private high school)	(NA)	(NA)	.0085 (0.3)	.0406 (1.6)	.0309 (0.9)	-.0056 (-0.2)
34. MASTERS (obtained master's degree)	(NA)	(NA)	(NA)	(NA)	.1393 (4.3)	.1343 (4.0)
35. PHD (obtained doctorate)	(NA)	(NA)	(NA)	(NA)	.1353 (2.5)	.3400 (3.8)
36. FLDSTDY1 (college field was law, medicine, or dentistry)	(NA)	(NA)	(NA)	(NA)	.2099 (3.3)	-.0649 (-0.7)
37. FLDSTDY2 (college field was math or science)	(NA)	(NA)	(NA)	(NA)	.1417 (3.3)	.0106 (0.2)
38. FLDSTDY3 (college field was business or economics)	(NA)	(NA)	(NA)	(NA)	.2182 (6.6)	.0638 (1.6)
39. FLDSTDY4 (college field was engineering)	(NA)	(NA)	(NA)	(NA)	.2783 (6.6)	.0665 (0.8)
40. FLDSTDY5 (college field was education)	(NA)	(NA)	(NA)	(NA)	.0656 (1.4)	.0187 (0.5)
41. FLDSTDY6 (college field was nursing, pharmacy, or health technologies)	(NA)	(NA)	(NA)	(NA)	.1686 (1.6)	.2045 (4.1)
42. FLDSTDY7 (college field was technical or vocational)	(NA)	(NA)	(NA)	(NA)	.0231 (0.3)	-.1858 (-1.4)
43. CONSTANT	1.3212	1.2354	1.5010	1.2630	1.3902	1.7556
Number of cases	1,414	804	4,414	3,288	2,339	1,463
R^2	.34	.32	.26	.24	.25	.26
Mean hourly earnings	$8.05	$5.66	$10.16	$7.01	$13.92	$9.99

The control groups for the above model were made up of (a) persons who were divorced, widowed, or separated, (b) persons in nonmetropolitan areas, (c) persons not covered by a union contract, (d) Whites, (e) non-Spanish origin persons, (f) persons with no work disability, (g) persons with perceived health status other than very good or excellent, (h) persons with no children, (i) persons who usually worked at part-time jobs during their work life, (j) persons employed by a firm with fewer than 25 employees and (k) persons who left their last job voluntarily. For persons who did not finish high school, white collar workers were also used as a control group. Additional control groups for high school and college graduates included persons who did not take an academic curriculum in high school and persons who attended a public high school. For college graduates, other additional control groups included those who received a Bachelor's degree and those whose field of study was other than those listed in FLDSTDY1-FLDSTDY6.

Other variables related to experience include a measure of whether the person usually worked at full time jobs during his or her time in the labor force and the time that elapsed between the start of his or her current job and the end of the previous job.

For high school graduates, three education variables were added: (a) whether his or her high school program was academic or college preparatory, (b) the number of high school courses in algebra, trigonometry or geometry, chemistry or physics, and

foreign languages, and (c) whether he or she attended a private high school. These variables were also included in the model for college graduates, and, in addition, variables were added on highest degree and field of study. For the purpose of studying the effect of the latter variable, fields of study were grouped into eight categories; (a) law, medicine, or dentistry, (b) science or mathematics, (c) business or economics, (d) engineering, (e) education, (f) nursing, pharmacy, or health technologies, (g) vocational or technical studies, and (h) other.

A look at the coefficients in table I suggests that the method used to create the experience variables is appropriate. For five of the six sex and age groups, there is a consistent and plausible relationship among the three major measures; current tenure, previous occupational experience, and other work experience. The coefficients are positive and of descending importance. In the sixth group, females who did not graduate from high school, the results are less satisfactory. The current job tenure variable is strongly positive but the variable "years of work experience less years in current occupation" has a negative coefficient that is significant.

Variables other than those related to experience were also significant. Living in a large metropolitan area had a positive effect on earnings. For non-high school graduates, working at a skilled trade had a positive effect on earnings as did being covered by a union contract for those who were not college graduates. Occupational structure, as measured by the percent of persons in the occupation who were female had a large effect on earnings.

For each sex and age group, there was a strong negative relationship between wage rates and the relative number of females in the occupation. A perceived health status variable (equal to one if the person's health was very good or excellent) was positive and was significant for four of the six groups (those who were not college graduates). Being Black had a strong negative effect on the earnings of high school graduates and those who did not finish high school, but race and ethnicity variables were not significant for college graduates.

The number of math, science, and foreign language courses taken in high school had a positive effect on the earnings of high school graduates, and the highest degree received had a signifi-

Table J. Mean Values of Independent Variables of the Earnings Model

	Not a high school graduate		High school graduate		College graduate	
	Male	Female	Male	Female	Male	Female
1. JOBTENUR	11.02	8.00	9.73	7.19	8.46	6.72
2. POCCTENUR	3.53	2.27	2.74	2.21	2.82	2.37
3. PWORKEXP	9.98	8.28	8.11	6.14	7.77	5.25
4. FT	.97	.92	.98	.93	.96	.89
5. MS1	.77	.59	.72	.59	.74	.55
6. MS6	.12	.08	.17	.17	.19	.28
7. MET1	.38	.39	.41	.42	.50	.49
8. MET2	.32	.31	.36	.35	.35	.33
9. UNION	.31	.24	.32	.17	.17	.20
10. SKLBLUE	.28	.06	(NA)	(NA)	(NA)	(NA)
11. OTHBLUE	.43	.39	(NA)	(NA)	(NA)	(NA)
12. PCTFEM	.17	.61	.21	.68	.30	.61
13. FIRMSZ1	.16	.12	.13	.12	.12	.12
14. FIRMSZ2	.13	.18	.12	.15	.15	.19
15. FIRMSZ3	.06	.08	.05	.07	.07	.10
16. FIRMSZ4	.40	.45	.51	.50	.53	.46
17. PSECTOR	.90	.92	.85	.83	.72	.59
18. FED	.02	.02	.05	.04	.07	.04
19. INVOL	.14	.11	.12	.09	.07	.05
20. BETWEEN	.20	.70	.15	.68	.19	.70
21. BLACK	.14	.16	.09	.14	.05	.10
22. OTHER	.03	.04	.02	.02	.04	.04
23. SPAN	.13	.12	.04	.04	.03	.02
24. DISAB	.12	.12	.06	.05	.04	.04
25. HEALTH	.48	.39	.70	.66	.84	.79
26. KLT6	.25	.17	.25	.18	.28	.15
27. K6T17	.63	.67	.57	.53	.61	.42
28. CURRIC	(NA)	(NA)	.30	.30	.75	.78
29. HSCOURSES	(NA)	(NA)	1.94	1.84	3.26	3.18
30. PRVTHS	(NA)	(NA)	.08	.09	.15	.15
31. MASTERS	(NA)	(NA)	(NA)	(NA)	.19	.23
32. PHD	(NA)	(NA)	(NA)	(NA)	.09	.03
33. FLDSTDY1	(NA)	(NA)	(NA)	(NA)	.06	.03
34. FLDSTDY2	(NA)	(NA)	(NA)	(NA)	.11	.06
35. FLDSTDY3	(NA)	(NA)	(NA)	(NA)	.27	.17
36. FLDSTDY4	(NA)	(NA)	(NA)	(NA)	.13	.02
37. FLDSTDY5	(NA)	(NA)	(NA)	(NA)	.09	.30
38. FLDSTDY6	(NA)	(NA)	(NA)	(NA)	.01	.09
39. FLDSTDY7	(NA)	(NA)	(NA)	(NA)	.03	.01

(NA) Not applicable.
- Rounds to zero.

cant effect on the earnings of college graduates. Those males whose major field of study was law, medicine, dentistry, math, science, business, economics, or engineering had, other things being equal, higher earnings than those in other fields, but among female college graduates, only one field of study (nursing, pharmacy, or health technologies) was significantly higher than the control group.

The data in table I show the effect of variables on earnings levels. The data in table J show how males and females differ in the characteristics that affect earnings.

Among non-high-school graduates, 28 percent of males but only 6 percent of females worked at an occupation that was in the "precision production, craft, and repair category."

The difference between men and women in occupational patterns is apparent in table J. Among high school graduates, for example, the average male worked in an occupation that was 21 percent female: the average female worked in an occupation that was 68 percent female. This pattern was similar for the other two education groups.

Another notable difference between males and females is in the field of study of college graduates. The proportions in the various fields were as follows:

Field of study	Percent in field	
	Males	Females
Law, medicine, or dentistry	6	3
Science or mathematics	11	6
Business or economics	27	17
Engineering	13	2
Education	9	30
Nursing, pharmacy, or health technologies	1	9
Vocational or technical studies	3	1

Proportion of the Earnings Gap Accounted for by Differences in Characteristics

Table K shows the proportion of the earnings gap accounted for by differences between the sexes in the mean values of the independent variables. The figures are calculated by multiplying both the male and female mean values by the male coefficients.

Differences between males and females in experience variables accounted for 22 perent of the earnings gap among high school and college graduates and about 14 percent for those who didn't finish high school.

Among college graduates, field of study accounted for 12 percent of the gap. Among those who didn't finish high school, being employed at a skilled trade accounted for 13 percent of the gap. Occupational structure (the existence of male and female dominated occupations) accounted for 30 percent of the earnings gap among those without a college degree and 17 percent of the gap among college graduates.

Table K. Proportion of Male-Female Earnings Differential Accounted for by Differences in the Mean Values of the Independent Variables

(Based on coefficients for males)

Characteristic	Not high school graduates	High school graduates	College graduates
Experience[1]	.139	.222	.226
Schooling[2]	(NA)	.008	.127
Field of study	(NA)	(NA)	.116
Skilled trades[3]	.129	(NA)	(NA)
Occupational structure[4]	.303	.300	.174
Other characteristics[5]	.024	.071	.128
All characteristics	.595	.601	.655
Residual	.405	.399	.345

[1]Number of years with current employer, years in current occupation less years with current employer, years of work experience less years in current occupation, whether usually worked full-time during work years, length of time between current and previous job.

[2]Type of high school program, number of math, science, and foreign language courses in high school, whether public or private high school (high school and college graduates); highest degree and field of study (college graduates).

[3]Whether in precision production, craft, or repair occupation.

[4]Percent of persons in occupation who are female.

[5]Marital status, type of geographic area, whether covered by a union contract, size of firm, class of worker, whether involuntarily left last job, race and Hispanic origin, disability and health status, presence of children.

Overall, differences in mean values accounted for between 60 and 66 percent of the male-female earnings gap. The residual represents earnings differences that were not accounted for by occupational structure or by differences in the other independent variables in the model. This means that approximately 40 percent of the earnings gap was not accounted for by male-female differences in the independent variables included in the model. The remaining wage gap may reflect unmeasured differences in the productivity-related characteristics of individuals, it may reflect differences in nonmoney compensation, or it may reflect wage differentials that are based on factors other than productivity.

The model presented above is based on a rich source of data, but the model itself should be viewed as a work in progress. There may be more useful ways of specifying some of the variables and the list of variables may be usefully shortened or expanded. In some instances, it was not possible to develop a satisfactory variable from information collected in the survey. For example, analysis of the data on vocational training did not yield a way to define a usable independent variable.

The primary findings of the study include the following; (1) male-female differences in experience and education account for 14 to 35 percent of the earnings gap, (2) male-female differences in occupational patterns account for 17 to 30 percent, and (3) approximately 35 to 41 percent was not accounted for by measured differences in human capital characteristics or by measured aspects of occupational structure.

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