Investigating the differences in weekly earnings of women and men

Studies report wide variances in the value of factors explaining the female-male earnings gap; standardization of BLS weekly earnings data shows that some of the gap is explained by age, education, occupation, and hours worked

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Studies seeking to identify and rank the most important reasons for the earnings disparity between men and women have proliferated in recent years. Although the many compendiums of such studies frequently emphasize different viewpoints—of business, government, or academia—they have one aspect in common: each reports an astonishingly wide variance in the explanatory power of the factors used in the studies. For example, in a summary of 16 studies published by various analysts between 1964 and 1979, Cynthia Lloyd and Beth Niemi show that the variables in these studies explained from little or none of the sex-earnings gap to as much as 71 percent. Such large differences arise mostly from the variables selected for analysis, the measure of earnings used (for example, hourly, annual), and the source of the data. In general, models employing only a small number of variables—for example, age, race, and educational attainment—explain far less of the earnings gap than those with many more variables, including occupational detail, hours worked, and several work experience items.

This article looks at sex-earnings differences using a relatively newer data series published by the Bureau of Labor Statistics. The information comes from the Current Population Survey, conducted by the Bureau of the Census for the Bureau of Labor Statistics. The monthly survey includes data on how much full-time wage and salary workers usually earn per week, by race, age, education, occupation, hours worked, and several other characteristics. (See box.) Most of the analysis is based on a statistical technique called standardization. This technique permits us to examine each characteristic at the macroeconomic level, and then to estimate what the earnings of women would be if, for each characteristic, the distribution of women had been the same as that for men, and all other characteristics remained unchanged.

In the most aggregate terms, median usual weekly earnings of full-time workers were \$309 in 1982. (See table 1.) With a median of \$241, women earned 65 percent as much as men (\$371). The following discussion illustrates how part of this 35-percent gap is explained through standardizations by age, education, occupation, industry, and hours of work. Also, discussed briefly is the possible effect of labor force interruptions on male-female earnings differences.

Age, education account for small amount

The age-earnings profile for women peaks at younger ages than for men. Median usual weekly earnings of women peak at \$261 in the 25-to-34 age group; peak earnings of men are attained in the 35-to-44 category at a figure \$67 higher

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than the median for men 25 to 34. (See table 1.)

Among teenagers, the female-to-male earnings ratio for full-time workers was 87.6 percent—slightly higher than that for 20- to 24-year-olds, and considerably higher than that for other age groups. However, a large number of young workers have earnings at or near the prevailing minimum wage (\$3.35 per hour in 1982, or \$134 for a 40-hour workweek). About one-third of the male teenagers and nearly half of the female teenagers earned under \$150 a week in 1982. The sex-earnings ratio for workers 25 to 34 was 72 percent and was even lower for the groups comprising 35-to 64-year-old workers.

The age distribution of women who work full time is slightly different from that of men. The women tend to be a bit younger; nearly 20 percent were under 25, compared to 16 percent for men in 1982. However, age apparently does little to explain earnings differences between the sexes. The following shows the actual age distribution of women in 1982, their distribution if they had the same age profile as men, and median weekly earnings in both cases:

		Redistri-
	Actual	buted
Age 16 and over:		
Total, (thousands)	28,267	28.267
Percent	100.0	100.0
16 to 19	3.4	3.1
20 to 24	16.1	13.2
25 to 54	68.6	71.0
25 to 34	31.5	31.6
35 to 44	21.2	22.5
45 to 54	16.0	16.9
55 and over	11.9	12.7
Median earnings	\$241	\$243

If women who work full time had an age distribution identical to that of men, and all other characteristics had remained the same, the estimated median earnings (assuming the weekly earnings distribution for each age group did not change) would have been only \$2 higher in 1982, and the sex-earnings ratio would have edged upward by 0.5 percentage point, from 65.0 to 65.5 percent.

Differences in years of school completed also account for only a small amount of the earnings gap. If the distribution of years of school completed by employed women 25 and over had been the same as that for men, median earnings of women would have moved up by only \$2 and the sexearnings ratio also would have been raised by only 0.5 percentage point. (Age 25 and over is used in looking at educational attainment because a large number of the population 16 to 24 are still in school.)

Occupations play a larger role

More of the earnings gap can be explained by the variations in the employment of women and men among occupations. Information by occupation is published from the CPs at three levels of detail. The least detailed in 1982 was the major group, or "one-digit" level, with 11 categories.²

Note on weekly earnings data

The Bureau of Labor Statistics has been collecting quarterly and annual average data on the usual weekly earnings of individuals and families by various demographic characteristics since the first quarter of 1979. These data have certain distinct advantages over other sources of earnings information. They are timely, in that quarterly reports with summary measures are issued about I month following the close of each quarter. The series can be tabulated by the exact number of hours reported as usually worked; hence, there is no need to make assumptions in order to estimate hours worked as is the case with the various sources on annual earnings. Of greater significance is the large sample that can be accumulated over the course of a year. Even though the question on weekly earnings is asked of only one-quarter of the monthly Current Population Survey (CPS) sample of some 60,000 households each month, over the course of a year there are about 180,000 unduplicated records of the earnings for full-time workers. Such a data base permits detailed annual average tabulations, including, for example, the earnings of workers by sex for hundreds of occupations. For additional details on the CPS and the merits and limitations of the data on weekly earnings. see Earl F. Mellor, Technical Description of the Quarterly Data on Weekly Earnings from the Current Population Survey, Bulletin 2113 (Bureau of Labor Statistics, 1982).

The next level of detail ("two-digit") had 40 occupational groups relevant to wage and salary workers. For example, professional and technical workers were divided into six groups and craftworkers into eight. The "three-digit" level of detail had 422 occupational titles applicable to wage and salary workers. However, many of these titles had too few sample observations to permit the estimation of reliable earnings medians, especially separately for men and women.

Among the 11 major occupational groups, there are large and longstanding differences between the sexes. Women remain underrepresented in some major groups and overrepresented in others.³ For example, in 1982, women accounted for about 6 percent of all craftworkers and 78 percent of all clerical workers. However, an analysis of earnings on the basis of only the major occupational groups does little to explain the female-male earnings gap. If women were distributed among the 11 major groups the same as men (with earnings in each group unchanged), their median earnings would have risen by \$6 to \$247. The earnings ratio in 1982 thus would have been 66.6 percent, closing the female-male gap by very little (1.6 percentage points).

Because there are both high- and low-paying jobs within major groups, it is important to know what jobs within each group are held by women. For example, among wage and salary workers, women actually are more likely than men to work in the professional and technical group (20 versus 17 percent) but are less likely to hold the higher paying jobs

within this group. On one hand, they account for only 5 percent of the engineers, 23 percent of the lawyers, and 22 percent of the physicians employed as wage and salary workers.⁴ (See table 2.) On the other hand, women make up very large shares of the lower paying professional and technical jobs—94 percent of the registered nurses. 70 percent of the health technologists and technicians, 67 percent of teachers below the college level, and 65 percent of the social and recreation workers.

Another example is salesworkers, a middle-paying category in which women are somewhat underrepresented. About half the women in sales were sales clerks in retail trade, one of the lowest paying sales occupations. Only about one-sixth of the men in sales worked in this category—more of them were sales representatives in wholesale trade. Large numbers of men were also employed as sales representatives in manufacturing; salesworkers, other than sales clerks, in retail trade; and as stock and bond sales agents—all relatively high-paying sales jobs.

As noted, the adjustment of the employment distribution of women to that of men yielded only a small (1.6 percentage point) increase in the sex-earnings ratio when major groups were used. However, the ratio moved up 5.1 percentage points to 70.1 percent when the redistribution method was applied to 40 two-digit occupations. In dollar terms, median earnings of women rose \$19 to \$260. The ratios would undoubtedly rise even higher if the very detailed three-digit occupations were redistributed. However, serious data constraints would complicate such an analysis, as there are many jobs on the list for which no, or very few, women (and, in some cases, men) were found in the CPS sample. Where the exercise can be applied on a more limited scale for example, to the 13 categories of salesworkers—a marked narrowing is apparent. Overall, women in sales jobs earned only 55 percent as much as men in 1982; but, if women were distributed among the sales jobs in the same way as men, the ratio would jump 11 points to 66 percent.

Even at the finest level of detail for which the CPS data are available, women earn less than men in almost all occupations for which comparisons can be made. For most jobs, full-time usual weekly earnings of women were 60 to 80 percent as much as those of men. For some (for example, nurses, secondary school teachers, cashiers, postal clerks), the ratio was 85 percent or more.

It is important to note that the three-digit level of detail for occupations cannot take into consideration the wide range of full-time jobs which is found in each category. For example, under physicians, there are 85 specialties⁶ (for example, interns and neurological surgeons) for which data are not collected and would not be statistically reliable if they were. For each three-digit occupation, there are numerous specialties with differences in skill levels, market demand for the jobs, and other variables not available from the CPS, but which affect the earnings of each. Obviously, earnings differences between men and women reflect these

Table 1. Median usual weekly earnings of full-time wage and salary workers, by selected characteristics, 1982 annual averages

	Median weekly earnings					
Characteristic	Characteristic Total					
Race and Hispanic origin						
16 years and over White Black Hispanic	\$309	\$371	\$241	65.0		
	317	382	244	63.9		
	247	281	223	79.4		
	242	272	207	76.1		
Age 16 to 24 years 16 to 19 20 to 24 25 to 34 35 to 44 45 to 54 55 to 64 65 and over	214	231	194	84.0		
	167	177	155	87.6		
	226	246	205	83.3		
	319	364	261	71.7		
	359	431	260	60.3		
	350	428	254	59.3		
	336	409	246	60.1		
	257	299	210	70.2		
Years of school completed		ļ				
25 years and over Less than 4 years of high school Elementary, 8 years or less 1 to 3 years of high school 4 years or more of high school	335	403	257	63.8		
	248	298	189	63.4		
	230	262	176	67.2		
	268	327	197	60.2		
	354	424	273	64.4		
4 years of high school 1 to 3 years of college 4 years or more of college 5 years or more of college	308	381	238	62.5		
	356	422	279	66.1		
	444	525	351	66.9		
	420	503	326	64.8		
Hours usually worked			0.5			
35 to 39 hours	230	305	213	69.8		
40 hours or more	318	374	247	66.0		
40 hours	300	355	241	67.9		
41 hours or more	400	429	311	72.5		
60 hours or more	411	435	304	69.9		

variables to some degree.7

Skill level. Some insight into sex-earnings differences by the skill level of a set of selected, narrowly defined occupations is provided in the National Survey of Professional. Administrative, Technical, and Clerical Pay (PATC) conducted by the Bureau of Labor Statistics. An accompanying article reports that earnings of women in the March 1981 PATC survey ranged from 74 to 101 percent of those of men, and, in all but two occupations, the ratio was under 90 percent. But, when the skill level (based on an examination of job duties and responsibilities) is taken into consideration, women earned at least 90 percent as much as men in almost every job and experience category. The PATC data do not indicate the number of years workers remain at a given skill level, that is, how long it takes to be promoted to positions with greater duties and responsibilities.

Distribution of earnings. The distributions from which the medians are calculated in the CPS cover a wide range of usual weekly earnings among workers in job groups for which there were a reasonably large number of sample observations. Regardless of the median value, there often were some workers earning under \$200 or even under \$100, and others earning hundreds of dollars above the median. For example, lawyers employed full time as wage and salary workers had median weekly earnings of \$626, but nearly 10 percent reported earnings below \$300, and roughly twice that percentage had earnings of \$900 or more. Among retail

Table 2. Weekly earnings of wage and salary workers who usually work full time in occupations employing 50,000 or more, by sex, 1982 averages

Mumbers	in	(shousands)	

Occupation	10	tal	M		Women	
Occupation	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹
Total ²	70,546	\$309	42,279	\$371	28,267	\$241
rofessional, technical, and kindred workers	12,983	410	7,379	484	5,604	342
Accountants	968	404 460	585 53	468 504	383	325
Architects	58 699	492	499	529	199	401
Computer programmers	386	444	263	478	123	382
Computer systems analysts	246 66	539 611	181 55	568 636	65	428
Computer specialists, n.e.c.	-	1				
Engineers	1,471 73	586 628	1,391	592 632	80	479
Aeronautical and astronautical engineers	64	629	58	641	6	_
Civil engineers	187	558	184	561 607	3 16	-
Electrical and electronic engineers	382 237	599 550	366 208	566	29	_
Mechanical engineers	239	584	231	588	9	–
Engineers, n.e.c.	220	592	207	596	12	_
Foresters and conservationists	57	382	53	398	5	
Lawyers and judges	306 284	633 626	238 218	660 653	68	502 492
Librarians, archivists, and curators	159	349	35	- 055	124	340
Librarians	149	346	29		119	338
Life and physical scientists Biological scientists	279 54	519 399	225	553	54 23	378
Chemists	122	520	98	546	23	_
Operations and systems research analysts	232	508	159	547	73	417
Personnel and labor relations workers	390	430	196	530	194	354
Physicians, dentists, and related practitioners	358	507	279 85	530 517	80	421
Pharmacists	113 217	501 526	169	564	47	_
Nurses, dietitians, and therapists	1,215	357	123	358	1.092	357
Dietitians	55 952	295 365	6 56	363	49 897	366
Registered nurses Therapists	207	333	62	348	145	328
Health technologists and technicians	499	316	153	365	346	298 317
Clinical laboratory, technologists and technicians Radiologic technologists and technicians	211 82	326 325	53 29	369	158	299
Health technologists and technicians, n.e.c.	163	293	66	362	97	257
Religious workers	281	299	251	305	31	_
Clergy	243	302	232	304	11	
Social scientists	253 161	518 581	165 117	580 638	88 44	420
Economists	71	420	34	_	38	-
Social and recreation workers	414	311	146	359	268 216	291 307
Social workers	329 85	328 234	33	382	52	203
Teachers, college and university	423	499	312	528	110	415
Teachers, except college and university	2.621	360	861	413	1.760	338
Adult education teachers	56 1,261	432 349	38 236	411	1.025	339
Prekindergarten and kindergarten teachers	156	284	3		153	283
Secondary school teachers	1.092 56	384 314	560 25	411	532 31	357
Teachers, except college and university, n.e.c.		1	1	20.4	ì	007
Engineering and science technicians Chemical technicians	1.022 92	379 384	843 69	394 400	178	307
Drafters	278	365	232	379	46	_
Electrical and electronic engineering technicians	292 58	400 336	256 58	411 336	36 0	
Surveyors	242	380	184	404	58	308
Technicians, except health, engineering, and science	171	411	132	465	40	-
Airplane pilots Radio operators	56 56	588 296	54 28	600	2 28	
Vocational and educational counselors	142	402	72	459	69	348
	700	204	477	444	000	04.4
Writers, artists, and entertainers Designers	766 170	391 461	477 127	444 526	289	314
Editors and reporters	157	383	83	451	74	325
Painters and sculptors	89 112	344 411	49 60	550	40 52	341
Public relations specialists and publicity writers	72	391	42		30	-
Research workers, not specified	149	486	100	562	49	_
Managers and administrators, except farm	7.908	430	5,595	507	2,313	309
Bank officers and financial managers	710	471	445	574	264	336
Buyers, wholesale and retail trade	153	334 382	84 32	412	69 31	271
Credit and conection managers		302			_ 	

Table 2. Continued—Weekly earnings of wage and salary workers who usually work full time in occupations employing 50,000 or more, by sex, 1982 averages

[Numbers in thousands]

Garage State	To		M		Women		
Occupation	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹	
Health administrators Inspectors, except construction and public administration Managers and superintendents, building Office managers, n.e.c. Officials and administrators, public administration, n.e.c. Officials of lodges, societies, and unions Purchasing agents and buyers, n.e.c. Restaurant, cafeteria, and bar managers	205 107 113 444 407 108 254 424	\$461 420 285 337 463 479 421 274	104 94 54 124 296 79 166 237	\$587 429 353 512 501 525 494 309	101 13 59 320 110 29 88 187	\$394 	
Sales managers and department heads, retail trade Sales managers, except retail trade School administrators, college School administrators, elementary and secondary Managers and administrators, n.e.c. slesworkers Advertising agents and salesworkers Insurance agents, brokers, and underwriters Real estate agents and brokers Stock and bond sales agents Sales representatives, manufacturing industries Sales representatives, wholesale trade Sales workers, except clerks, retail trade Salesworkers, except clerks, retail trade Salesworkers, services and construction	321 342 119 269 3.699 3.643 103 444 202 150 338 795 1.020 376 181	302 566 505 517 463 317 344 357 357 349 462 409 188 298 346	193 302 78 181 2.979 2.416 52 297 91 116 278 691 420 333 122	386 585 547 566 518 383 449 419 435 642 512 426 239 310 408	128 40 41 87 720 1.227 51 147 111 34 59 104 600 43 59	227 ———————————————————————————————————	
erical and kindred workers Bank tellers Billing clerks Billing clerks Cashiers Clerical supervisors, n.e.c. Collectors, billing and account Counter clerks, except food	13.845 453 128 1.321 720 262 71 243	248 199 235 244 176 345 260 225	2.997 32 16 116 112 76 26 62	347 — 330 196 474 — 277	10.848 422 111 1.205 608 185 46 182	236 198 233 240 172 313 — 213	
Dispatchers and starters, vehicle Estimators and investigators, n.e.c. Expediters and production controllers File clerks Insurance adjusters, examiners, and investigators Library attendants and assistants Mail carriers, post office Mailhandlers, except post office Messengers and office helpers	97 505 254 180 185 56 239 146 71	335 337 342 220 300 240 420 229 204	67 206 146 23 79 7 209 80 58	370 426 398 — 383 — 423 250 212	31 298 108 158 106 50 30 66	289 294 217 257 236 — 209	
Office machine operators Computer and peripheral equipment operators Keypunch operators Office machine operators, n.e.c. Payroll and timekeeping clerks Postal clerks	988 530 332 54 203 248	259 285 240 261 275 420	257 201 19 19 39 175	343 354 — — — 427	731 329 312 35 164 73	242 253 237 — 257 403	
Receptionists Secretaries Secretaries, legal Secretaries, medical Secretaries, n.e.c. Shipping and receiving clerks Statistical clerks Stock clerks and storekeepers	442 3.086 151 65 2.870 464 323 439	207 243 285 247 241 258 271 287	9 22 1 0 22 358 67 282	274 341 322	433 3.084 150 65 2.849 106 255 157	206 243 285 247 241 221 256 241	
Teachers aides, except school monitors Telephone operators Ticket, station, and express agents Typists Miscellaneous clerical workers Not specified clerical workers	145 237 133 691 927 340	164 269 434 227 247 245	9 16 72 22 173 68	465 — 322 297	136 221 62 670 754 272	162 267 387 227 239 236	
Bakers Brickmasons and stonemasons Bulldozer operators Cabinetmakers Carpenters Compositors and typesetters Crane, derrick, and hoist operators	97 87 79 52 672 146	375 236 392 317 302 341 278 420	9.417 62 86 78 48 664 92	384 271 395 319 341 334 421	651 35 1 1 3 9 54	247 — — — — — — 224	
Decorators and window dressers Electricians Electric power line and cable installers and repairers Excavating, grading, and road machine operators, except bulldozer	538 112	221 432 441 351	27 528 110 253	434 441 351	42 10 1 4	- - -	

Table 2. Continued—Weekly earnings of wage and salary workers who usually work full time in occupations employing 50,000 or more, by sex, 1982 averages

•	To	tal	M'	en	Women	
Occupation	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹	Employed	Weekly earnings
Blue-collar worker supervisors, n.e.c.	1,640	\$422	1,448	\$438	192	\$263
Inspectors, n.e.c.	133	408	117	414	16	_
Job and die setters, metal	70	358	68	364	2	_
Machinists	466	371	451	375	16	
Mechanics and repairers	2.801	345	2,740	346	61	318
Airconditioning, heating, and refrigeration	173	360	173	360	1 1	_
Aircraft	123	431	117	435 305	7 2	_
Automobile body repairers	135 778	305 307	133	308	7	_
Automobile mechanics Data processing machine repairers	75	429	70	433	1 6	_
Farm implement	50	269	50	269	0	_
Heavy equipment mechanics, including diesel	901	366	889	367	12	_
Household appliance accessory installers and mechanics	118 75	340 373	114	340 379	4 5	_
Office machine Radio and television	75	338	65	346	6	_
Miscellaneous mechanics and repairers	215	361	208	362	7	
Millwrights	91	458	90	460	1	<u> </u>
Painters, construction and maintenance	250	294	240	298	11	<u> </u>
Plumbers and pipe fitters	385	422	381	421	3	-
Printing press operators	171	345	148	362	23	-
Roofers and slaters	67 141	306 401	66 136	308 405	5	_
Sheetmetal workers and tinsmiths	182	393	179	391	3	l –
Structural metal workers	73	497	72	498	0	
Telephone installers and repairers	307	449	272	451	35	-
Telephone line installers and repairers	101	396	94	398	6 2	_
Tool and die makers	150	437	148	439	2	_
peratives, except transport	8.291	252	4.998	311	3.294	198
Assemblers	1.016	246	460	319	556	220
Checkers, examiners, and inspectors, manufacturing	699	284	326	360	372	235
Clothing ironers and pressers	87	169	22		65	156
Cutting operatives, n.e.c.	188	232 355	128 55	249 356	60	186
Drywall installers and lathers	55 109	234	78	256	32	_
Garage workers and gas station attendants	190	184	179	186	11	
Laundry and dry cleaning operatives, n.e.c.	119	178	35	-	84	167
	153	341	147	342	6	_
Meat cutters and butchers, except manufacturing	81	279	54	329	27	
Mine operatives, n.e.c.	212	432	210	432	2	
Mixing operatives	75	289	71	289	4	
Packers and wrappers, except meat and produce	508	218	212	246 279	296	204
Painters, manufactured articles Photographic process workers	117	258 245	98 33	2/9	36	_
Priotographic process workers	1			1		Ī
Precision machine operatives	258	330	227	345	31	_
Grinding machine operatives	92 80	317 362	83 74	326 371	8 6	
Lathe and milling machine operatives	86	282	50	317	35	
Sawyers	100	228	87	230	13	l –
Sewers and stitchers	634	166	32	_	602	165
Shoemaking machine operatives	61	176	16	070	45	_
Furnace tenders and stokers, except metal	67	369	66	372	2	_
Textile operatives	251	213	93	232	158	198
Spinners twisters and winders	1 90	220	28	-	62	217
Textile operatives, n.e.c.	107	204	49	75.1	59	176
Welders and flame cutters		345 288	531 809	351 322	31 289	213
Machine operatives, miscellaneous specified		252	191	280	92	214
Miscellaneous operatives		248	374	287	175	193
Not specified operatives	151	300	97	348	54	250
	0.000	202	2 506	220	122	227
ransport equipment operatives	2.638 168	323 332	2.506	328 370	133 46	237
Bus drivers Delivery and route workers		307	411	316	27	-
Forklift and tow motor operators	312	301	284	307	28	1 -
Taxicab drivers and chauffeurs	90	240	85	244	6	-
Truck drivers	1.519	330	1.495	331	24	-
aharara ayaant farm	3.092	243	2,757	248	335	205
aborers, except farm Construction laborers, except carpenters' helpers		254	595	253	- 17	-
Freight and material handlers	1	270	533	274	61	244
Garbage collectors	61	233	60	232	1	-
Gardeners and groundskeepers, except farm	372	209	356	210	16	101
Stock handlers		222 205	357 108	237 203	138	191
Vehicle washers and equipment cleaners	0.50	275	235	282	18	1 =
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Table 2. Continued—Weekly earnings of wage and salary workers who usually work full time in occupations employing 50,000 or more, by sex, 1982 averages

(Numbers in thousands)

		tal	Mo	en	Women	
Occupation	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹
Miscellaneous laborers Not specified laborers	164 227	\$284 241	145 207	\$296 244	19 20	=
Service workers, except private household Cleaning service workers Lodging quarters cleaners Building interior cleaners, n.e.c. Janitors and sextons	7.011 1.624 105 515 1.003	207 211 142 192 229	3.518 1.104 6 234 864	246 231 — 217 234	3.493 520 100 281 140	\$180 175 140 177 195
Food service workers Bartenders Waiter assistants Cooks Dishwashers Food counter and fountain workers Waiters Food service workers, n.e.c.	1.960 175 72 724 105 98 531 256	168 196 140 180 140 145 158 169	796 87 62 386 81 25 83 71	192 224 140 205 141 ——————————————————————————————————	1.164 88 10 338 24 73 448 185	155 177 — 156 — 143 149 164
Health service workers Dental assistants Health aides, except nursing Nursing aides, orderlies, and attendants Practical nurses	1.410 95 218 826 268	200 202 219 182 255	163 2 30 118 12	222 — — 211 —	1.248 93 189 708 255	198 201 216 179 253
Personal service workers Attendants, recreation and amusement Child care workers Hairdressers and cosmetologists Housekeepers Protective service workers Firefighters Guards Police and detectives Sheriffs and bailiffs	662 88 92 184 132 1.355 218 561 487 75	202 197 148 199 221 331 393 241 405 321	211 55 10 24 48 1.245 216 494 455 68	251 222 — — 338 393 240 409 336	451 33 82 160 84 110 2 66 32 7	188 ———————————————————————————————————
Private household workers Child care workers Housekeepers Cleaners and servants	301 125 60 111	111 82 128 127	10 1 2 6	- - -	291 124 58 105	111 83 127 128
Farm workers	765 696	190 184	686 623	192 185	79 74	174 170

¹Excludes earnings from self employment.

Note: n.e.c. = not elsewhere classified. Dashes indicate earnings not shown where base is less than 50.000.

sales clerks, with a median of \$188, a small proportion (about 1 percent) reported earnings of \$900 or more, but a much larger proportion (81 percent) had earnings under \$300 and some (29 percent) were under \$150.

As shown in table 3, 1 of 3 full-time wage and salary female workers earned under \$200 a week, compared to 1 of 8 men. For most of the major occupational groups, women were 2 to 5 times as likely as men to earn under \$200. Only for the three lowest paying groups was the ratio at or below 2. At the upper end of the earnings distribution, men were at least twice as likely as women to earn \$500 or more for each of the major groups.

The data thus show that differences by sex are greater at the extremes of the earnings scale than a comparison of medians alone suggests. These large differences persist even among the detailed occupations. In each of the 10 lowest paying and the 10 highest paying occupations in which 50,000 or more of each sex were employed, women were far more likely than men to earn under \$200 and far less

likely than men to earn \$500 or more. However, among the lowest paying occupations, the proportion of women to that of men earning under \$200 generally was lower than was the case among the higher paying occupations. This may reflect, as with teenagers, some effect of the minimum wage on large differences at the low end of the earnings spectrum.

Another way to look at earnings differences is to find the top decile of women's earnings and ascertain how much a woman must earn to be among the highest 10 percent of women in an occupation, and then estimate the proportion of men who are earning at least that level. For most major occupational groups, about 40 percent of the men earn at least as much as the highest 10 percent of women workers. (See table 4.)

Unfortunately, this type of analysis cannot be extended to the 10 lowest and highest paying of each of the detailed occupations because of the relatively few sample observations in the vicinity of the top decile boundary. (Observations tend to be clustered near average earnings values.)

²Includes data for occupations not shown

However, an examination of the seven three-digit occupations in table 4 in which at least 250,000 workers of each sex were employed in 1982 produced results similar to those for the major groups.

Job and occupational tenure

Questions on both job and occupational tenure were asked in a special CPs supplement conducted in January 1983. Job

Table 3. Median usual weekly earnings of women and men, and percent earning under \$200 and \$500 or more in major occupations and in selected low- and high-paying occupations, full-time workers, 1982 annual averages

Occupation	Occupation Median usual Percent under \$200				nt \$500 or more
	weekly earnings	Men	Women	Men	Women
Major occupation groups					
Total	\$309	12.7	32.7	26.7	6.0
Professional and technical workers	410	3.4	8.8	47.8	15.6
administrators, except farm	430	3.2	16.2	51.3	14.9
Salesworkers	317 248	11.8 13.0	45.8 30.3	32.6 16.5	7.5 2.4
workers	375	7.0	28.4	23.9	7.7
transport	252	16.7	50.7	10.1	1.0
Transport equipment operatives Nonfarm laborers Private household	323 243	14.4 32.3	35.3 47.5	16.6 5.9	6.8 1.5
workers Other service workers Farm workers	111 207 190	([†]) 31.9 53.8	90.7 61.7 62.0	(¹) 7.8 1.6	0.3 0.8
Lowest paying occupations ²					
Waiters Food service workers,	158	36.1	77.5	6.0	_
n.e.c	169 176	60.6 52.7	75.1 66.3	2.8 5.4	0.5 0.2
household Nursing aides, orderlies,	180	47.4	76.3	0.3	2.8
and attendants	182	43.2	65.1	2.5	0.1
Farm laborers Sales clerks, retail trade Building interior cleaners,	184 188	57.8 34.5	63.5 71.0	1.0 8.8	1.2
n.e.c	192 196 202	41.0 37.9 33.2	66.2 65.9 56.1	3.8 4.6 7.6	_
Highest paying occupations ²					
Lawyers	626 586	2.3 0.4	3.0 1.3	74.8 71.3	48.5 45.0
analysts	539	_	4.6	66.9	35.4
scientists	519 518	4.0 1.8	11.1 2.3	59.1 61.8	31.5 35.2
elementary and secondary	517	0.6	20.7	65.2	28.7
researchers and analysts	508	1.3	2.7	61.6	28.8
Physicians, dentists, and related practitioners	507	1.8	7.5	55.2	37.5
Teachers, college and university	499	2.6	6.4	56.1	32.7
Bank officers and financial managers	471	0.7	7.6	63.6	18.2

¹Percent not shown where the base is under 50,000 workers.

tenure differs from occupational tenure in that it refers to the time spent with the current employer, while the latter refers to the number of years in the same occupation without regard to the number of employers. Job tenure results showed that men had been with their current employer an average of 5.1 years, compared to 3.3 years for women. Men in each 10-year age group 35 years and over also had more seniority with their employer than did women. Up to about the mid-30's, job tenure does not differ significantly by sex.⁹

In a study of the effect of occupational tenure on the male-female earnings gap, Nancy Rytina found that the combination of potential work experience (age minus years of schooling minus 6), tenure in the same three-digit occupation, marital status, part-versus full-time employment, residence, and major occupation and industry group accounted for 25 percent of the wage difference between the sexes. ¹⁰ However, occupational tenure alone accounted for 4 percent of the gap.

The CPS contains no information about the work history of an individual which may encompass several jobs of different but closely related titles and several employers. Clearly, differences in skills and other aspects of career development accumulated over the worklife may have more impact on current earnings than the length of time spent working in the current occupational field or for the current employer.

Several studies of work history have analyzed other measures of education, training, work history, and labor force attachment—most of which are not available from the CPS—to explain wage differences by race and sex. For example, in an analysis of work history and other data, Mary Corcoran and Greg Duncan explained 44 percent of the hourly wage gap between white men and women. Tenure with the current employer prior to the present position, combined with the number of years of training completed in the present position, explained 23 percent of the gap. Although post-training job tenure in the present position contributed to higher wages, it did not explain any of the wage gap between the sexes. An additional 8 percent of the gap was associated with the number of years of worklife that were at full-time jobs.¹¹

Industry

Data from a BLS survey of business establishments illustrate the extent to which employed women are concentrated in lower paying industries and underrepresented in the higher paying ones. ¹² In a ranking of 52 industries (from the July 1982 establishment survey), the apparel and other textile industries ranked first in female employment (82 percent) but ranked 50th in average hourly earnings. Conversely, the bituminous coal and lignite mining industry ranked 52nd in percentage of women employees (5 percent) but first in average hourly earnings.

Current Population Survey data amplify the above findings, showing that women are less likely than men to be employed in mining, durable goods manufacturing, trans-

²Occupations in which at least 50,000 of each sex are employed.

NOTE: Dashes indicate zero or rounds to zero.

portation and public utilities, and the Federal Government—groups in which women's earnings are relatively high. A redistribution of female employment to that of male employment among an all-inclusive list of 15 private industry groups and the three levels of government would raise the 1982 sex-earnings ratio 1.0 percentage point, or \$4. However, if the standardization exercise is done on a more detailed list of 46 industry groups in the private sector and 14 groups among government, the median usual weekly earnings of women would rise by \$11, narrowing the sexearnings ratio by 2.9 percentage points.

Hours worked

To facilitate comparisons among groups, analysis in this article is restricted to full-time workers—those who usually work 35 hours or more per week. Even so, full-time earnings vary widely, depending on whether the worker is at the low or high end of the hours range. For example, full-time workers putting in fewer than 40 hours had median earnings of \$230 per week in 1982. For those working 40 hours, the median was \$300, while those usually working 41 hours or more averaged \$400 a week. The fact that men work more hours explains some of the differential in weekly earnings. Among full-time workers, 24 percent of the men, compared to 10 percent of the women, usually worked more than 40 hours per week in 1982. Thus, men could be expected to earn more per week even if both sexes earned the same hourly rate. If the distribution of hours worked by women were the same as that of men, with women's earnings in each category of hours worked unchanged, median usual weekly earnings of women in 1982 would have been \$253, or 68.2 percent of those of men, instead of \$241 or 65 percent. In other words, the \$12 increase would represent 9.2 percent of the earnings gap between the sexes, or 3.2 percentage points.

Because some people may associate working more than 40 hours a week with the receipt of overtime pay, men may be expected to earn more per week than women as a result of such premium pay. However, the data indicate that premium pay for overtime work may not be a contributing factor to the \$12 disparity attributed to differences in hours usually worked. In fact, the opposite may be the case.

May 1978 is the latest date for which CPS data on both weekly earnings and the receipt of premium pay for working more than 40 hours are available. Among workers who put in 41 hours or more during the survey reference week, more than two-thirds of those who usually worked 41 hours or more did not receive a premium rate for their long workweeks. ¹³ Among those usually working 35 to 40 hours, only about one-third did not receive premium pay. For both groups, those who did receive premium pay usually earned less per week than those not paid a higher overtime rate. This was true for both men and women.

An explanation for this apparent paradox is that higher paying jobs often are salaried, demand more weekly hours, and are not covered by either collective bargaining agreements or the overtime provisions of the Fair Labor Standards Act. The data show that among those working 41 hours or more during the reference week who usually worked 41 or more hours, professional-technical workers and managers-administrators accounted for 14 percent of the population receiving premium pay, but 55 percent of the population not paid higher rates.

The numbers suggest that the effect on women's earnings as a result of their working fewer hours than men is brought about more because women are less likely to hold higher paying jobs which demand long workweeks than the fact that they are less likely to work overtime and receive premium pay. In support of this explanation is the fact that, for workers putting in 41 hours or more a week in May 1978, women were somewhat more likely than men (45 versus 42 percent) to receive premium pay.

Labor force interruptions

The role labor force interruptions play in sex-earnings differences has been analyzed using data which are not available in the CPS. In 1974, Jacob Mincer and Solomon Polachek used data from the 1967 National Longitudinal Survey of Work Experience to suggest that because of depreciation and a shorter overall payoff period, workers who expect to interrupt their careers will have lower investments

Table 4. Top decile earnings of men and women, and percent of men earning as much as the highest paid decile of women for major occupational groups and for selected occupations, full-time workers, 1982 annual averages

Occupation		undary of lecile	Percent of men earning at least as much as
	Men	Women	women's top decile
Major occupation groups			
Total	\$688	\$437	37
workers	848	561	37
except farm	1900+	568	40
Salesworkers	790	440	40
Clerical workers	571	386	42
Craft and kindred workers	616	470	29
Operatives, except transport	502	338	43
operatives	569	445	24
Nonfarm laborers	448	355	25
Private household workers	(²)	197	(²)
Other service workers	469	295	38
Farm workers	315	285	14
Selected occupations ³			
Accountants	776	532	39
Secondary school teachers	637	567	18
Sales cierks, retail trade	482	290	37
Assemblers	477	362	40
Cooks, except private			-10
household	358	243	34
Checkers, examiners, and		· · · · · · · · · · · · · · · · · · ·	٥.
inspectors	540	380	45
Bank officers and financial	- 10	550	45
managers	1900 +	597	46

¹Earnings of \$900 or more. Decile boundaries are estimated using linear interpolation of \$50- and \$100-wide intervals. Since the \$900 + interval is open-ended, the boundary cannot be estimated.

²Decile boundary and percent not estimated where base is under 50,000.

³Occupations in which at least 250,000 of each sex are employed.

in human capital than those who expect no interruptions.¹⁴ In 1981, Polachek showed that if the cost of withdrawing from the labor force varied among occupations and lifetime labor force participation differs among individuals, an individual will choose occupations which result in the smallest atrophy penalty (depreciation and forgone appreciation) in his or her lifetime.¹⁵

Using data from the Panel Study of Income Dynamics, Mary Corcoran, Greg Duncan, and Michael Ponza found that even though women earned relatively lower wages when they returned to work than they had prior to dropping out of the labor force, they experienced a subsequent rapid wage growth (a rebound) such that the net long-term loss from dropping out is small. 16 In addition, they found that depreciation does not differ significantly between "male" and "female" jobs, confirming research by Paula England, who, using data from the National Longitudinal Survey, found that neither the depreciation rate nor returns to work experience were correlated with the percent female in the current occupation. 17 They also showed that there is enough mobility between "men's" and "women's" jobs to suggest that "the use of current occupation as a proxy for occupational history is inappropriate and may provide misleading information about whether job choice is conditioned by expectations about future work or whether experience garnered in 'female' jobs results in lower wage growth and less depreciation than experience garnered in 'male' jobs."

A recap and related issues

Theories such as human capital theory, dual labor markets, and comparable worth all encompass factors that have a bearing on earnings differences between men and women. As discussed, studies focusing on these theories show a great diversity of views and reveal an exceedingly wide variance in the explanatory power of their investigations. ¹⁸ Using data from a relatively new BLS earnings series published quarterly, I examined separately certain aspects of employment, and estimated how much the sex-earnings ratio would change if women were distributed in employment more like men. The following summarizes my findings:

	Female-male ratio, median weekly earnings, 1982	Percentage- point change
Actual	65.0	_
Redistributed by: Age Years of school (age 25	65.5	0.5
and over)	64.3	0.5
Occupation	70.1	5.1
Industry	67.9	2.9
Hours worked	68.2	3.2

Although differences in age, years of school completed, industry, occupation, and hours worked each account for a relatively small part of the earnings gap between women and men, it would be inappropriate to accumulate these

Table 5. Median usual weekly earnings of men and women, full-time wage and salary workers, May 1967–78, and quarterly and annual averages, 1979–83

Date	Total	Men	Women	Female- to-male
	\$109			ratio
May:1	ו עיטונג	\$125	\$ 78	62.4
1967	121	142	3 /0 86	60.6
1970	130	151	94	62.3
1971	138	162	100	61.7
1972	144	168	106	63.1
1973	159	188	116	61.7
1974	169	204	124	60.8
1975	185	221	137	62.0
1976	196	233	145	62.2
1977	211	252	156	61.9
1978	226	271	166	61.3
1979:			400	
	238	290	182	62.8
	242	295	183 187	62.0 62.8
M . ,	243	298	187 192	62.8
(V	252 244	309 298	192	62.4
<u>-</u>	677	250		V2. 7
1980:	260	315	200	63.5
1	261	317	200	63.1
III	266	321	205	63.9
iV	277	334	211	63.2
Annual average	266	322	204	63.4
1981:				
[283	342	220	64.3
111	284	343	221 224	64.4
W	287	345 360	224	64.9 64.4
IV	300 289	360	232	64.4
1982:	-33	"	1	
1982:	304	363	238	65.6
	308	370	240	64.9
III	307	371	240	64.7
IV . ,	316	379	248	65.4
Annual average	309	371	241	65.0
1983:			050	
<u> </u>	319	385	252	65.5
M	320	383	253	66.1 64.7
∭	320	388 393	251 260	64.7
IV	327 322	393	250 254	65.6

¹Data for 1967-78 are not strictly comparable to those for later years.

NOTE: Data are not seasonally adjusted. Earnings data were not collected in 1968.

reductions. They may explain more or less than their sum depending on their interaction. Clearly, there is an overlapping of the individual parts. For example, a redistribution of women among occupations to close the 5.1-percentagepoint gap due to occupational differences may also reduce some of the differences in both industry and hours worked as well as any from job or occupational tenure. Although statistical techniques have been applied to various human capital variables (education, on-the-job training, and so forth) using individual CPS records, they cannot establish precisely to what extent the differences in occupations are based on human capital factors alone, as opposed to differences caused by individual selections between higher and lower paying jobs-voluntarily or otherwise- and differences resulting from discrimination in hiring, advancement, and pay scales on the part of employers. The CPS contains no questions on the last factors. Moreover, many components of human capital are not available from either the CPS or other sample survey data; indeed, some may be virtually impossible to measure.

If an occupation pays little simply because women constitute a large share of the total employed, one may expect the earnings of men employed in these occupations to be lower than those in which men predominate. A simple regression equation shows a weak inverse, but not statistically significant, relationship. The share of women in an occupation was associated with only 1.4 percent of the variance in men's earnings. ¹⁹ Thus, this regression alone cannot suggest that employers pay less for certain jobs simply because women predominate in them.

A regression of women's median earnings on the percent employed in a specific occupation (done on 112 occupational titles with 50,000 women or more) does show a significant inverse relationship. The slope of the estimated regression line indicates that for each increase of 10 percent in the proportion of women in the occupation, median usual weekly earnings in 1982 would fall by \$13. The equation accounted for about 19 percent of the variance in women's earnings among these occupations. ²⁰ The relationship shows a correlation with, but not a cause for, women earning less than men.

Recent trends

The overall median weekly earnings ratio of women to men employed full time did not change much between 1973 and 1978, fluctuating mostly between 61 and 62 percent. (See table 5.) Among specific age groups, changes were mixed. The ratio of the medians rose for teenagers and for workers 25 to 34 years and fell for those 45 to 54 and 55 to 64. Apparent changes for the remaining groups were not statistically significant.

The overall ratio of female-to-male earnings did change significantly between 1979 and 1982. For workers 25 and over, the sex-earnings ratio rose from 61 to 64 percent, and it rose even after race and years of school completed were taken into consideration. Among whites age 25 and over, women gained relative to men for the educational groups with less than 4 years of college. Although the earnings of women with 4 years or more of college did not advance relative to men, they continued to have a higher sex-earnings ratio (67 percent) than those completing fewer years of school. Among blacks 25 and over, there were apparent gains in the earnings ratio for all educational groups between 1979 and 1982. However, because of their smaller sample size, only gains for those completing 4 years of high school or less are statistically significant.²¹

One possible explanation of the recent rise in the female-to-male earnings ratio could be that there has been a changed mix of occupations. That is, proportionately more women than men may have moved into higher paying jobs. The data, however, do not confirm this. If both women and men age 16 and over in 1982 were distributed among either the major or the two-digit occupational groups as their counterparts were in 1979, with earnings distributions within each occupational group the same as they were in 1982, the ratio of female-to-male earnings would have been 64.9 percent—not significantly different from the actual ratio.

Another factor which could affect the earnings ratio is change in the economic situation, particularly if the unemployment rate and hours worked by men are more sensitive to overall fluctuations than those of women. In such a case, the sex-earnings ratio would have risen as a result of recent recessions if more men than women lost higher paying jobs or had their hours reduced.

——FOOTNOTES——

¹Cynthia B. Lloyd and Beth T. Niemi, *The Economics of Sex Differentials* (New York, Columbia University Press, 1979). The table beginning on page 232 summarizes the results of these studies, most of which use multiple regression analysis.

²There were actually 12 such categories in the classification system used for the 1972-82 period, but there are so few farmers and farm managers employed as wage and salary workers that they are combined with the farm laborers and supervisors category.

³See Janet L. Norwood, *The Female-Male Earnings Gap: A Review of Employment and Earnings Issues*, Report 673 (Bureau of Labor Statistics, 1982), pp. 2 and 8; and Carol Boyd Leon, "Occupation winners and losers: who they were during 1972–80," *Monthly Labor Review*, June 1982, pp. 18–28.

⁴Because these proportions exclude the self-employed and unpaid family workers, they differ from those published in the Bureau of Labor Statistics' monthly publication, *Employment and Earnings*, which generally have as a universe all employed persons.

⁵Salesworkers in retail trade, excluding clerks, include such job categories as automobile salesworkers, estimators, comparison and investigative shoppers, and various sales consultants. See U.S. Bureau of the

Census, 1970 Census of Population, Classified Index of Industries and Occupations (Washington, U.S. Government Printing Office, 1971).

⁶ See Classified Index, pp. 0-7 and 0-8 for a list of these specialties.

⁷See Michael Finn, "The Earnings Gap: Discrimination or Economic Choices," a paper presented to the Conference on Comparable Worth, sponsored by The Eagle Forum Education and Legal Defense Fund, held in Washington, D.C., October 1983.

*The job titles covered are accountant, auditor, attorney, chemist, director of personnel, job analyst, buyer, engineering technician, drafter, computer operator, photographer, accounting clerk, messenger, and purchasing assistant.

⁹U.S. Department of Labor, USDL News, 84-86, Mar. 1, 1984.

¹⁰Nancy F. Rytina, "Tenure as a factor in the male-female earnings gap," *Monthly Labor Review*, April 1982, pp. 32-34.

¹¹Mary Corcoran and Greg J. Duncan, "Work History, Labor Force Attachment, and Earnings Differences Between the Races and Sexes," *Journal of Human Resources*, Winter 1979, pp. 3–20.

¹²The Female-Male Earnings Gap, pp. 2 and 7.

¹³U.S. Department of Labor, Bureau of Labor Statistics, unpublished

data from the May 1978 Current Population Survey.

¹⁴Jacob Mincer and Solomon Polachek, "Family Investments in Human Capital: Earnings of Women," *Journal of Political Economy*, March/April 1974, pp. S76–S108.

¹⁵ Solomon Polachek, "Occupational Self-Selection: A Human Capital Approach to Sex Differences in Occupational Structure," *The Review of Economics and Statistics*, February 1981, pp. 60-69.

¹⁶Mary Corcoran, Greg J. Duncan, and Michael Ponza, "Work Experience, Job Segregation, and Wages," a paper prepared in 1982 for the National Academy of Science Conference on Job Segregation by Sex. Much of the discussion in this section is drawn from this paper.

¹⁷Paula England, "The Failure of Human Capital Theory to Explain Occupational Sex Segregation," *Journal of Human Resources*, Summer 1982, pp. 358–70.

¹⁸For an example of two compendiums espousing different viewpoints on comparable worth, see Donald J. Treiman and Heidi I. Hartman, eds., Women, Work, and Wages: Equal Pay for Jobs of Equal Value (Washington, National Academy Press, 1981); and E. Robert Livernash, ed., Comparable Worth: Issues and Alternatives (Washington, The Equal Employment Advisory Council, 1980).

¹⁹The regression equation for the earnings of men is:

$$E_m = $398.3 - 0.57 P_f,$$

(30.02) (-1.55)

where E_m is the usual weekly earning of men, and P_t is the percent of workers in each occupation who are women (numbers in parentheses are T-statistics.) The slope term is not significant at the 0.1 level, and the R-square is only 0.014.

²⁰The regression equation for the earnings of women is:

$$E_{f} = $333.9 - 1.28 P_{f}$$

(21.04) (-5.11)

where E_t is the usual weekly earnings of women, and P_t is the percent of workers in each occupation who are women. The slope term is significant at better than the 0.1 level, and the R-square is 0.192. The universe of occupations is those in which 50,000 women or more were employed, either at the three-digit level of detail or the first lower level of detail having 50,000 or more female employees.

²¹See Earl F. Mellor, *Technical Description of The Quarterly Data on Weekly Earnings from the Current Population Survey*, Bulletin 2113 (Bureau of Labor Statistics, 1982), for information pertaining to the merits and limitations of the earnings data from the CPS.

A contemporary social problem

The logic of paying housewives for keeping the work force in good condition is not likely to appeal to either employers or to husbands. And certainly there are many hurdles to overcome. But, who knows, by the 21st century employers may be contributing to a fund to pay for the services supplied to their workers by wives in the home as routinely as they contribute to social security funds, or unemployment accounts. It may be simply a matter of getting used to the idea. Such a system would require conceptualizing housewives as part of the labor force and counting their contribution to the gross national product. It would constitute a major shrinkage of the segment of social life for which the societal model was relevant. With what "unanticipated consequences," we cannot yet say. But if such a system were inaugurated, it would entitle employers to impose standards of performance, the implementation of which would no doubt be rejected by most housewives.

"Between Two Worlds: The Housewife," in Phyllis L. Stewart and Murial G. Cantor, eds., Varieties of Work (Beverly Hills, Calif., Sage Publications, Inc., 1982), p. 89.