

INCREASING WORKING MOTHERS' EARNINGS
EXECUTIVE SUMMARY

by

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The Increasing Importance of Mothers' Earnings

Over the past twenty years, two concurrent trends have significantly affected the economic status of women and their children: the increase in women's economic responsibility for their families and the rise in women and children living in poverty. Between 1970 and 1990, the labor force participation rate of women increased from about 40 to 67 percent, with mothers accounting for the largest growth of any group within this time period. By 1990, two-thirds of all mothers (22 million) were in the labor force. Over the last decade, the income of married couples with children would not have increased without the increased labor force participation of working mothers.

Women are also increasingly more likely to be solely responsible for their children. Nearly all women have children during their lifetimes, many outside of marriage. Many more become single parents as a result of separation and divorce. Indeed, roughly two-thirds of all mothers can expect to spend some portion of their life as a single mother. Ninety percent of women-maintained households have children in them. Poverty rates for minority women and their children are especially high at 56 and 59 percent, respectively, for black and Hispanic single mother families with children under age 18 in 1988. And, in the past two decades, the number and proportion of children living in one-parent families has doubled. Still other mothers are their families' main breadwinner even if married.

Thus, the earnings of working mothers have become increasingly necessary for their families' economic well-being. It is therefore increasingly important that all women earn enough to support themselves and their families at an adequate level. Yet mothers continue to be viewed as tangential members of the labor force, who, according to neoclassical economic theory, limit their investment in human capital in anticipation of marriage and family. This theory further supposes that when women do work, they choose employment compatible with child rearing--e.g., low-wage jobs that are easily entered and exited. Thus, high job turnover among women is often explained by current or potential marriage and child rearing

EXECUTIVE SUMMARY

Within the private service sector, the telecommunications industry--the core of the post-industrial, high-technology, information industry--has been the exception to the rule of low pay for female-dominated work. According to a new IWPR study, non-supervisory women workers in telecommunications (with clerical workers representing the largest share) earn close to the median weekly wage of all full-time *male* workers in the economy (\$462 per week as compared to \$485, respectively), and earn *twice* the median weekly earnings of all non-supervisory women workers (\$220 per week) in the private service-producing industries.

Yet, telecommunications is a majority-female industry (53 percent of non-supervisory workers in all occupations and 86 percent of such workers in clerical occupations are women). The success of women in telecommunications can be attributed both to the high skill level and advanced technology in the industry and to the high rate of unionization.

While only 13 percent of all non-supervisory workers in the private service-producing industries (and only 18 percent economy-wide) are union members or covered by union contracts, 64 percent of non-supervisory workers in telecommunications are unionized. For women workers, 60 percent in telecommunications are unionized versus 10 percent in all the private service-producing industries and 15 percent economy-wide.

These higher wages mean that women in telecommunications contribute a higher share of income to their families than do women in the other private service industries.

Women's employment and earnings in telecommunications are threatened, however, by recent developments in the industry. Since the breakup of AT&T in 1984, increased deregulation, competition, and industry-wide restructuring, exacerbated by the current recession, have pushed employers toward cost-cutting measures. These measures have resulted in job losses and wage declines that are unevenly shared by white and minority men and women. These losses are documented in the IWPR study.

- o Between 1988 and 1990, the number of non-supervisory jobs in the telecommunications industry declined by 8 percent, according to the Census Bureau's Current Population Survey, with unionized workers suffering less than a two percent job loss and non-unionized workers suffering almost a 20 percent job loss. The greatest job losses were experienced by non-unionized white male workers.
- o Between 1988 and 1990, the wages of all groups of non-supervisory workers in telecommunications failed to keep up with inflation, but the pay gap between unionized and non-unionized workers increased by five percentage points as a result of larger average real wage decreases for non-unionized workers.
- o The larger declines in real earnings in the non-unionized segment of the industry were not evenly shared among workers; minority men and women bore a disproportionate share of the wage losses.

These job and wage losses suggest a pattern of race and gender segmentation (especially within the non-union sector of the industry) in which higher-wage jobs typically held by white males are deskilled, the workers who held these jobs lose them and leave the industry and sometimes the labor market, and wages in the remaining jobs decline, especially for minority men and women.

Thus far, collective bargaining in the telecommunications industry has provided a barrier to this race and gender pattern of job losses and wage declines. The benefits from productivity gains have been shared by workers and stockholders. In the face of changes in the industry, it now seems likely that, unless the relative strength of telecommunications workers increases (through increased organizing and federal support of collective bargaining) and workers are able to participate effectively in devising alternative strategies to address changing circumstances, job losses will continue and the wages of all workers will likely shift downward.

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The Institute for Women's Policy Research (IWPR) is an independent, non-profit, scientific research organization founded in 1987 to meet the need for women-centered, policy-oriented research. IWPR works with policymakers, scholars, and advocacy groups around the country to design, execute, and disseminate research findings that illuminate policy issues of special importance to women, and to build a network of individuals and organizations that conduct and use women-oriented policy research.

IWPR is national and international in scope and is committed to addressing the full spectrum of issues affecting women and families—with attention to the complexities engendered by race, ethnicity, and class.

IWPR's work is supported by foundation grants, government grants and contracts, donations from individuals, and contributions from organizations. Members and affiliates of IWPR's Information Network receive reports and information on a regular basis. IWPR is a 501(c)(3) tax-exempt organization.

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OVERVIEW: THE SERVICE SECTOR AND THE TELECOMMUNICATIONS INDUSTRY

The great majority of new jobs created over the last several decades were created in the service sector of the economy (broadly defined as any activity not classified as agriculture, mining, construction, or manufacturing). Between 1959 and 1991, the number of service sector jobs increased from 33 million to 85 million, while the service sector's proportion of total employment grew from 61.7 to 73.1 percent.¹ The growth of the service sector created employment opportunities for women in the very jobs in which women already worked--in health care, education, and offices. Many of these jobs, however, were secondary, low-wage jobs that did not pay enough to support a family. As of 1990, the median earnings for full-time non-supervisory service sector jobs were \$320 per week in contrast to \$430 per week for full-time wage and salary jobs in manufacturing.² As women have become increasingly responsible for their families' economic well-being, either as members of dual-earner families or as sole breadwinners, the inadequacy of the wages of many service sector jobs to sustain American families at a middle-class standard of living has become clearer.

Within the service sector, the telecommunications industry has been an exception to the rule of low-wages, especially for women workers. One reason for these higher rates of pay is the high rate of technological development within this industry, in contrast to much of the service sector. The telecommunications industry, the core of the post-industrial, high-technology, information industry, has been characterized by enormous technological change and vast increases in the speed and quality of service; the volume of telephone calls today could simply not be handled with yesterday's technology--to do so every other worker would have to be a telephone worker (ie., 50 percent of the labor force). In the past, workers in telecommunications benefitted from the high rate of productivity growth through wage increases that generally kept pace with productivity improvements.

But technological change can also mean that more work can be handled by fewer people, and, in times of economic recession, the cost cutting and labor saving potential of new technologies may be more salient to managers than the potential to enhance the quality and quantity of service. In the telecommunications industry, increased deregulation and competition since the breakup of AT&T in 1984 has also pushed employers towards cost cutting strategies. Some analysts have argued that industry managers have used technology to divide higher-skilled jobs into their more and less skilled

¹ 1991 data are from the Bureau of Labor Statistics, U.S. Department of Labor, *Employment and Earnings*, Volume 39, Number 1, January, 1992, Table 28. The 1959 data are from Judith Gregory et al., "Women's Wages: A Key to Preserving Middle Income Jobs," Washington, DC: National Organization for Women, August 1986.

² The figure for non-supervisory service sector workers is derived from calculations by the Institute for Women's Policy Research using the 1990 Current Population Survey Merged Earnings File. The figure for wage and salary workers in manufacturing includes supervision. It is also derived from the Current Population Survey and is reported in *Employment and Earnings*, Volume 38, Number 1, January 1991, Table 60. *Employment and Earnings*, January 1992, Table 67, provides a figure for weekly earnings of production (or non-supervisory) workers in manufacturing of \$442. Using either figure, service workers clearly earn much less.

components and then automated and eliminated the lower-skilled jobs. Although reflective of longer-term trends in the industry, use of these management strategies appears to have increased during the latest recession.

Thus far, in telecommunications, collective bargaining has provided a barrier to the wholesale deskilling and automating of jobs and to the pattern of low-wages that accompany such jobs in many industries. The telecommunications industry is an exception to the rule of the low degree of unionization within the service sector. In fact telecommunications is the most unionized of the private service industries--with almost two-thirds of all non-supervisory workers in telecommunications covered by a union contract in contrast to 12.5 percent of all service sector workers and 18.3 percent of all U.S. workers (see Table 1). The protections available to workers through collective bargaining are likely to become increasingly important in the face of continuing recession or slow growth, economic restructuring, and declines in real wages for many U.S. workers.

TABLE 1. Unionization Rates for Men and Women in the Private Service-Producing Industries in 1990 (Non-Supervisory Workers)

Industry	Percent Union		
	Male	Female	All
Telecommunications	67.9	59.8	63.6
Transportation	43.1	34.3	40.8
Utilities/Other Comm.	45.4	24.7	40.2
Wholesale	10.0	2.9	7.8
Retail	7.3	5.9	6.5
Finance, Ins., & Real Est.	5.6	3.2	4.1
Business and Repair	5.6	3.3	4.6
Personal/Private Households	9.1	2.8	4.3
Medical	18.7	11.8	12.9
Social	9.2	6.6	7.1
Miscellaneous	18.7	17.7	17.9
TOTAL (All Service)	16.3	9.6	12.5
TOTAL for Economy	21.4	14.9	18.3

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

The Census Bureau's Current Population Survey (CPS) data show that, as of 1990, approximately 1,066,000 million workers are employed in the telecommunications industry.³ Of

³ *Employment and Earnings*, January 1991, Table 28.

these, about 770,500 are non-managerial and non-supervisory workers.⁴ On average, non-supervisory workers in telecommunications are the highest paid non-supervisory workers in the private service sector. In 1990 their median earnings were \$505 per week in contrast to \$250 per week for non-supervisory workers in other private service industries and \$346 per week for non-supervisory workers in all industries (see Appendix Table 2).

In telecommunications, clerical workers are the largest group of non-supervisory workers (about 48 percent of all non-supervisory workers), followed by production workers (about 35 percent) and sales and technical workers (about 18 percent of all non-supervisory workers) -- see Figure 1a. More than half (53 percent) of all non-supervisory workers are female; almost one out of four (24 percent) non-supervisory women workers and 13 percent of non-supervisory male workers are members of minority groups (see Figure 1b).⁵

Figure 1a.
Number and Percent of Telecommunications
Workers by Occupational Group, 1990

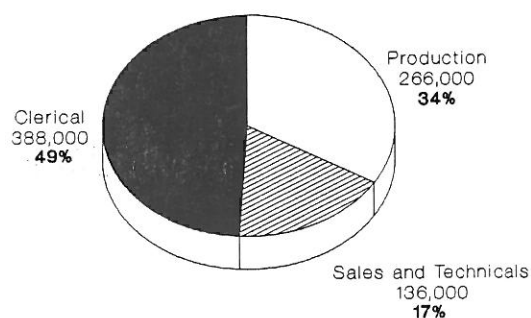
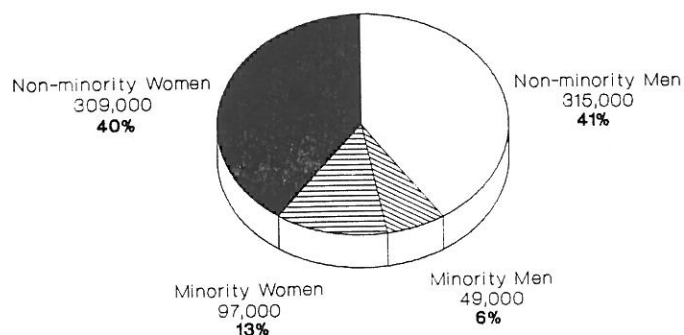


Figure 1b.
Number and Percent of Telecommunications
Workers by Race and Gender, 1990



Note: Non-Supervisory Workers Only

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey

⁴ Unless otherwise noted, all data are from the Current Population Survey 1988 or 1990 Merged Earnings File, data tapes produced by the U.S. Bureau of Labor Statistics for use by the public. Calculations were done by IWPR. See Methodological Appendix.

⁵ In this report, minorities include African Americans, Asian Americans, and Hispanic Americans (who can be of any race). The category non-minorities consists mainly of whites who are not of Hispanic background.

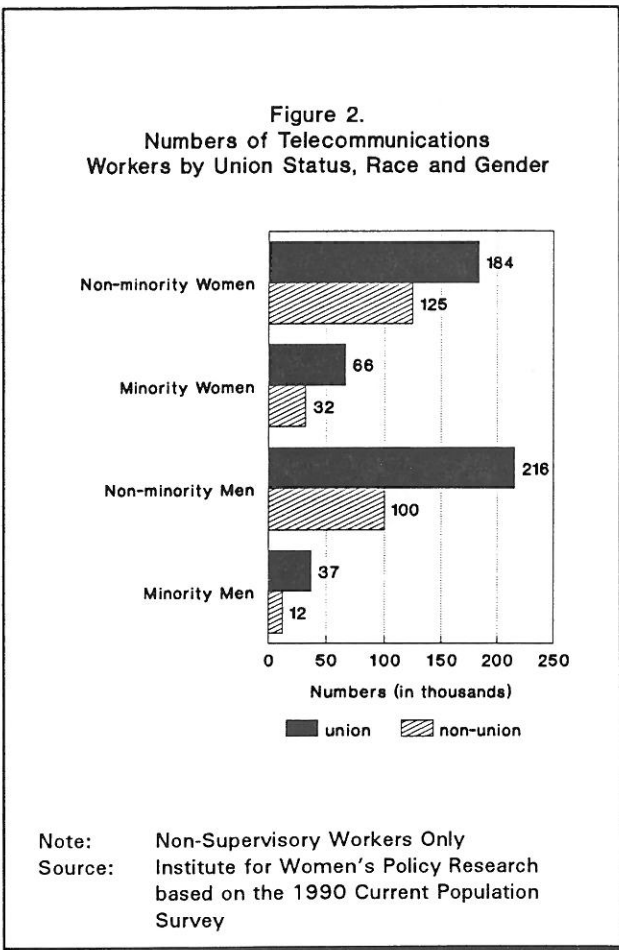


Figure 2 shows how women and men, both minority and non-minority, are distributed across union membership and contract coverage. All groups in telecommunications have high rates of unionization. Minority men have the highest percentage of union membership and coverage (76 percent); non-minority men are 68 percent union and minority women 67 percent. Non-minority women have the lowest rate of unionization in the industry but at 59 percent, their rate is still well above the national average of 15 percent for all female non-supervisory workers.

This report first describes how workers, and especially women workers, in telecommunications are the exception to the rule of low-wage service sector work. It then describes how their work and wages are being affected by technological change, restructuring, and race and gender segmentation, all of which threaten to erode the middle class standard of living attained by these workers and their unions over the past several decades.

WOMEN IN TELECOMMUNICATIONS: THE EXCEPTION TO THE RULE

Non-supervisory women workers in the telecommunications industry are the exception to the rule that women earn low pay for the work that they do. Contrary to expectation, the majority (53 percent) of non-supervisory workers in this industry are women, with over three-fourths of the women employed as clerical workers. Typically, the higher the proportion of women in the workforce of an industry or occupation the less its pay. As Table 2 shows, the median earnings of non-supervisory women workers in the telecommunications industry are quite high relative to other industries: \$462 per week in 1990, about \$24,000 dollars annually. Non-supervisory women workers in telecommunications earn more than twice the median weekly wages of all non-supervisory women workers in the private service-producing industries (\$462 as compared to \$220, respectively). They earn higher wages than non-supervisory *male* workers in all but two of the remaining service-producing industries. (The exceptions are the higher earning male workers in transportation, and

utilities and other communications, both of which are industries that have a much lower proportion of women workers; women in telecommunications earn 92 cents for every \$1.00 earned by men in these two industries.)

Compared to all women and men in the economy, non-supervisory women workers in telecommunications earn about \$1.33 for every \$1.00 earned by the average full-time woman worker in the United States, including supervisory workers (\$462 as compared to \$348 per week). And they earn close to the same median weekly wage as do all full-time, male workers, including supervisory workers (\$462 as compared to \$485 per week).⁶

TABLE 2. Percent Female, Median Weekly Earnings by Gender, and Female-Male Earnings Ratios for Private Service-Producing Industries in 1990 (Non-Supervisory Workers)

Industry	Percent Female	Female Earnings (dollars)	Male Earnings (dollars)	Earnings Ratio
Telecommunications	53.0	462	622	74.3
Transportation	25.7	350	500	70.0
Utilities/Other Comm.	25.1	374	500	74.8
Wholesale	30.5	290	400	72.5
Retail	54.7	150	210	71.4
Finance, Ins., & Real Est.	63.8	300	450	66.6
Business and Repair	40.8	240	309	77.7
Personal/Private Households	76.1	152	240	63.3
Medical	83.9	270	320	84.4
Social	80.1	175	150	116.7
Miscellaneous	68.9	230	265	86.8
TOTAL (All Service)	56.5	220	320	68.8

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

Unlike many service industries, where low-wage labor substitutes for high productivity as the basis for industry profits, telecommunications forms the core of the high technology communication and information industries. But telecommunications is also unlike many other service-producing industries in that it has been unionized since the mid 1940s. As Table 1 shows, nearly two-thirds of

⁶ The median weekly earnings of full-time male workers (including supervisors, managers and professionals) were \$485 in 1990 and the median weekly earnings of full-time female workers (including supervisors, managers and professionals) were \$348 (*Employment and Earnings*, January 1991, Table 54) compared to \$462 for non-supervisory women workers in telecommunications, as calculated by IWPR.

non-supervisory workers in the telecommunications industry are members of unions or are covered by union contracts.

Like men, women in telecommunications are also highly unionized (60 percent of women workers compared to 68 percent of male workers), whereas economy-wide, only about 15 percent of women are covered compared to about 21 percent of men. The degree of unionization in telecommunications is exceptionally high, especially in light of the fact that unionization rates in other private-sector service industries are generally low, ranging from 4 to 18 percent. Those few other service-producing industries with relatively high union representation (transportation, and utilities and other communications) have a much smaller proportion of female workers (26 percent and 25 percent respectively -- see Table 2).

Nearly all the private-sector service industries as well as most other industries show disparity in the degree of unionization between women and men (Table 1). For example, in the utilities industry 45 percent of the men but only 25 percent of the women are union members or covered by union contracts.

Across most of the private sector, high unionization and the accompanying high wages are associated with predominantly male workforces--as in mining, construction, and durable goods manufacturing. In telecommunications, however, substantial numbers of women as well as men benefit from union membership.

Although it is somewhat difficult to measure the effect of unionization on wages net of other influences, researchers generally agree that unionization is associated with higher wages. A recent IWPR study finds that white men earn a union premium of 4.2 percent, black men earn a premium of 18.5 percent, Hispanic men earn a premium of 23.6 percent, white women earn a premium of 10.7 percent, black women earn a premium of 17.5 percent, and Hispanic women earn a premium of 22.0 percent, when other factors are held constant.⁷

⁷ Institute for Women's Policy Research with the Displaced Homemakers Network, *Low-wage Jobs and Workers: Trends and Options for Change*, for the U.S. Department of Labor, Employment and Training Administration, November 1989. In another research study that attempted to "hold everything else constant," particularly the quality of the workers and the occupation and industry in which they work, Richard B. Freeman and Jonathan S. Leonard (in "Union Maids: Unions and the Female Workforce," pp. 189-216 in Clair Brown and Joseph Pechman, eds., *Gender in the Workplace*, Washington, DC: Brookings Institution, 1987) found that male union workers earned a premium of 18 percent on average and women union workers earned a premium of 14 percent an hour in the private sector. They found that the wage premium was higher for white collar women and women in the public sector. Measuring the effect of unionization on wage rates is complicated by the existence of spillover effects. To the extent that high union wages lead employers to offer high wages to nonunion employees in the same industry or occupation (in order to attract workers or to prevent unionization), the differences in wages between union and nonunion members will be small.

CLERICAL WORKERS

Clerical work is the largest occupational group in the telecommunications industry--with women constituting 86 percent of the approximately 368,000 workers in this occupational category (see Table 3). Clerical workers in telecommunications earn \$460 per week, on the average. These earnings are the second highest for non-supervisory clerical workers in all service-producing industries and are more than 1.5 times the service industry average. The only service-producing industry with higher weekly wages for clerical workers is transportation (and only about half of the clerical workers in this industry are women). The predominantly female clerical workers in telecommunications are the most highly unionized group of clerical workers in the service sector -- three-fifths are union members or are covered by a union contract.

Clerical workers in telecommunications are among the few groups of non-supervisory women workers who come close to earning the same median weekly wage as do full-time male workers, the wage level commonly regarded as the standard, constituting a wage high enough to support a family at a moderate level of living. The living wage clerical workers earn in the telecommunications industry (\$460 per week) contrasts with the low wages (\$290 per week) of clerical workers in the private service-producing industries as a whole. The success of clerical workers in telecommunications can serve as a model for this largest of women's occupations.

TABLE 3. Percent Female, Percent Unionized, and Median Weekly Earnings for the Clerical Occupations in the Private Service-Producing Industries in 1990 (Non-Supervisory Workers)

Industry	Percent Female	Percent Union	Weekly Earnings*
Telecommunications	85.6	62.5	460
Transportation	49.1	52.9	480
Utilities/Other Communications	69.3	28.4	391
Wholesale	76.6	3.1	293
Retail	79.0	7.4	240
Finance, Ins., & Real Est.	85.2	3.8	300
Business and Repair	80.8	2.1	270
Personal/Private Households	80.4	4.0	225
Medical	93.5	9.8	280
Social	89.7	16.0	270
Miscellaneous	89.7	16.3	250
TOTAL (All Service)	81.5	14.6	290

Note: * Median weekly earnings for women and men.

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

Traditionally, the low wages of clerical workers are based on the image of young, single workers who will leave the labor force in order to marry and raise children. As Table 4 shows, this image is at variance with reality. Only about one-third of non-supervisory clerical workers in all the private service producing industries are single and without children--likely responsible for their own economic well-being only. The wages of the remaining two-thirds help support a family unit, with almost four out of 10 clerical workers responsible for the economic well-being of families with children, either as members of dual-earner couples or as single parents.

Married clerical workers with children in all service industries other than telecommunications provide about 40 percent of their families' income, and single parents with children provide almost 90 percent of their families' income. These workers require a living wage rather than a secondary wage; they are not working for "pin money." Because of their higher rates of pay, clerical workers in telecommunications can contribute a *higher* share of earnings to their families' well-being. Married clerical workers with children contribute about half of their families' income and single parents provide 100 percent of their families' income. Women, like men in telecommunications, can help provide their families with a middle class standard of living.

TABLE 4. Family Type, Median Weekly Earnings, and Percent of Family Earnings, for Male and Female Clerical Workers in Telecommunications and All Other Private Services, 1990

	Telecommunications			All Other Services		
	Percent in Category	Weekly Earnings	Percent of Family Earnings*	Percent in Category	Weekly Earnings	Percent of Family Earnings*
Total	100.0	472**	57	100.0	284	43
Married with children	29.6	476	50	29.0	280	40
Married without children	24.9	476	49	25.9	300	45
Single with children	12.5	450	100	12.5	246	87
Single without children	33.0	440	*	32.7	280	*

Note: * Percent of Family Earnings is calculated for only those workers living in families.

** This figure differs from the earlier figure given for the median weekly earnings of clerical workers (\$460) because the sample population here is smaller and is limited to those for whom the necessary information was available.

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

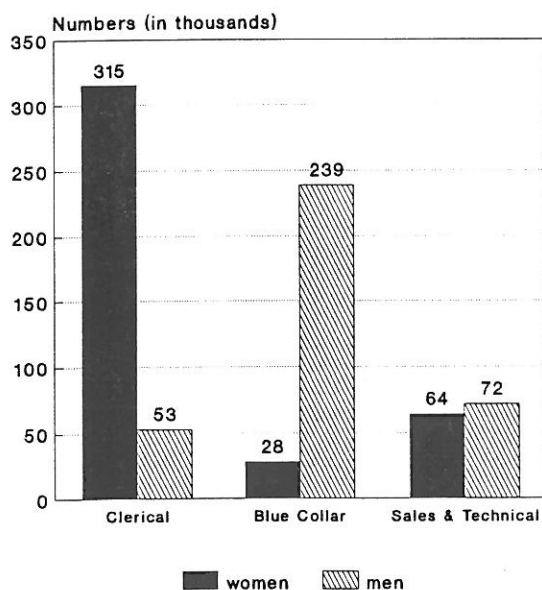
Despite the importance of their wages for their families' well-being and the high rate of technological change and productivity growth in the telecommunications industry, employers in the industry have often argued against wage increases for clerical workers that are comparable to the increases provided the more male-dominated occupations. Employers have often supported their

argument with community wage surveys that generally show that the wages of clerical workers in telecommunications are higher than the average wage for clerical workers in the other service industries. In other words, employers of high wage female clerical workers often argue that the wages of their employees should be pushed down to the low average in other industries.

If this common employer strategy to reduce clerical workers' wages were to succeed in the telecommunications industry, the gap between female and male workers (currently at 74 cents for every \$1.00) would increase. The wages of clerical workers in the telecommunications industry would no longer provide a model for other non-supervisory women's occupations. Even larger numbers of non-supervisory women workers would earn only a poverty living standard for their families.⁸

WOMEN AND EQUAL EMPLOYMENT OPPORTUNITY

Figure 3.
Numbers of Telecommunications
Workers by Occupation and Gender, 1990



Note: Non-Supervisory Workers Only
Source: Institute for Women's Policy Research
based on the 1990 Current Population Survey

Although clerical work is by far the largest women's occupation in the telecommunications industry, women have made some progress in entering the precision production, craft, repair, and operative occupations traditionally dominated by men. Figure 3 shows the distribution of women and men across the three major occupational groups for non-supervisory workers: clerical, blue collar, and sales and technical. Just as clearly as women predominate in clerical work (86 percent female) men predominate in blue-collar work (90 percent male).

These blue-collar occupations are the highest paying (\$626 per week), most highly unionized non-supervisory jobs in the telecommunications industry (79 percent of all non-supervisory workers in this occupation are unionized). As Table 5

⁸ A recent IWPR study, *Mothers, Children, and Low-Wage Work*, by Roberta Spalter-Roth, Heidi Hartmann, and Linda Andrews, shows that about half of all working women do not earn hourly wages high enough to support a family of three, plus average child care expenses, even if they worked full-time, full-year. Of these women, about half are their families' main breadwinner.

shows, blue collar workers in telecommunications are the highest paid blue-collar workers in the private service industries.

As of 1990, 10.7 percent of the blue-collar telecommunications workers were women, slightly lower than the average for the service industries as a whole (at 15.7 percent) but higher than the percentage of women employed in precision production, craft, repair, and operative occupations in related industries such as transportation and utilities. (Women hold only about 7 percent of the jobs in these blue-collar occupations in the transportation industry and 3 percent in the utilities and other communication industries.)

TABLE 5. Percent Female, Percent Unionized, and Median Weekly Earnings for Precision Production, Craft, Repair, and Operative Occupations, 1990 (Non-Supervisory Workers)

Industry	Percent Female	Percent Union	Weekly Earnings
Telecommunications	10.7	79.0	626
Transportation	7.4	34.8	450
Utilities/Other Communications	3.2	51.0	500
Wholesale	11.2	16.1	325
Retail	19.7	12.7	230
Finance, Ins., & Real Est.	5.2	16.7	358
Business & Repair	9.2	5.1	306
Personal/Private Households	47.8	8.9	200
Medical	39.6	18.7	300
Social	39.4	3.3	84
Miscellaneous	31.7	31.7	280
Total (All Service)	15.7	20.9	320

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

Women in telecommunications generally benefitted from the 1973 consent decree between AT&T and the Equal Employment Opportunity Commission (EEOC), which opened up non-traditional jobs for women in the telecommunications industry and effectively raised women's wages by 11 percent.⁹ Since the 1970's wages of some of the traditionally female clerical jobs have also increased, so that, on average, all non-supervisory women workers in telecommunications are able to earn a moderate standard of living.

⁹ See Phyllis A. Wallace, (ed.) *Equal Employment and the AT&T Case*, Cambridge: Massachusetts Institute of Technology Press, 1976, and Judith Gregory, et al., *Women's Wages: A Key to Preserving Middle Income Jobs*, Washington, DC: National Organization for Women, August 1986.

Nevertheless, a sex-based wage gap still exists in telecommunications--although at 74.3 cents for every \$1.00 earned by men, it is smaller than many of the other service-producing industries (the average for all private service-producing industries is 68.8 cents for every \$1.00 earned by men--see Table 2). And it is smaller than the national average. In 1990, full-time women workers earned 72 cents for every dollar earned by full-time male workers (on a weekly basis).¹⁰

The wage gap in the telecommunications industry stems primarily from occupational segregation -- women holding different jobs from men, rather than from women earning less than men in the same job. Women still have progress to make in order to further close the wage gap.

Some trends, however, are working against closing the gap. To the extent that high wage jobs are deskilled and eliminated by automation or other measures, women will have a hard time finding such jobs to enter. In fact, women's share of precision production, craft, and repair jobs in the industry actually decreased from 13.6 to 10.3 percent of all jobs between 1988 and 1990, perhaps as a result of job cutbacks, in which the most recently hired are likely to lose jobs first. As Figure 5 (p. 13) shows, the blue collar occupational groups lost proportionately more jobs than any other occupational group. If the number of blue-collar jobs in telecommunications continues to decline, then overcoming occupational segregation cannot be the only strategy used to close the female/male wage gap. Women in traditionally female occupations and in growing occupations will need continued pay increases.

OLD JOBS, NEW JOBS, AND RESTRUCTURING

Between 1988 and 1990, the number of non-supervisory jobs in the telecommunications industry fell by eight percent. Some of this job loss is likely related to the continued restructuring of the telecommunications industry after the breakup of AT&T. The two-year time span covered by this report may underestimate the magnitude of these losses.¹¹ According to CPS data, the majority of the job losses in telecommunications between 1988 and 1990 occurred in the non-unionized sector of the industry. The unionized sector of telecommunications workers experienced less than a two

¹⁰ *Employment and Earnings*, January 1991, Table 54.

¹¹ The CPS data and the two-year time span used in this analysis may mask longer-term job loss. According to AT&T reports to the Securities and Exchange Commission (form 10-K), since AT&T divestiture in 1984, more than 125,000 union jobs have been lost at AT&T alone. Between 1988 and 1990, the two years analyzed here with CPS data, company figures show a loss of 30,000, or approximately 6 percent, in union jobs at AT&T. While the number of union jobs remained fairly stable at the regional and local phone companies throughout the 1980s (and from 1988 to 1990 dropped by only 3,000 according to 10-K reports), according to the Communications Workers of America, the accelerated pace of deregulation, competition, and technological change in these markets since 1990 has begun to impact union employment levels at these companies as well. The differences between the CPS data and the 10-K reports are most likely due to differences in reporting units (firms versus households) as well as sampling and weighting error in the CPS.

percent decline in the number of jobs, whereas the non-union sector witnessed job losses of almost 20 percent.

Figures 4a and 4b show these losses by gender and by union status as reported in the CPS. Among unionized, non-supervisory workers in telecommunications, the number of employed men remained fairly stable while women workers suffered small losses (down 3.6 percent).

Figure 4a.
Change in Employment of Union Workers
by Gender, 1988 and 1990

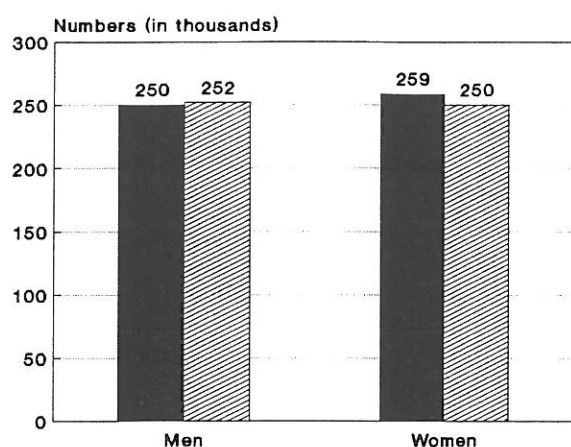
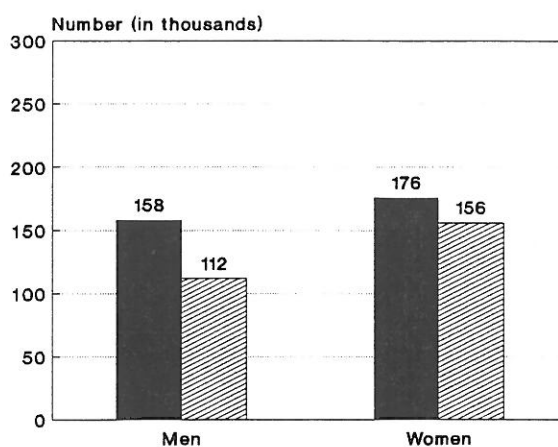


Figure 4b.
Change in Employment of Non-union
Workers by Gender, 1988 and 1990



■ 1988

▨ 1990

Note: Non-Supervisory Workers Only

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey

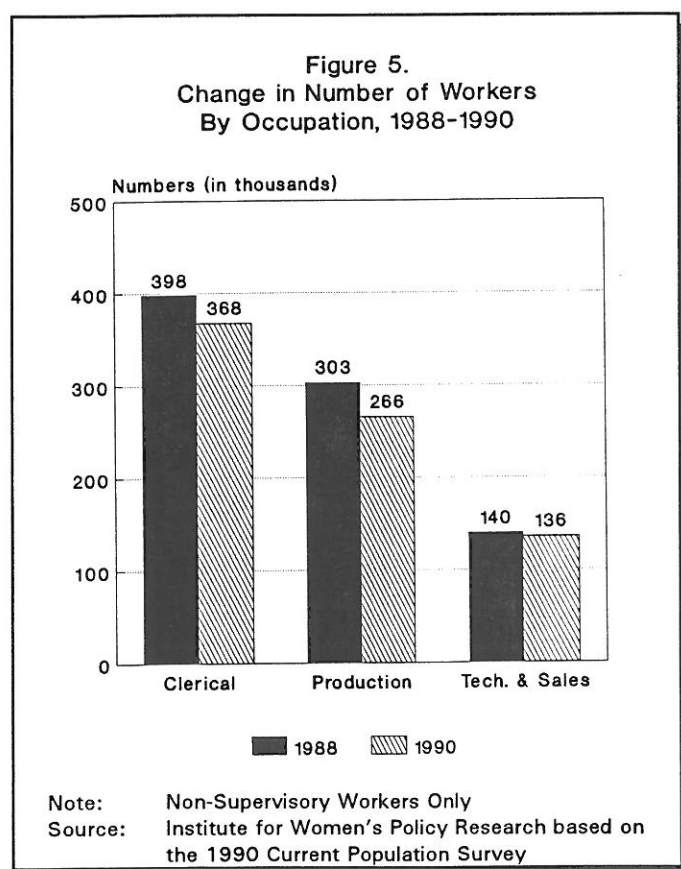
In contrast, workers in the non-unionized sector of the industry faced much more severe job losses. According to the CPS data shown in Figure 4b, fully one-quarter of non-union men's jobs and 12 percent of non-union women's jobs were lost between 1988 and 1990.

The recession appears to have had a negative impact on employment in telecommunications, but longer-term trends, including deregulation, restructuring, and technological change, appear to be even more important in explaining declining employment levels. Recent industrial output and employment projections by the Bureau of Labor Statistics suggest that whereas overall in the economy, employment is projected to grow by 1.2 percent per year between now and the year 2005, employment in the telecommunications industry is expected to decline by 1.8 percent per year. Real output in telecommunications, however, is expected to increase by 2.8 percent per year, more than

125 percent of the rate of growth of total economic output.¹² Thus, productivity increases in the telecommunications industry will continue to be very large, but are not projected to be accompanied by job gains. Rather firms are likely to continue to downsize by automating and eliminating jobs.

Some jobs, particularly telephone operators, are projected to be especially hard hit, while non-supervisory blue collar occupations like mechanics, installers, and repairers are expected to decline slightly. In contrast, substantial job growth is projected over the 15 year period for technicians and related support personnel (37 percent) and marketing and sales workers (24 percent).¹³

Although the job growth projected by the Bureau of Labor Statistics did not occur between 1988 and 1990, non-supervisory jobs in the technical and sales category *declined less* between 1988 and 1990 than did other non-supervisory jobs (see Figure 5).



These technical and sales jobs are substantially less likely to be unionized than are the production or clerical jobs (36 percent, 79 percent, and 64 percent, respectively). As can be seen in Table 6, technical and sales jobs in telecommunications pay relatively high wages (median weekly wages of \$594) in contrast to other private service industries. Although this group of jobs is the least unionized among the occupational groups in telecommunications, at 36 percent union its union representation is nevertheless high relative to other industries (only the transportation industry has a higher rate of unionization at 38 percent).

Within telecommunications these technical and sales jobs pay less than precision production, craft, repair, and operative jobs (\$594 per week compared to \$626 per week), but more than clerical and

other administrative support jobs (\$594 per week compared to \$460 per week). They are

¹² See Max L. Carey and James C. Franklin, "Industry Output and Job Growth Continues Slow Into Next Century, United States Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review*, Vol. 114, No. 11, November 1991.

¹³ See George Silvestri and John Lukasiewicz, "Occupational Employment Projections," United States Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review*, Vol. 114, No. 11, November 1991.

substantially less likely than administrative support jobs to be held by women (47 percent as compared to 86 percent). For all service industries considered together, the technical and sales jobs have low wages, averaging only \$200 weekly, as well as low rates of unionization (7.7 percent).

If wage growth and union strength are to continue in telecommunications this group of technical and sales workers needs to be brought into union membership in increased numbers. If women's employment opportunities in the industry are to be maintained, their share of jobs in the new technical work (much of it computer based), technical support work, and sales must grow. Characteristic of many of the new jobs in the new economy is that they combine skills from traditional, male- and female-dominated jobs--clerical and human interaction skills with craft and

TABLE 6. Percent Female, Percent Unionized, and Median Weekly Earnings for Technical and Sales Occupations, 1990 (Non-Supervisory Workers)

Industry	Percent Female	Percent Union	Weekly Earnings (dollars)
Telecommunications	47.3	36.3	594
Transportation	48.4	37.9	413
Utilities/Other Communications	28.4	22.5	500
Wholesale	21.6	2.3	500
Retail	62.3	4.4	150
Finance, Ins., & Real Est.	40.1	3.3	450
Business & Repair	45.9	5.9	250
Personal/Private Households	80.1	3.6	160
Medical	83.1	13.8	271
Social	86.1	4.9	160
Miscellaneous	54.1	16.5	205
TOTAL (All Service)	61.6	7.7	200

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

technical skills. Sales as well as repair work is increasingly computer based; all workers will need greater computer literacy skills--which are based on reading, writing, mathematics, and logic skills, and many will need increased human relations skills.¹⁴ If the new jobs are to be rewarded fairly, the components associated with traditionally female jobs as well as those associated with traditionally male jobs must receive decent pay.

It remains to be seen whether unions can work with management to use technology to benefit both workers and stockholders. Evidence presented in the next section indicates that recent developments (especially in the non-unionized sector of the telecommunications industry) are not

¹⁴ See Heidi I. Hartmann, Robert Kraut, and Louise Tilly, (eds.), *Computer Chips and Paper Clips: Technology and Women's Employment*. Washington, DC: National Academy Press, 1986.

beneficial to workers; segmentation along race and gender lines appears to be increasing, while both the number of jobs and real wage levels are falling.

RACE AND GENDER SEGMENTATION IN TELECOMMUNICATIONS

Although the current recession can be blamed for declining wages and job loss, in fact, two longer-term trends are at work throughout the economy. These trends impact telecommunications along with those noted above (increased competition and high rates of technological change) that are somewhat more specific to the industry.

First, since the early 1980s, structural changes in the labor market, including the growth of part-time, on-call, contingent, and temporary work, have been widely noted. Many researchers see these structural changes, often referred to as "flexible production" as a means for employers to acquire renewed control over labor and to create a dual labor market system with a core of high wage, high skill workers and a majority (the periphery) of low-wage, low-skilled workers.¹⁵

A second trend is the increasing diversity of the labor force stemming from increases in women's labor force participation and higher population growth and immigration among people of color than among whites.

That these two trends are occurring is widely recognized, but what is less understood is how they are interconnected.¹⁶ The race, ethnicity and gender of job incumbents undoubtedly affects their working conditions, pay and benefits.

Employers can take advantage of cultural stereotypes about the skills and productivity of different groups of workers and the antagonisms among them to create segmented labor markets. During the 1980's, for example, real wage growth occurred in the upper end of the wage distribution (among high-wage workers) while real wages fell for most middle and low-wage workers, including many college graduates.¹⁷

¹⁵ See for example, Michael Piori and C. Sabel, *The Second Industrial Divide: Possibilities for Prosperity*, New York: Basic Books, 1984; Chris Tilly, "Reasons for the Continuing Growth of Part-Time Employment," *Monthly Labor Review*, March 1991: 10-18; and Eileen Appelbaum, "Structural Change and the Growth of Part-Time and Temporary Employment," in Virginia Du Rivage, ed., *New Policies for the Part-Time and Contingent Work Force*. Armonk, NY: M.E. Sharpe, forthcoming.

¹⁶ Heidi I. Hartmann, Testimony before the Committee on Labor and Human Resources, United States Senate, *Hearings on the Recession and the Workforce*, 102nd Congress, January 7, 1991.

¹⁷ A recent study by Lawrence Mishel and Jared Bernstein, *Declining Wages for High School and College Graduates: Pay and Benefits Trends by Education, Gender, Occupation, and State, 1979-1991* (Washington, DC: Economic Policy Institute, May 1992) found a 6 percent decline in average wages, a 3.1 percent decline for college graduates and a 16.1 percent decline for high school graduates.

According to Bluestone and Harrison, 80 percent of the growing inequalities were due to intra- rather than inter-sector inequalities -- it was not so much difference in wage growth between the manufacturing and service sectors, but rather wage dispersion within each sector.¹⁸ The growing inequalities within sectors have not been race and gender neutral; rather the race and gender characteristics of job incumbents affect their share of wages. These findings raise the issue of whether the greater inequality observed was at least partly the result of "divide and conquer" strategies on the part of employers.

Particularly in recent years, unions have been active in attempting to arrest the growth of race and gender segmented labor markets through bargaining collectively to decrease pay differences between groups of workers and between firms. The ability of employers to use segmentation strategies has been legitimated over the last decade by the decreased federal enforcement of existing labor laws and the deteriorating influence of unions in the formulation and implementation of labor law.¹⁹ The growth of contingent work, for example, has been allowed to proceed without interference from public policy or government. Unions face formidable obstacles in maintaining the current high rates of membership and the current pay rates for their members, as the industry continues to restructure. The decreasing power of unions and the increasing power of employers makes the task of the unions particularly difficult. The telecommunications industry is a case in point.

In the highly unionized telecommunications industry, union wages and working conditions have set the standard for the entire industry. As a result, increased productivity generally benefitted workers as well as stockholders. The ability of unions to protect the non-unionized as well as the unionized segment of the industry appears to be waning, as a result of many factors--deregulation and increased competition, continued automation, and increasing labor market segmentation within the industry.

The story told in Tables 7 and 8 is one of job losses and pay decreases. Unionized workers experienced a much smaller share of job losses and a more equal distribution of wage losses (which were small) compared to non-union workers.

Table 7 shows the job losses. The nearly 20 percent loss in non-union jobs (-19.3 percent) was unevenly shared. White men bore the greatest losses (-29 percent), followed by minority men (-20 percent), white women (-12 percent), and minority women (-8 percent). This pattern of job loss indicates that the lowest paid workers are the most likely to be retained. In contrast, among unionized telecommunications workers, with the exception of white women who did experience a nine percent loss in jobs, all other groups experienced relative job stability or actual gains in employment.

¹⁸ Barry Bluestone and Bennett Harrison, *The Great American Job Machine*. A report prepared for the U.S. Congress, Joint Economic Committee, Washington, DC, December 1986.

¹⁹ Richard Edwards, Paolo Garonna, and Franz Todtling, *Unions in Crises and Beyond: Perspectives from Six Countries*, Dover, MA: Auburn House Publishing, 1986.

TABLE 7. Numbers of Non-Supervisory Workers by Gender, Race and Union Status and Percent Change in the Telecommunications Industry for 1988 and 1990

	1988	1990	Percent Change
Total Number	841,149	770,538	-8.4
Total Women	434,618	406,416	-6.5
Non-minority	343,856	309,016	-10.1
Minority	90,762	97,399	7.3
Total Men	406,531	364,122	-10.4
Non-minority	355,862	315,114	-11.5
Minority	50,668	49,008	-3.3
Total Union	509,046	502,539	-1.3
Male Union	250,379	252,433	0.8
Non-minority	214,868	215,601	0.3
Minority	35,511	36,832	3.7
Female Union	258,667	250,106	-3.3
Non-minority	202,140	184,342	-8.8
Minority	56,527	65,764	16.3
Total Non-Union	332,103	267,999	-19.3
Male Non-Union	156,152	111,689	-28.5
Non-minority	140,994	99,513	-29.4
Minority	15,157	12,176	-19.7
Female Non-Union	175,951	156,310	-11.2
Non-minority	141,716	124,675	-12.0
Minority	34,235	31,635	-7.6

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

Table 8 shows that unionized workers in telecommunications have higher median weekly earnings than do their non-union counterparts. This is true for all groups of workers regardless of their race or gender. As previous research has shown, unionization is particularly beneficial for the earnings of minority workers. Table 8 also shows that the pay gap between unionized and non-unionized telecommunications workers increased between 1988 and 1990, as a result of larger average real wage *decreases* for non-unionized workers. (Note that all dollar figures in Table 8 are in constant 1990 dollars.)

TABLE 8. Median Weekly Earnings by Union Status, Race and Gender, and Non-Union/Union Earnings Ratios for Workers in the Telecommunications Industry, 1988 and 1990 (Non-Supervisory Workers; 1990 Dollars)

	Union		Non-Union		Earnings Ratio	
	1988	1990	1988	1990	1988	1990
Total	530	520	515	480	97.2	92.3
Men	650	630	637	600	98.0	95.2
Non-minority	651	640	650	600	100.0	93.8
Minority	633	537	530	310	83.7	57.7
Women	488	475	460	440	94.3	92.6
Non-minority	487	480	466	450	95.7	93.8
Minority	492	450	387	316	78.7	70.2

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

The decreases in real earnings among workers in the non-unionized segment of the industry were not only relatively large, they were also unevenly shared. For example, among women, non-union non-minority workers lost an additional two cents for every \$1.00 earned by their union counterparts, and non-union minority women workers lost an additional eight cents for every \$1.00 earned by their union counterparts. By 1990, non-union minority women workers earned 70 cents (down from 78 cents) for every \$1.00 earned by union minority women workers.

Among men, the relative real earnings losses for non-union minority men were more than four times as great as the pay losses for non-union non-minority male workers, so that by 1990, non-union minority men earned only 58 cents (down from 84 cents) for every \$1.00 earned by union minority men. (The small number of minority men in the sample, however, means that the findings for this group are not statistically significant; the large declines in real wages shown for this sample may not be an accurate reflection of conditions in the telecommunications industry for minority males.)

Between 1988 and 1990, unions in the telecommunications industry were relatively successful in the face of recession and longer-term trends in preventing wholesale job and wage losses for workers in the unionized segment of the industry.

In contrast, non-unionized telecommunications workers saw major job losses (especially among higher-paid male workers) and major pay losses (especially among minority workers). These losses indicate a pattern of race and gender segmentation in which higher wage jobs are deskilled, wages decline, and the workers who held those jobs leave the industry.

REGIONAL DIFFERENCES

The West

According to the 1990 CPS data, about 19 percent of non-supervisory telecommunications workers reside in the West (see Table 9). Of these workers, 61.8 percent are union members.²⁰ Women telecommunications workers in the West have the highest unionization rates of women telecommunications workers in all the regions of the country--with two-thirds (65.8 percent) belonging to unions. Telecommunications workers in the West who are union members receive the highest median weekly earnings levels (\$557 per week) of all non-supervisory workers in the telecommunications industry (see Table 10). In contrast, non-union members in the Western states earn an average of \$500 per week or 89.8 cents for every \$1.00 earned by union members. The data also show that the wage gap between non-unionized and unionized women workers is even greater in this region than the gap for all workers. Non-supervisory women workers who are not union members earn an average of \$420 per week as compared to \$500 per week for women who are members, or 84 cents for every \$1.00 earned by union women (not shown on table).

TABLE 9. Percent of Telecommunications Workers, Unionized Workers, and Women Unionized Workers by Region, 1990 (Non-Supervisory Workers)

	West	Midwest	South	Northeast
Percent Workers in Region	18.6	23.4	34.8	23.2
Percent Workers in Union	61.8	68.0	48.9	65.7
Percent Women in Union	65.8	61.0	43.6	59.7

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

The Western states in this analysis are Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

²⁰ In this part of the report, concerning regional differences, we define union membership somewhat differently than in the earlier part of the report. Here we limit union membership to only those who are members of unions and do not include those who are not union members but are covered by union contracts. As a result, the sample is about five percent smaller.

TABLE 10. Median Weekly Earnings for Union and Non-Union Workers in Telecommunications by Region, 1990 (Non-Supervisory Workers)

	West	Midwest	South	Northeast
Union Wage	\$557	\$544	\$500	\$540
Non-Union Wage	500	477	425	520
Non-Union/Union Wage Ratio	89.8	87.7	85.0	96.3

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

The Midwest

About 23 percent of all non-supervisory telecommunications workers reside in the Midwest. This region has the highest rate of union membership at 68 percent and the second highest rate of union membership among women workers (61 percent). The median weekly wage for union members, at \$544 per week, is the second highest among the four regions. Non-supervisory workers in the Midwest who are not union members earn substantially less--\$477 per week, or 87.7 cents for every \$1.00 earned by Midwestern union members. Among non-supervisory women workers, union members earn \$460 per week compared to \$435 for their non-union counterparts, so that non-union women earn 94.6 cents for every \$1.00 union women earn.

The Midwestern states in this analysis are Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

The South

The South has the largest share of telecommunications workers--about 35 percent of the national total. About 49 percent of all non-supervisory workers and about 44 percent of all non-supervisory women workers are union members. Although these unionization rates are the lowest of all the regions among telecommunications workers, they are still considerably higher than the national rates for union membership in the service sector as a whole. Telecommunications workers in the South who are not union members earn \$425 per week, on average, compared to \$500 for their unionized counterparts in the South, or 85 cents for every \$1.00. Among women telecommunications

workers in the South, non-union members earn \$400 per week compared to \$458 for non-union women workers, or 87.3 cents for every \$1.00.

For this analysis the states included in the South are Alabama, Arkansas, Delaware, the District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

The Northeast

About 23 percent of all non-supervisory telecommunications workers reside in the Northeast. About two-thirds of these workers are union members (the second highest rate among the four regions); about 60 percent of all non-supervisory women workers in the Northeast are union members. The median weekly earnings of union members are \$540 per week, compared to \$520 per week for non-union workers. The spillover effect on wages of the high rate of unionization in this industry is especially great among telecommunication workers in the Northeast; non-union members earn 96.3 cents for every \$1.00 earned by union members.

Among women workers in the Northeast, the average weekly earnings of non-union workers have outpaced those of union members (\$500 as compared to \$480, respectively). This disparity is likely due, in part, to the high weekly earnings of sales and technical workers in the Northeast, who are significantly less likely to be union members than are the lower-paid clerical workers.

For this analysis Northeastern states include Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont.

Overview of Regional Differences

These findings show that major national trends in the telecommunications industry are reflected at the regional level, despite some differences among regions. In all four regions, the telecommunications industry is the exception to the rule of low pay for employment in the service sector, especially for women workers. Although non-union workers earn less, on the average, than do union members, they generally benefit from the spillover effect of high union wages in this industry. Data from the regions also reflect major national trends which show that, between 1988 and 1990, non-union employees experienced greater job and real wage losses than union members. Unless telecommunications workers are brought into union membership in increased numbers, the relatively high wages of telecommunications workers are likely to erode.

CONCLUSION

Since the 1940s unions have been successful in the telecommunications industry in establishing a relatively high pay standard and in seeing that workers (as well as stockholders) benefit from productivity gains in the industry. Since the 1970s, unions have been successful in decreasing pay differentials between groups of workers so that women of all races and minority men, including those workers in the highly female clerical occupations can, like white men, earn a middle class standard of living.

Because of the high rates of unionization in telecommunications, unions have been able to set the standard for the industry through collective bargaining. In 1990, in the face of industry restructuring, deregulation, and increased competition, lack of government support for collective bargaining, and increased segmentation among the non-supervisory workforce, unions appear less able to protect the jobs and earnings of non-unionized workers than they were in 1988 or earlier years. Unless the relative strength of telecommunications unions increases (through increased organizing and greater federal support of collective bargaining, for example), the wages of all workers, and especially women and minority workers, will likely shift downward.

Telecommunications is currently an exception to the rule of low pay in women's jobs in the service industry. High rates of union membership have resulted in a living wage even in what were once traditionally low-paid female jobs. The question for the future is whether telecommunications will continue to provide a model for the service sector, or whether it too will come to replicate the patterns of growing inequality so common in many industries. Such a replication would jeopardize the middle class living standard women workers in telecommunications have been able to achieve.

METHODOLOGICAL APPENDIX

This study investigates employment and earnings in 1990 and changes in employment and earnings between 1988 and 1990, among both union and non-union workers, in the telecommunications and other private sector service-producing industries.

The data reported in this study (unless otherwise noted) are based on original tabulations from the 1988 and 1990 Current Population Survey (CPS) by the Institute for Women's Policy Research (IWPR). The CPS is a monthly survey of a nationally-representative sample of approximately 60,000 households conducted by the U.S. Bureau of the Census. Over the course of a year, 240,000 households are interviewed. The labor force data are routinely analyzed by the Bureau of Labor Statistics and provide the basis for monthly national employment and unemployment statistics. The CPS also provides data on occupation, industry, and earnings, and demographic information such as gender, race, marital status, number of children, and so on. Every other month one quarter of the sample respondents are rotated out of the survey; it is only the outgoing respondents who are asked questions on usual hours worked, wages, earnings, and union affiliation. The outgoing respondents are selected for an annual Merged Earnings File; this study uses the 1988 and 1990 Merged Earnings Files, each of which contains information for some 600,000 individuals. The merged files result in sample sizes large enough to generate reliable estimates of major industrial, occupational, regional, gender, and union status differences among workers, including similar differences among telecommunications workers, an investigation which would not be feasible if only one monthly CPS file were used.

Persons were selected for IWPR's analysis if they were employed as non-supervisory workers in the private service-producing industries. All workers who reported their occupations as managerial and professional workers, or as occupations in farming, forestry, and fishing occupations or armed forces' occupations (based on both two digit and three digit occupation codes) were also deleted. The remaining occupations were used in the analysis and categorized as follows:

- 1) administrative support, including clerical;
- 2) precision production, craft, repair, operatives and laborers; and
- 3) technical, sales, and service occupations.

The telecommunications industry was identified by its three-digit code, and the other private service-producing industries were identified by their major industrial code (two-digit code). The service-producing industries analyzed here are categorized as follows:

- 1) Telecommunications (detailed Census Bureau industry code=441; SIC code=481)
- 2) Transportation
- 3) Public utilities and other (non 441/481) communications industries

- 4) Wholesale trade
- 5) Retail trade
- 6) Finance, insurance, and real estate (F.I.R.E.)
- 7) Personal and private household services
- 8) Business and repair services
- 9) Medical, including hospital services
- 10) Social services
- 11) Miscellaneous services including entertainment and recreation, educational, and other professional services.

In the IWPR study, union representation and earnings are analyzed by occupation and gender in these various private service-producing industries. Median weekly earnings data are presented for both hourly and salaried workers, who are considered together in the IWPR study. All earnings data are presented in 1990 constant dollars. The CPI-U-X1 was used to convert 1988 to 1990 dollars.

Union coverage includes both those workers who are union members as well as those covered by union contracts. For 1988, using the weighted numbers from the CPS file, we obtained a population of 58.4 million non-supervisory service workers of which 840,755 workers were employed in the telecommunications industry. For 1990, we obtained a population of 60.6 million non-supervisory service workers of which 770,536 were employed in the telecommunications industry.

APPENDIX TABLE 1. Sample Size -- Number of Workers in the Telecommunications Industry in the 1990 Current Population Survey Merged Earnings File

Total Number of Cases	1,372
Total Women	725
Non-Minority	568
Minority	157
Total Men	64
Non-Minority	575
Minority	72
Total Blue Collar	484
Women	430
Men	54
Total Sales, Tech.	227
Women	105
Men	122
Total Clerical	661
Women	566
Men	95
Total Union	888
Male Union	446
Non-Minority	394
Minority	52
Female Union	442
Non-Minority	338
Minority	104
Total Non-Union	484
Male Non-Union	201
Non-Minority	181
Minority	20
Female Non-Union	283
Non-Minority	230
Minority	53

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.

APPENDIX TABLE 2. Percent Female, Percent Unionized, and Median Weekly Earnings for All Occupations in the Private Service-Producing Industries, 1990

Industry	Percent Female	Percent Union	Weekly Earnings * (dollars)
Telecommunications	53.0	63.6	505
Transportations	25.7	40.8	460
Utilities/Other Communications	25.1	40.1	460
Wholesale	30.5	4.8	360
Retail	54.7	6.5	175
Finance, Ins., & Real Est.	63.8	4.1	325
Business & Repair	40.8	4.6	420
Personal/Private Households	76.1	4.3	175
Medical	83.9	12.9	280
Social	80.1	7.1	170
Miscellaneous	68.9	18.0	240
Total (All Services)	56.5	12.5	250
Total for Economy	45.3	18.3	346

Note: * Median weekly earnings for all non-supervisory workers, male and female.

Source: Institute for Women's Policy Research based on the 1990 Current Population Survey.