# GAO

September 1994

# EQUAL EMPLOYMENT OPPORTUNITY

## Displacement Rates, Unemployment Spells, and Reemployment Wages by Race

GAO/HEHS-94-239FS

# GAO

September 16, 1994

The Honorable Julian C. Dixon
House of Representatives

Dear Mr. Dixon:

Despite numerous federal legislative efforts to provide equal employment opportunities regardless of race (such as the Civil Rights Act of 1991), African American economic outcomes persistently lag those of whites in the United States. The labor market is a chief source of these differences. For example, average African American wage rates are consistently below those of whites, and African American unemployment rates are higher than those of most other racial groups. Recently, media reports have highlighted changes in net employment by race. According to these reports, African Americans were the only group to experience net employment losses during the last recession.

On October 19, 1993, you asked us to examine data from the Equal Employment Opportunity Commission (EEOC) to determine if African American workers were uniquely affected by the 1990-91 recession and whether an emphasis on achieving overall progress in minority employment has resulted in many employers' disregard for the specific employment situation of African Americans. In consultation with your staff, we agreed to address these issues by (1) analyzing a nationally representative database of workers displaced during the 1990-91 recession, (2) reviewing EEOC's database on the U.S. firms, and (3) interviewing corporate officials at a judgmentally selected sample of companies.

In subsequent discussions with your staff, we agreed to report our findings in two parts. This initial report relies on the nationally representative database and provides an analysis of the probability of African American, white, Hispanic, and Asian workers being laid off in the last recession. To provide a more complete picture of African American labor market performance, we also compared (1) the length of time displaced African American workers were unemployed with unemployment spells for displaced workers of the other racial groups, and (2) the reemployment wages of displaced African Americans with those of displaced whites and Hispanics. In addition, we examined these factors for the years 1982 to

1991, allowing us to see how they varied over an entire business cycle.[1] In a subsequent report, we plan to present an analysis of EEOC data and interviews with corporate and federal officials.

## Background

The Wall Street Journal, in an analysis of EEOC data, reported that African Americans were the only racial group to experience net losses in employment during the 1990-91 recession.[2] The EEOC data showed the occupational composition by race for about 35,000 firms reporting in both 1990 and 1991. Employment in these firms totaled over 40 million, accounting for about 37 percent of the U.S. nonagricultural employment. However, because firms are required to report to the EEOC only when they have (1) 100 or more employees or (2) 50 or more employees and federal contracts, results from analyzing the EEOC data do not necessarily represent the workforce as a whole. In fact, nationally representative data from the Bureau of Labor Statistics show that net employment declined for African Americans (227,000), whites (1.1 million), and Hispanics (156,000) during the 1990-91 recession.[3]

Displacement rates provide a more precise assessment of job losses associated with the recession.[4] While net employment changes at a firm can result from a variety of reasons, such as the sale of company units, voluntary attrition (outflows), or acquisitions (inflows), in a recession, the most notable change is worker displacement through layoffs as firms cut back production or discontinue operations.[5] The economics literature has long noted disparities in worker displacement across groups, with racial minorities experiencing higher displacement rates than whites.

[1]The last recession ended in the fourth quarter of 1982. The following recovery lasted until July 1990, when the economy again entered a recession lasting for 8 months, until March 1991.

[2]Rochelle Sharpe,"Losing Ground: In the Latest Recession, Only Blacks Suffered Net Employment Loss," The Wall Street Journal, Sept. 14, 1993, p. 1.

[3]J. Meisenheimer II, E. Mellor, and L. Rydzewki, "Job market slid in early 1991, then struggled to find footing," Monthly Labor Review, Vol. 115, No.2 (Feb.1992), pp.3-17.

[4]We defined a displaced worker as one who experienced an involuntary job separation.

[5]In a recession, unemployment rates rise as workers are laid off, but worker displacement is only part of why unemployment rates rise. During a recession, new workers continue to enter the labor market, but the number of job vacancies is low. These new job seekers are unemployed (increasing the unemployment rate) even though they have not been displaced from a job due to the downturn. Some new job seekers or displaced workers pursuing reemployment may also leave the labor market (decreasing the unemployment rate) because of the low likelihood of finding a job.

# In Summary

During the 1990-91 recession, African Americans were 15 percent more likely to lose their jobs than whites. Hispanic and African American workers experienced the highest layoff probabilities of the four groups examined, followed by whites. Asians experienced the lowest layoff probability. The high African American displacement rate was partially due to the impact of the recession on industries and occupations in which African Americans were disproportionately represented; however, differences still persisted after accounting for industrial and occupational affiliations, education levels, and worker age.

Once displaced, African American workers were unemployed slightly longer than workers in the other groups, on average. For workers losing jobs in the 1990-91 recession, the average African American unemployment spell lasted 12 weeks while the average white worker experienced 11 weeks of unemployment; average unemployment spells were 10 weeks for Hispanics. Once reemployed, African Americans had the highest relative losses in weekly earnings, experiencing an average decrease of 10.1 percent. In contrast, white and Hispanic employees experienced average earnings losses of about 9.5 percent and 5.3 percent, respectively.[6]

These results are not unique to recession periods. In years of economic growth, fewer workers of all races experienced job displacement, and displaced workers spent less time unemployed. However, African American workers consistently experienced the worst labor market outcomes throughout the decade regardless of the state of the economy.

The following sections discuss each of these issues in detail. Section 1 provides descriptive data on differences in worker displacement by race. Section 2 reports results from a statistical analysis that focused on the probability of displacement by race. Section 3 provides results from a statistical analysis that focused on unemployment spells and reemployment wages for displaced workers by race. Finally, Section 4 discusses trends in each of these characteristics over time.

# Scope and Methodology

To examine African American job displacement, we used two methods of analysis. First, we reviewed and summarized the existing economics literature on worker displacement; selected papers are summarized in appendix I, table I.1, and a broader set of references are included at the

---

[6]Average unemployed durations and wage losses were not reported for Asians because the number of Asian displaced workers who answered these survey questions were too small for reliable estimates.

end of this report. Second, we developed summary statistics and estimated a statistical model using data from the Displaced Worker Survey (DWS), a biannual supplement to the January Current Population Survey (CPS).[7] The results of this analysis, along with a detailed description of our statistical methods, are discussed in appendix II.

As arranged with your office, unless you announce its contents earlier, we plan no further distribution of this fact sheet until 15 days after the date of this letter. At that time, we will send copies to other interested parties.

Please contact me or Cornelia Blanchette, Associate Director, on (202) 512-7014 if you or your staff have any questions. The major contributors to this report are Wayne Upshaw, Assistant Director, and Patrick Redmon, Senior Economist, (202) 512-7023.

Sincerely yours,

Linda G. Morra
Director, Education
   and Employment Issues

---

[7]As a supplement to the CPS, this survey is administered if a respondent answered "yes" to the following question: "In the past five years, have you lost or left a job because of a plant closing, an employer going out of business, a layoff from which you were not recalled, or other similar reasons?" For those answering "yes," the survey collects information on the predisplacement job and the worker's experience since displacement.

# Contents

**Abbreviations**

| | |
|---|---|
| CPS | Current Population Survey |
| DWS | Displaced Worker Survey |
| EEOC | Equal Employment Opportunity Commission |
| PSID | Panel Survey of Income Dynamics |

# Descriptive Data on Racial Differences in Layoffs in the 1990-91 Recession

Heterogeneity in average characteristics across racial groups is one explanation for differences in worker displacement by race. Labor economists have long noted several factors that affect general labor market performance, including susceptibility to layoff. Traditionally, workers with the least experience or education are the most likely to be laid off. Additionally, certain industries and occupations experience relatively high layoff rates. If certain minority groups, on average, are less educated or experienced, or if such groups concentrate in industries and occupations with inherently high displacement rates, then these factors may explain why African Americans and Hispanics exhibit disproportionately high displacement rates. In this section, we examine these factors as potential explanations for disproportionate layoff rates across racial groups.

## Differences in Displacement by Race

To examine proportional differences in layoff rates by race, it is important to understand the composition of the sample we used to produce the estimates. This sample includes private-sector workers over 20 years old. Whites make up nearly 80 percent of this sample, followed by African Americans with about 9 percent. Table 1.1 provides a complete description of the sample.

Table 1.1 also shows the racial composition of workers who experienced layoffs during 1990-91. Whites constituted the largest share of displaced workers, with 77 percent of total layoffs. However, this number is less than the white share of the sample. If layoffs were proportional, whites should have constituted about 80 percent of the layoffs. African Americans made up about 9 percent of this sample but experienced 10.2 percent of the layoffs; Hispanics accounted for over 7 percent of the sample but 9 percent of the layoffs. Asians, as did whites, constituted a less than proportional share of layoffs, accounting for about 3 percent of the sample but slightly over 2 percent of total layoffs.

Section 1
Descriptive Data on Racial Differences in
Layoffs in the 1990-91 Recession

**Table 1.1: Racial Composition of Sample Drawn From the January 1992 Current Population Survey**

| Race | Number | Percent of total | Displaced, 1990-91 | Percent of all displaced |
|------|--------|------------------|--------------------|--------------------------|
| White | 41,475 | 79.7% | 2,824 | 77.2% |
| African American | 4,734 | 9.1 | 373 | 10.2 |
| Hispanic | 3,765 | 7.3 | 338 | 9.3 |
| Asian | 1,535 | 2.9 | 80 | 2.2 |
| Native American | 373 | 0.7 | 33 | 0.9 |
| Other | 162 | 0.3 | 9 | 0.3 |
| Total | 52,044 | 100.0% | 3,657 | 100.1%[a] |

[a]Column does not sum to 100 percent due to rounding.

# Racial Differences in Layoffs Due to Age and Education

Differences in worker characteristics should partially explain disproportionate layoff rates. Table 1.2 describes the characteristics of workers displaced in the last recession by race. For example, displaced African Americans and Hispanics were, on average, younger than displaced whites and Asians. The average for both African Americans and Hispanics was 36 and 35 years old, respectively, versus 38 for whites and 40 for Asians. Because seniority is often a major criterion for layoff in both unionized and nonunionized firms, layoffs are usually concentrated among young workers. Hence, the age difference between these groups could partially explain the disproportionate layoff rates across groups; because they were younger, these workers were more likely to be laid off regardless of race.

Racial differences in educational attainment conveys essentially the same story. About 82 percent of displaced white workers ended their education with a high school diploma or less, while about 77 percent of Asians ended their education with high school or less. For displaced African Americans and Hispanics, over 90 percent ended their educations with a high school diploma or less. Because less educated workers are more likely to be displaced, these differences in schooling may further explain differences in layoff rates across groups.

Section 1
Descriptive Data on Racial Differences in
Layoffs in the 1990-91 Recession

**Table 1.2: Characteristics of 1990-91 Displaced Workers by Race (Means)**

| Variable | White | African American | Hispanic | Asian |
|---|---|---|---|---|
| Age (years) | 38 | 36 | 35 | 40 |
| Female (percent) | 39% | 51% | 35% | 35% |
| Education (percent) | 19% | 27% | 46% | 28% |
| Did not complete high school | | | | |
| High school graduate | 63 | 65 | 44 | 49 |
| College graduate | 13 | 6 | 7 | 15 |
| Graduate education | 5 | 2 | 3 | 8 |

With the exception of Asians, displaced workers were younger (and therefore had less potential labor market experience) and more likely to be male than workers who were not displaced.[8] Table 1.3 shows the average characteristics of nondisplaced workers in our sample, and these facts are clear when comparing displaced worker characteristics in table 1.2.

**Table 1.3: Characteristics of Nondisplaced Workers by Race (Means)**

| Variable | White | African American | Hispanic | Asian |
|---|---|---|---|---|
| Age (years) | 38 | 38 | 36 | 38 |
| Female (percent) | 43% | 54% | 40% | 47% |
| Education (percent) | | | | |
| Did not complete high school | 16% | 24% | 43% | 18% |
| High school graduate | 59 | 64 | 48 | 42 |
| College graduate | 18 | 10 | 7 | 28 |
| Graduate education | 7 | 2 | 2 | 12 |

Another potential explanation is that the high African American and Hispanic layoff rates are related to the economy's effect on particular industries and occupations in which these groups tended to concentrate.

# Racial Differences in Layoffs Due to Industry and Occupation

We found that industry and occupational differences appear to partially contribute to disproportionate layoffs among African Americans and Hispanics. We compared layoff rates for industries with the share of minority employment in the industry. Table 1.4 shows that manufacturing shouldered over 28 percent of all layoffs in 1990-91, the highest layoff rate of the industries listed below. African American workers were

[8]For displaced Asian workers, however, these characteristics are different. The average displaced Asian in 1990-91 was 40 years old versus 38 for nondisplaced workers.

Section 1
Descriptive Data on Racial Differences in
Layoffs in the 1990-91 Recession

disproportionately represented in manufacturing, potentially contributing to the likelihood of being displaced. Although about 23 percent of the total workforce was employed in manufacturing, over 28 percent of African Americans worked in manufacturing. Overall employment by industry as well as for African Americans and Hispanics appears in table 1.5.

**Table 1.4: Layoffs by Industry**

| Industry | Percent of total layoffs |
|---|---|
| Agriculture | 1.31% |
| Mining | 1.72 |
| Construction | 14.00 |
| Manufacturing | 28.44 |
| Transportation | 4.78 |
| Communications | 5.44 |
| Wholesale trade | 4.87 |
| Retail trade | 16.68 |
| Finance | 6.21 |
| Medical | 2.41 |
| Education | 0.85 |
| Other[a] | 4.59 |

[a]This category includes the following industries: utilities and sanitary service, social services, forestry and fisheries, and other professional services. This column does not sum to 100 because some individuals did not identify their industry.

Section 1
Descriptive Data on Racial Differences in
Layoffs in the 1990-91 Recession

**Table 1.5: African American and Hispanic Employment by Industry**

| Industry | Percent of all employment | Percent African American employment | Percent Hispanic employment |
|---|---|---|---|
| Agriculture | 1.49% | 1.10% | 3.63% |
| Mining | 1.02 | 0.26 | 0.88 |
| Construction | 6.41 | 3.89 | 7.21 |
| Manufacturing | 23.46 | 25.36 | 25.44 |
| Transportation | 4.21 | 4.53 | 4.21 |
| Communications | 2.52 | 3.22 | 1.62 |
| Wholesale trade | 4.44 | 2.77 | 4.16 |
| Retail trade | 18.50 | 16.96 | 19.41 |
| Finance | 7.83 | 6.88 | 5.70 |
| Medical | 9.08 | 11.19 | 6.66 |
| Education | 2.29 | 1.74 | 1.21 |
| Other[a] | 18.75 | 22.10 | 19.87 |

[a]This category includes the following industries: utilities and sanitary service, social services, forestry and fisheries, and other professional services.

We performed a similar analysis for occupational categories. Table 1.6 shows layoff rates by occupation, and table 1.7 shows overall employment with African American and Hispanic employment by occupation. African Americans were concentrated in clerical and machine operator categories, occupations that ranked second and third in proportion of displaced workers. Hispanics were concentrated among machine operators and precision production positions, both categories with high layoff rates.

Section 1
Descriptive Data on Racial Differences in
Layoffs in the 1990-91 Recession

**Table 1.6: Layoffs by Occupation**

| Occupation | Percent of total layoffs |
|---|---|
| Executive | 10.53% |
| Professional | 5.99 |
| Technical | 2.95 |
| Sales | 10.45 |
| Clerical | 14.79 |
| Precision production | 18.57 |
| Machine operator | 13.70 |
| Mover | 4.84 |
| Handler | 6.48 |
| Other[a] | 11.70 |

[a]This category includes the following occupations: private household services; protective services; farming, forestry, and fishing; and other services.

**Table 1.7: Occupational Distribution for African Americans and Hispanics**

| Occupation | Percent of all employment | Percent African American employment | Percent Hispanic employment |
|---|---|---|---|
| Executive | 11.99 | 6.02 | 5.89 |
| Professional | 9.85 | 4.84 | 4.49 |
| Technical | 3.83 | 2.94 | 2.06 |
| Sales | 12.16 | 8.68 | 9.09 |
| Clerical | 16.66 | 16.74 | 13.13 |
| Precision production | 12.70 | 8.85 | 13.74 |
| Machine operator | 9.21 | 14.42 | 15.50 |
| Mover | 4.61 | 5.85 | 4.79 |
| Handler | 4.53 | 6.83 | 7.08 |
| Other[a] | 14.46 | 24.83 | 24.73 |

[a]This category includes the following occupations: private household services; protective services; farming, forestry, and fishing; and other services.

# Statistical Analysis of Differences in Displacement Across Groups

The preceding section demonstrated that observable worker characteristics ostensibly accounted for some of the disproportionate displacement rates across racial groups. However, our statistical analysis (described in app. II) shows that differences persist across groups even after controlling for the characteristics discussed earlier. Using our statistical modeling results, we calculated the likelihood of a worker of average age and education being displaced in 1990-91 for each racial group.[9] While we could not statistically control for all potential factors, such as job tenure, that may account for remaining differences, our analysis of the characteristics of displaced workers suggests that these omissions cannot account for all differences in layoffs across groups.

During the last recession, African Americans and Hispanics faced the highest probability of displacement, even after controlling for age, education, gender, industry, and occupation. Table 2.1 shows these estimated probabilities.[10] African Americans faced a layoff probability of 6.6 percent in 1990-91, and Hispanics faced approximately the same risk rate with a 6.8-percent probability. Whites and Asians, however, faced layoff probabilities of 5.7 and 4.6 percent, respectively. This means that African Americans and Hispanics faced a risk of displacement at least 15 percent greater than that of comparable whites and at least 43 percent greater than Asians.

**Table 2.1: Probability of Layoff by Race, Controlling for Industry, Occupation, Education, and Age**

| Race | Adjusted probability of layoff |
|---|---|
| White | 5.7% |
| African American | 6.6 |
| Hispanic | 6.8 |
| Asian | 4.6 |

Note: These layoff rates are statistically different from zero; the layoff rates for African American, Hispanic, and Asian workers are statistically different from the white layoff rate at the 5-percent level of significance.

The reasons for these differences by race are not clear. One potential explanation is that African American and Hispanic workers have less tenure, on average, than white employees. Tenure differences could occur because job turnover is greater among these groups. In that case, the

---

[9]These estimates also control for gender, industry, and occupational differences across races. The method of calculating these probabilities is detailed in appendix II.

[10]All results were significant at the 5 percent confidence level.

likelihood of displacement would be higher because these workers would have less time on the job, even if they had the same education and total labor market experience. Because seniority is still heavily used in labor contracts and by nonunion firms, less tenure on the job increases the risk of displacement.

We could not estimate the effect of job tenure on the likelihood of displacement. Although the Displaced Worker Surveys collects job tenure information for the displaced workers it surveys, the Current Population Survey does not collect this information, and we cannot statistically control for tenure without information on both displaced and nondisplaced workers.

However, we have gained some insight into tenure differences by race. DWS data on tenure suggest that tenure cannot account for racial differences for African Americans, although it may explain relatively high Hispanic displacement rates and relatively low Asian displacement rates. Table 2.2 shows the average years of tenure on the job from which workers were displaced by race. Displaced African American workers had higher tenure than whites, for those reporting. If tenure was a likely explanation for disproportionate African American layoffs, we would expect African Americans to have lower average tenure. Displaced Hispanics, in fact, have a year less tenure than displaced whites, providing a potential explanation for their relatively high layoff rate. Displaced Asians have more tenure than whites, potentially explaining their relatively low layoff rate.

Other factors, such as racial discrimination, that we also could not observe or measure may account for differences in displacement across racial groups. However, we cannot determine how much of the 15-percent difference in African American and white displacement rates could be due to such factors.

**Table 2.2: Differences in Tenure of Displaced Workers by Race**

| Race | Tenure (in years) |
|------|------------------:|
| White | 4.1 |
| African American | 5.2 |
| Hispanic | 3.1 |
| Asian | 5.0 |

# Racial Differences in Unemployment Spells and Reemployment Wages

We have established that layoff rates vary across groups, but differences in layoff rates do not necessarily imply that the cost of displacement differs across groups.[11] Losses from displacement come from two sources: (1) time spent not working after being displaced from a job and (2) potentially lower compensation after finding another job.

In addition to experiencing a relatively high layoff rate, displaced African American workers stayed unemployed longer than those in other racial groups once they lost their jobs. Moreover, for those displaced workers who found jobs, African Americans also experienced the greatest wage loss upon reemployment. Whites found new employment most quickly, although they also received lower weekly earnings in their new jobs than in the previous ones. Hispanics experienced the shortest unemployment spells and the smallest wage loss upon reemployment.

## Unemployment Spells and Reemployment Wages by Race

Among displaced workers who found new jobs, African Americans experienced the longest spells of unemployment. Table 3.1 shows the average number of weeks of unemployment for each racial group. Displaced African Americans had the longest unemployment spells with an average spell of nearly 12 weeks. Displaced whites found new work somewhat more quickly, with about 11 weeks of unemployment on average. Displaced Hispanic unemployment spells lasted about 10 weeks on average.[12]

These differences are important in assessing the cost of displacement to each group.[13] If African Americans, for example, had relatively short spells of unemployment, a relatively high layoff rate would not be as serious because the losses across groups might be equalized.[14] However, these patterns in unemployment spells indicate that displacement costs across

---

[11]In this report, we examine only the private cost of worker displacement—the cost to the worker.

[12]Numbers for Asians were not included in our examination of the cost of displacement because the number of available observations was too small to estimate unemployment duration and reemployment earnings accurately.

[13]Interpreting the differences in racial means for unemployment spells and reemployment wages requires caution. A large number of displaced workers had not been reemployed at the time they were surveyed. Differences in unemployment spells and reemployment wages depend not only on the new job opportunities offered to individuals but also on the displaced workers' search behavior for new employment. Some displaced workers might search longer for a new job to match their previous wage rate. If behavior differs systematically across racial groups, then considering differences in reemployment wages alone potentially misstates actual differences in the cost of displacement across groups. For a detailed discussion of this issue, see Daniel S. Hamermesh, "What Do We Know About Worker Displacement in the U.S.?" Industrial Relations, Vol. 28, No. 1 (1989) pp. 51-59.

[14]Of course, both the private and social costs of displacement would still be substantial.

groups are even greater than indicated by differential layoff rates. When
we examined differences in lost wages, the differences in displacement
costs appeared even more pronounced.

**Table 3.1: Number of Weeks
Unemployed**

| Race | Average unemployment spell (in weeks) |
|---|---|
| White | 11 |
| African American | 12 |
| Hispanic | 10 |

The cost of displacement for workers laid off in the 1990-91 recession
were substantial for all groups, but African Americans were especially hit
hard. In addition to experiencing longer spells of unemployment, these
workers also returned to proportionally lower earnings than white and
Hispanic workers. As shown in table 3.2, upon returning to work, African
American workers' average weekly earnings fell 10.1 percent; white
workers lost 9.5 percent and Hispanics lost 5.3 percent.[15]

**Table 3.2: Wage Loss for Displaced
Workers Who Are Reemployed**

| Race | Percent loss from predisplacement wage |
|---|---|
| White | 9.5 |
| African American | 10.1 |
| Hispanic | 5.3 |

## Losses in Health Care Coverage Across Groups

Part of the compensation loss experienced by displaced workers is in
fringe benefits. If benefits are lower upon reemployment, the private cost
to the worker is higher than shown by the change in average weekly
earnings. Unfortunately, the Current Population Survey and the Displaced
Worker Surveys do not routinely collect detailed information on fringe
benefits. The DWS does, however, ask workers if in their previous jobs they
were covered by a group health plan and if they are currently covered by a

---

[15]We computed wage losses by first taking the natural logarithm of the worker's average weekly
earnings (deflated by the Consumer Price Index) in both the current and predisplacement job and then
subtracting current earnings from prior earnings. The difference may be interpreted as the percentage
change in earnings.

group health plan other than Medicare or Medicaid. Table 3.3 shows the responses.[16]

African Americans were less likely to have health coverage upon reemployment. While over 50 percent were covered in the predisplacement job, only about 38 percent were covered upon reemployment. About 56 percent of white workers had coverage in their predisplacement job, and upon reemployment, 60 percent had health coverage. Only 48 percent of Hispanic workers were covered before displacement, and 37 percent were covered upon reemployment.

**Table 3.3: Displaced Workers' Health Insurance Coverage**

| Race | Percent covered in previous job | Percent covered in current job |
|------|---------------------------------|-------------------------------|
| White | 56.0 | 59.7 |
| African American | 53.4 | 37.6 |
| Hispanic | 48.0 | 37.0 |

[16]Note that the survey question was asked of displaced workers who had not returned to work at the time of the survey as well as of those who were reemployed. Some of the differences across racial groups could result from individuals obtaining group health coverage through sources other than employment, although employment is the chief source of coverage.

# Racial Differences in Worker Displacement Over Time

Because we investigated relative differences in displacement rates across racial groups during the 1990-91 recession, the temptation is to conclude that the recession caused these disparities. However, we found that African American workers were disproportionately affected by layoffs even in years when the economy was growing: (1) African American layoff rates always exceeded white layoff rates; (2) African American workers remained unemployed longer once they were displaced; and (3) African American workers experienced relatively large wage losses after returning to work, especially by the early 1990s. Cyclical downturns may exacerbate these racial differences, but the differences exist independently of the business cycle.

African American layoff rates always exceeded white layoff rates, although in 1984-85 and 1988-89, the differences were not statistically significant.[17] Table 4.1 shows the probability that a worker of a particular race would be laid off in each wave of the Displaced Worker Surveys, controlling for age, gender, educational attainment, and industrial and occupational affiliation. The probabilities of layoff for all groups were highest in the recessions of the early 1980s and 1990s. During this decade, however, African American workers were always at least as likely to be displaced as white workers, but the differential was smaller in years of economic growth. Hispanic workers were less likely to be laid off than whites in the previous recession and in years of economic growth. In the most recent recession, Hispanic workers experienced layoff rates approximately matching those of African American workers.[18]

**Table 4.1: Probability of Layoff Over Time, by Race**

| Race | 1982-83 | 1984-85 | 1986-87 | 1988-89 | 1990-91 |
|------|---------|---------|---------|---------|---------|
| White | 5.3% | 4.2% | 4.1% | 3.9% | 5.7% |
| African American | 6.3 | 4.6 | 4.7 | 3.9 | 6.6 |
| Hispanic | 4.7 | 3.7 | 3.6 | 3.5 | 6.8 |

In addition to relatively high probabilities of layoffs during the 1980s, African Americans also experienced longer periods of unemployment in this period. In 1982-83, African American workers were unemployed 4 weeks longer than white workers, as shown in table 4.2. However, this gap narrowed over the decade, and by the 1990-91 timeframe, the difference in

---

[17]In 1988-89, the layoff rates for white and African American workers round to 3.9 percent, but in fact, the African American rate is slightly higher though not statistically different from the white layoff rate.

[18]Other racial groups are not included in this analysis because in the first three DWSs, the CPS obtained racial information on whites, African Americans, and other groups. Additionally, the survey collected information on ethnic origin. As a result, we could not compare layoff rates for Asians over time.

the length of unemployment spells for white and African American workers was about a week.[19]

**Table 4.2: Average Number of Weeks Unemployed**

| Race | 1982-83 | 1984-85 | 1986-87 | 1988-89 | 1990-91 |
|------|---------|---------|---------|---------|---------|
| White | 17 | 12 | 11 | 9 | 11 |
| African American | 21 | 23 | 12 | 11 | 12 |

In the early and middle 1980s, displaced African American workers experienced smaller wage losses than white workers, but over the decade, African American wage losses grew and exceeded those of white workers. Table 4.3 shows the wage losses for each group over the decade. Wage losses upon reemployment were generally smaller for both groups in years of economic growth than in recessionary years, but in 1982-83 and 1986-87, reemployed African American workers experienced smaller wage losses than white workers. In subsequent years, however, African American wage losses were larger than white wage losses.

**Table 4.3: Percentage Wage Loss for Displaced Workers Who Are Reemployed**

| Race | 1982-83 | 1984-85 | 1986-87 | 1988-89 | 1990-91 |
|------|---------|---------|---------|---------|---------|
| White | 7.6% | 4.9% | 9.4% | 5.9% | 9.5% |
| African American | 7.2 | 7.2 | 8.5 | 7.4 | 10.1 |

[19]The results for Hispanic workers were not included here because in several years the number of workers reporting unemployment spells was too small for accurate estimates.

**GAO/HEHS-94-229FS Equal Employment Opportunity**

# Literature Review

| | |
|---|---|
| **John Bound and Richard B. Freeman (1992)** | This paper shows a widening in African American-white earnings and employment gaps among young men from the mid-1970s through the 1980s. Earnings gaps increased most among college graduates and in the Midwest, while gaps in employment-population rates grew most among dropouts. The authors attribute the differential widening to shifts in demand for subgroups due to shifting industry and regional employment, the falling real minimum wage and deunionization, the growing supply of African American to white workers that was marked among college graduates, and to increased crime among dropouts. The different factors affecting subgroups highlight the economic diversity of African Americans. The authors analyzed CPS data for the years 1963 through 1989. |
| **William J. Carrington and Asad Zaman (1994)** | A representative displaced worker is reemployed at about a 13-percent weekly wage cut; a worker with 10 years of predisplacement tenure loses about 12 percent more than a similar worker with no tenure; a worker with 20 years of experience loses about 9 percent more than a similar worker with no experience. Postdisplacement wage reductions, tenure profiles, and experience profiles of wage reduction vary substantially across industries. Industry characteristics explain some of the variation in mean wage reductions but not in tenure or experience profiles. Displacement-induced wage reductions tend to be largest in those industries that are highly unionized, pay high wages, have large firms, and frequently provide informal on-the-job training. The authors used CPS-DWS data from 1984, 1986, and 1988 for their analysis. |
| **Henry S. Farber (1993)** | The author finds that older and more educated workers were more likely to suffer job loss in the 1990s than in the 1980s. Nonetheless, job loss remained concentrated among younger and less educated workers. He also finds that job loss became more common in some important service industries and relatively less common in manufacturing during the latter part of the period. He finds that displaced workers, relative to nondisplaced workers, were less likely to be employed and, if employed, were more likely to be employed part time. These effects declined with time since displacement. There is no systematic secular change in these costs of displacement, either in the aggregate or for particular groups. Finally, he examined the earnings losses of full-time reemployed displaced workers by comparing their earnings change with the earnings change of full-time employed workers who were displaced. He found, consistent with what others have found, that these earnings losses are substantial. The author analyzed CPS-DWS data from 1984, 1986, 1988, 1990, and 1992; he |

also used mobility supplements to the January CPS, 1983, 1987, and 1991 in his analysis.

| | |
|---|---|
| **Daniel S. Hamermesh (1987)** | This study identifies part of the social loss attendant upon displacement as the remaining value of the assets specific to the severed employment relationship. If information is good, the wage-tenure profile will flatten as displacement approaches. For workers separated between 1977 and 1981, wage-tenure profiles are found not to change. This suggests that either workers, or both firms and workers, are surprised by the displacement. The present value of the part of the social loss attributable to the worker's share of the firm-specific capital is around $7,000 (1980 dollars). The author analyzed data from the PSID for the years 1977 through 1981. |
| **Daniel S. Hamermesh (1989)** | The secular increase in job displacement is independent of the business cycle. Average earnings losses due to long spells of unemployment and to subsequent reduced wages are substantial. Minorities suffer an above-average rate of displacement, but their earnings losses are not unusually high. Women and older workers are no more likely than others to become displaced or to suffer greater earnings losses, but high-tenure workers lose more. The author's conclusions are based on a review of selected literature from 1976 through 1987. |
| **Louis S. Jacobson, Robert J. Lalonde, and Daniel G. Sullivan (1993)** | High-tenure workers separating from distressed firms suffer long-term losses averaging 25 percent per year. The authors find that displaced workers' losses begin mounting before their separations, depend only slightly on their age and gender, depend more on local labor-market conditions and their former industries, are not limited to those in a few sectors, and are large even for those who find new jobs in similar firms. They analyze 52 quarters of Pennsylvania administrative data on workers' earnings histories merged with firm-specific data. |
| **Lori G. Kletzer (1991)** | African American workers bore a relatively heavier burden of widespread job displacement during the 1980s because of the industries and occupations in which they were concentrated; they also were less likely to be reemployed and were out of work longer. The author analyzes CPS-DWS data for 1984 and 1986. |

| Christopher J. Ruhm (1994) | Three to 5 years after job displacements, workers receiving the advance notice mandated by current law earn approximately 10 percent more than their nonnotified counterparts. This differential is not the result of firms' systematically notifying persons with favorable reemployment prospects—early warnings are disproportionately obtained by individuals expected to earn relatively low wages in subsequent employment. The notification differential may occur because the advance notice is frequently provided by employers offering other kinds of adjustment assistance such as job counseling, skill retraining, supplemental unemployment benefits, or outplacement assistance. The author analyzed CPS-DWS data from 1988 and 1990. |
|---|---|
| Robert H. Topel and Michael P. Ward (1992) | During the first 10 years in the labor market, a typical worker will hold seven jobs, about two-thirds of his career total. The evolution of wages plays a key role in this transition to stable employment: wage gains at job changes account for at least a third of early-career wage growth, and the wage is the key determinant of job changing decisions among young workers. Job changing is a critical component of workers' movement toward the stable employment relations of mature careers. The worker does not know in detail the nature of the job which he is obtaining nor does he know his own capacities. Nevertheless, it is the principal method by which workers at the present time improve their condition on their initiative. The authors analyze the Longitudinal Employee-Employer Data file for the years 1957 through 1972. |

# Statistical Analysis of Worker Dislocation

## The Data

The data for this study came from the Displaced Worker Surveys that were administered in January of 1984, 1986, 1988, 1990, and 1992. These surveys are supplements to the Current Population Survey; they are administered if the respondent answered "yes" to the following question: "In the past five years, have you lost or left a job because of a plant closing, an employer going out of business, a layoff from which you were not recalled, or other similar reasons?" For those answering "yes," the survey collects information on the predisplacement job and the worker's experience since displacement.[20]

A key feature of these data is that workers are being asked about events that occurred up to 5 years before the survey date. This retrospective sample design imparts a variety of biases to the data, the most prominent of which is "recall bias." This term refers to the fact that workers are more apt to recall traumatic events that result in serious economic or psychological costs. In these data, the most likely effect of recall bias is that displaced workers who adjusted easily to their job loss are less likely to report the displacement than are workers who found adjusting difficult. This means that the DWS probably overstates the average wage loss associated with displacement.[21]

While recall bias is a limitation of these data, DWS data have an advantage over other data sets, such as the Panel Survey of Income Dynamics (PSID), another data set used to analyze the cost of worker displacement. The DWS is a much larger sample, allowing greater precision in estimating worker characteristics. The PSID is not subject to recall bias, however, because it is a panel data set that contemporaneously tracks households over several years.[22]

## Estimation of Displacement Probabilities

To calculate the probability that a worker would be displaced (as in tables 1.9 and 3.1), we estimated a logit model. This model is a multivariate statistical technique that allows the estimation of a relationship between a worker's characteristics (such as race, age, or education) and the outcome

---

[20]For a succinct description of these data, see William J. Carrington and Asad Zaman, "Interindustry Variation in the Costs of Job Displacement," Journal of Labor Economics, Vol. 12, No. 2 (1994), pp. 243-275.

[21]For detailed discussion of recall bias and additional references on the subject, see William J. Carrington, "Wage Losses for Displaced Workers: Is It Really the Firm That Matters?" Journal of Human Resources, Vol. 28, No. 3 (1993), pp. 435-62.

[22]For a discussion of the advantages and disadvantages of the DWS versus the PSID, see Hamermesh, 1989.

of some event (such as worker displacement). Table II.1 shows our estimated model for workers displaced in 1990-91.

The dependent variable in this model is a binary variable equal to 0 if a worker is displaced and equal to 1 if not. While the DWS asks the worker about displacement in the last 5 years, we classified only workers who lost their jobs in the last 2 years as displaced workers.[23] We followed this approach to minimize recall bias. Additionally, we identified workers as displaced only if they lost work because of a plant closing, slack work, or an abolished position.[24] We did not classify workers stating other reasons for job loss as displaced because we wanted our analysis to reflect layoffs as the sole reason for job displacement.

The model's coefficients, shown in table II.1, show the impact that each variable has on the probability of not being displaced. To calculate the adjusted probability of layoff for each group in tables 1.9 and 3.1, we performed the following calculations: (1) first, we multiplied the model coefficients by the variable mean for all the variables except race; (2) for the group whose probability is being calculated (for example, African Americans), we multiplied the coefficient by 1 and the other groups' coefficients by 0; (3) we summed all the products just calculated; and (4) we performed the logit transformation.[25] The resulting number is the probability that a worker who is a member of a group (African Americans, in this case) will remain on the job. The probability that a worker in this group will be displaced is 1 minus the probability of remaining on the job.

---

[23]Also using this approach is Henry S. Farber, "The Incidence and Costs of Job Loss: 1982-91," Brookings Papers on Economic Activity: Microeconomics 1993 (Washington, D.C.: 1993), p. 73-132.

[24]Workers who classified themselves as displaced did so in some cases when completing seasonal work or closing self-operated businesses. Others provided no specific reason for displacement.

[25]The logit transformation is

$$probability = \frac{1}{1+e^{-x'\beta}} \quad .$$

X represents a matrix of the independent variables in the model, and $\beta$ represents a vector of the estimated model coefficients. X'$\beta$ is the sum of the variables multiplied by their estimated coefficients, computed in step 3. For a thorough discussion of logit models, see Jan Kmenta, Elements of Econometrics, Second Edition (New York: Macmillan Publishing Company, 1986), pp. 550-53.

**Table II.1: Logit Estimates of Layoff Model**

| Variable | Coefficient | Standard error | Mean |
|---|---|---|---|
| **Year: 1984** | | | |
| Constant | 2.45 | 0.11 | • |
| Age | 0.02 | 0.00 | 37.80 |
| Female | 0.05 | 0.04 | 0.45 |
| High school graduate | 0.08 | 0.05 | 0.62 |
| College graduate | 0.34 | 0.08 | 0.11 |
| Graduate degree | 0.34 | 0.11 | 0.07 |
| African American | −0.17 | 0.06 | 0.08 |
| Other race | 0.16 | 0.11 | 0.03 |
| Hispanic | 0.13 | 0.08 | 0.06 |
| Agricultural | −0.50 | 0.14 | 0.02 |
| Mining | −1.34 | 0.11 | 0.02 |
| Construction | −0.73 | 0.08 | 0.06 |
| Manufacturing | −0.71 | 0.07 | 0.28 |
| Transportation | −0.20 | 0.10 | 0.04 |
| Communications | −1.37 | 0.09 | 0.03 |
| Wholesale | −0.53 | 0.09 | 0.05 |
| Retail | 0.17 | 0.08 | 0.17 |
| Finance | 0.58 | 0.13 | 0.07 |
| Medical | 0.92 | 0.14 | 0.08 |
| Education | 1.18 | 0.32 | 0.02 |
| Executive | −0.07 | 0.09 | 0.11 |
| Professional | 0.09 | 0.11 | 0.09 |
| Technical | −0.04 | 0.13 | 0.03 |
| Sales | −0.24 | 0.09 | 0.12 |
| Clerical | 0.15 | 0.09 | 0.15 |
| Precision production | −0.26 | 0.08 | 0.14 |
| Machine operator | −0.39 | 0.09 | 0.11 |
| Mover | −0.14 | 0.11 | 0.05 |
| Handler | −0.56 | 0.09 | 0.05 |
| Midwest | −0.16 | 0.06 | 0.25 |
| West | −0.38 | 0.06 | 0.24 |
| South | −0.17 | 0.06 | 0.30 |
| **Year: 1986** | | | |
| Constant | 2.69 | 0.12 | • |
| Age | 0.02 | 0.00 | 37.81 |
| Female | 0.00 | 0.05 | 0.46 |

(continued)

| Variable | Coefficient | Standard error | Mean |
|---|---|---|---|
| High school graduate | 0.08 | 0.05 | 0.63 |
| College graduate | 0.30 | 0.09 | 0.12 |
| Graduate degree | 0.16 | 0.11 | 0.07 |
| African American | −0.09 | 0.07 | 0.09 |
| Other race | 0.23 | 0.12 | 0.03 |
| Hispanic | 0.13 | 0.09 | 0.05 |
| Agricultural | −0.54 | 0.15 | 0.02 |
| Mining | −1.21 | 0.12 | 0.02 |
| Construction | −0.64 | 0.09 | 0.06 |
| Manufacturing | −0.61 | 0.07 | 0.27 |
| Transportation | −0.21 | 0.11 | 0.04 |
| Communications | −1.43 | 0.09 | 0.03 |
| Wholesale | −0.46 | 0.10 | 0.05 |
| Retail | 0.35 | 0.09 | 0.17 |
| Finance | 0.58 | 0.13 | 0.07 |
| Medical | 0.95 | 0.15 | 0.08 |
| Education | 1.75 | 0.41 | 0.02 |
| Executive | 0.04 | 0.10 | 0.11 |
| Professional | 0.08 | 0.11 | 0.09 |
| Technical | −0.21 | 0.13 | 0.03 |
| Sales | −0.16 | 0.10 | 0.12 |
| Clerical | 0.44 | 0.10 | 0.16 |
| Precision production | −0.03 | 0.09 | 0.14 |
| Machine operator | −0.42 | 0.09 | 0.11 |
| Mover | −0.07 | 0.12 | 0.04 |
| Handler | −0.41 | 0.10 | 0.05 |
| Midwest | −0.20 | 0.06 | 0.25 |
| West | −0.41 | 0.06 | 0.20 |
| South | −0.19 | 0.06 | 0.30 |
| **Year: 1988** | | | |
| Constant | 3.43 | 0.13 | • |
| Age | 0.01 | 0.00 | 38.09 |
| Female | 0.02 | 0.05 | 0.46 |
| High school graduate | 0.07 | 0.06 | 0.63 |
| College graduate | 0.38 | 0.09 | 0.12 |
| Graduate degree | 0.18 | 0.11 | 0.08 |
| African American | −0.14 | 0.07 | 0.09 |
| Other race | 0.19 | 0.13 | 0.03 |

(continued)

| Variable | Coefficient | Standard error | Mean |
|---|---|---|---|
| Hispanic | 0.12 | 0.09 | 0.06 |
| Agricultural | −0.51 | 0.18 | 0.02 |
| Mining | −1.35 | 0.14 | 0.01 |
| Construction | −1.10 | 0.09 | 0.07 |
| Manufacturing | −0.52 | 0.08 | 0.25 |
| Transportation | −0.38 | 0.11 | 0.04 |
| Communications | −1.46 | 0.10 | 0.02 |
| Wholesale | −0.52 | 0.11 | 0.05 |
| Retail | −0.43 | 0.08 | 0.18 |
| Finance | −0.01 | 0.11 | 0.08 |
| Medical | 0.41 | 0.13 | 0.08 |
| Education | −0.15 | 0.20 | 0.02 |
| Executive | −0.22 | 0.10 | 0.12 |
| Professional | 0.10 | 0.12 | 0.10 |
| Technical | −0.39 | 0.14 | 0.03 |
| Sales | −0.12 | 0.10 | 0.13 |
| Clerical | −0.02 | 0.10 | 0.16 |
| Precision production | −0.26 | 0.10 | 0.13 |
| Machine operator | −0.44 | 0.10 | 0.10 |
| Mover | −0.03 | 0.12 | 0.05 |
| Handler | −0.25 | 0.11 | 0.04 |
| Midwest | −0.42 | 0.07 | 0.25 |
| West | −0.64 | 0.07 | 0.20 |
| South | −0.46 | 0.06 | 0.30 |
| **Year: 1990** | | | |
| Constant | 2.95 | 0.13 | • |
| Age | 0.01 | 0.00 | 38.09 |
| Female | −0.02 | 0.05 | 0.48 |
| High school graduate | 0.02 | 0.06 | 0.63 |
| College graduate | 0.09 | 0.10 | 0.12 |
| Graduate degree | 0.05 | 0.12 | 0.07 |
| African American | 0.00 | 0.08 | 0.09 |
| Indian | 0.11 | 0.26 | 0.01 |
| Asian | 0.74 | 0.19 | 0.03 |
| Other race | −0.15 | 0.39 | 0.00 |
| Hispanic | 0.10 | 0.09 | 0.07 |
| Agricultural | −0.02 | 0.21 | 0.02 |
| Mining | −0.73 | 0.19 | 0.01 |

(continued)

| Variable | Coefficient | Standard error | Mean |
|---|---|---|---|
| Construction | −1.06 | 0.10 | 0.07 |
| Manufacturing | −0.49 | 0.08 | 0.25 |
| Transportation | −0.33 | 0.12 | 0.04 |
| Communications | −1.36 | 0.11 | 0.02 |
| Wholesale | −0.41 | 0.12 | 0.05 |
| Retail | −0.36 | 0.08 | 0.18 |
| Finance | −0.06 | 0.11 | 0.08 |
| Medical | 0.50 | 0.14 | 0.08 |
| Education | −0.10 | 0.19 | 0.02 |
| Executive | 0.09 | 0.10 | 0.12 |
| Professional | 0.46 | 0.13 | 0.10 |
| Technical | 0.15 | 0.15 | 0.03 |
| Sales | 0.17 | 0.10 | 0.12 |
| Clerical | 0.06 | 0.09 | 0.16 |
| Precision production | 0.04 | 0.10 | 0.13 |
| Machine operator | −0.16 | 0.11 | 0.09 |
| Mover | 0.13 | 0.13 | 0.05 |
| Handler | 0.32 | 0.13 | 0.05 |
| Midwest | 0.09 | 0.07 | 0.24 |
| West | −0.16 | 0.07 | 0.21 |
| South | −0.06 | 0.06 | 0.30 |
| **Year: 1992** | | | |
| Constant | 2.34 | 0.10 | • |
| Age | 0.01 | 0.00 | 38.21 |
| Female | 0.12 | 0.04 | 0.48 |
| High school graduate | 0.01 | 0.05 | 0.59 |
| College graduate | 0.07 | 0.07 | 0.15 |
| Graduate degree | −0.10 | 0.10 | 0.05 |
| African American | −0.15 | 0.06 | 0.09 |
| Indian | −0.14 | 0.19 | 0.01 |
| Asian | 0.22 | 0.12 | 0.03 |
| Other race | 0.36 | 0.37 | 0.00 |
| Hispanic | −0.19 | 0.07 | 0.07 |
| Agricultural | −0.01 | 0.18 | 0.01 |
| Mining | −0.82 | 0.16 | 0.01 |
| Construction | −1.15 | 0.08 | 0.06 |
| Manufacturing | −0.38 | 0.06 | 0.23 |
| Transportation | −0.28 | 0.10 | 0.04 |

(continued)

| Variable | Coefficient | Standard error | Mean |
|---|---|---|---|
| Communications | −1.19 | 0.09 | 0.03 |
| Wholesale | −0.43 | 0.10 | 0.04 |
| Retail | −0.22 | 0.07 | 0.19 |
| Finance | −0.10 | 0.09 | 0.08 |
| Medical | 0.99 | 0.12 | 0.09 |
| Education | 0.66 | 0.20 | 0.02 |
| Executive | 0.05 | 0.08 | 0.12 |
| Professional | 0.18 | 0.10 | 0.10 |
| Technical | 0.04 | 0.12 | 0.04 |
| Sales | 0.08 | 0.08 | 0.12 |
| Clerical | 0.02 | 0.08 | 0.17 |
| Precision production | −0.04 | 0.08 | 0.13 |
| Machine operator | −0.34 | 0.09 | 0.09 |
| Mover | 0.20 | 0.11 | 0.05 |
| Handler | −0.09 | 0.10 | 0.05 |
| Midwest | 0.44 | 0.05 | 0.25 |
| West | 0.24 | 0.05 | 0.21 |
| South | 0.26 | 0.05 | 0.29 |

Note: The dependent variable is a dummy variable equal to 1 if an individual is not displaced during 1990-91 and 0 otherwise.

# Bibliography

Addison, John T., and Pedro Portugal. "The Effects of Advance Notification of Plant Closings on Unemployment." Industrial and Labor Relations Review, Vol. 41 (1987), pp. 3-15.

Bound, John, and Richard B. Freeman. "What Went Wrong? The Erosion of Relative Earnings and Employment Among Young Black Men in the 1980s." The Quarterly Journal of Economics, Vol. 107, No. 1 (1992), pp. 201-32.

Carrington, William J. "Wage Losses for Displaced Workers: Is It Really the Firm That Matters?" Journal of Human Resources, Vol. 28, No. 3 (1993), pp. 435-62.

_____ , and Asad Zaman. "Interindustry Variation in the Costs of Job Displacement." Journal of Labor Economics, Vol. 12, No. 2 (1994), pp. 243-275.

Farber, Henry S. "The Incidence and Costs of Job Loss: 1982-91." Brookings Papers on Economic Activity: Microeconomics 1993, Brookings Institute. Washington, D.C.: 1993, pp. 73-132.

Hamermesh, Daniel S. "What Do We Know About Worker Displacement in the U.S.?" Industrial Relations, Vol. 28, No. 1 (1989), pp. 51-59.

_____. "The Costs of Worker Displacement." The Quarterly Journal of Economics, Vol. 102, No. 1 (1987), pp. 51-75.

Howland, Marie, and George Peterson. "Labor Market Conditions and the Reemployment of Displaced Workers." Industrial and Labor Relations Review, Vol. 42, No. 1 (1988), pp. 109-22.

Jacobson, Louis, Robert LaLonde, and Daniel G. Sullivan. "Earnings Losses of Displaced Workers." American Economic Review, Vol. 83, No. 4 (1993), pp. 685-709.

Kletzer, Lori G. "Returns to Seniority after Permanent Job Loss." American Economic Review, Vol. 79, No. 3 (1989), pp. 536-43.

_____. "Earnings after Job Displacement: Job Tenure, Occupation, Industry," In Job Displacement: Consequences and Implications for Policy, ed. John T. Addison. Detroit: Wayne State University Press, 1991.

_____. "Job Displacement, 1979-86: How Blacks Fared Relative to Whites." Monthly Labor Review, No. 7 (1991), pp. 17-25.

Podgursky, Michael, and Paul Swain. "Job Displacement and Earnings Loss: Evidence from the Displaced Worker Survey." Industrial and Labor Relations Review, Vol. 41, No. 1 (1987), pp. 17-29.

Ruhm, Christopher. "Advance Notice, Job Search, and Postdisplacement Earnings." Journal of Labor Economics, Vol. 12, No. 1 (1994), pp. 1-28.

_____. "The Time Profile of Displacement-Induced Changes in Unemployment and Earnings." In Job Displacement: Consequences and Implications for Policy, ed. John T. Addison. Detroit: Wayne State University Press, 1991.

Topel, Robert. "Specific Capital and Unemployment: Measuring the Costs and Consequences of Job Loss." Carnegie-Rochester Conference Series on Public Policy, Vol. 33 (1990), pp. 181-214.

_____, and Michael P. Ward. "Job Mobility and the Careers of Young Men." The Quarterly Journal of Economics, Vol. 107 (1992), pp. 439-79.

## Ordering Information

The first copy of each GAO report and testimony is free.
Additional copies are $2 each. Orders should be sent to the
following address, accompanied by a check or money order
made out to the Superintendent of Documents, when
necessary. Orders for 100 or more copies to be mailed to a
single address are discounted 25 percent.

Orders by mail:

U.S. General Accounting Office
P.O. Box 6015
Gaithersburg, MD 20884-6015

or visit:

Room 1100
700 4th St. NW (corner of 4th and G Sts. NW)
U.S. General Accounting Office
Washington, DC

Orders may also be placed by calling (202) 512-6000
or by using fax number (301) 258-4066.

Each day, GAO issues a list of newly available reports and
testimony. To receive facsimile copies of the daily list or any
list from the past 30 days, please call (301) 258-4097 using a
touchtone phone. A recorded menu will provide information on
how to obtain these lists.

United States
General Accounting Office
Washington, D.C. 20548-0001

Official Business
Penalty for Private Use $300

Address Correction Requested