Are Displaced Workers Now Finished at Age Forty?

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I
N RECENT YEARS, THE MEDIA HAS DEVOTED CONSIDERABLE ATTENTION TO THE EFFECTS OF DOWN-
SIZING AND CORPORATE RESTRUCTURING ON WORKERS, FOCUSING IN PARTICULAR ON THE PLIGHT OF
LAID-OFF MIDDLE-AGED WORKERS. FOR EXAMPLE, A COVER STORY IN *FORTUNE* MAGAZINE DECLARED
THAT DISPLACED WORKERS ARE NOW "FINISHED AT FORTY," WITH GROWING NUMBERS OF LAID-OFF

workers over age forty unable to find jobs that pay as much as their former positions (Munk 1999). Similarly, the business press characterized the downturn in the early 1990s as "much tougher than past ones on older workers" (Labich 1993). A series on corporate downsizing in the *New York Times* (1996) reported that the share of laid-off workers aged 30–50 rose from 44 percent in 1981–83 to 56 percent in 1991–93.

Workers who are permanently involuntarily dismissed from their jobs are called displaced (or downsized) workers.[1] These workers have been the focus of considerable attention from economists as well as the media. Economists have focused particular attention on whether displacement has increased over time in the United States, and whether job security has concomitantly declined. The fraction of workers who are displaced tends to move with the business cycle; however, the displacement rate (the fraction of workers displaced during a given interval) did not fall as much as usual

during the earlier phases of the current expansion, leading to concerns that job security had permanently declined (Valletta 1997b; Aaronson and Sullivan 1998).

The magnitude of displacement is sizable. During 1995–96, about 2.2 million workers were displaced from jobs they had held for three or more years, or about 3 percent of workers with at least three years of tenure (Hipple 1999).

Many displaced workers incur significant costs, including wage losses. Among workers displaced during 1981–95 who found other jobs, real (inflation-adjusted) weekly postdisplacement earnings were 13 percent less than predisplacement earnings (Farber 1997). Several factors underlie these earnings losses. Other employers are unlikely to value job- or employer-specific skills gained on the lost job, so displaced workers are no longer compensated for those skills. In addition, displaced workers lose any seniority-related benefits that accrued with tenure at their previous employer.

Displaced workers also incur the costs of searching for a new job, including a period of nonemployment for many. Of the 2.2 million workers displaced during 1995–96 from jobs they had held for at least three years, only 83 percent were reemployed in February 1998 (Hipple 1999). These economic costs make the displacement rate and the effects of displacement on workers of concern to policymakers.

The probability and costs of displacement are traditionally believed to vary with age because older workers tend to have more firm-specific human capital than do younger workers. The theory of specific human capital posits that a firm and a worker share the cost of a worker acquiring job- or firm-specific skills, skills that raise a worker's productivity at that particular firm but not at other firms (Becker 1975). The firm recoups its investment because the worker is more productive, and over time the worker gains the benefits of his or her investment in specific human capital.[2] Wages then are observed to rise with tenure at the firm.

The acquisition of specific human capital lowers the likelihood that a worker will be displaced because the firm would no longer be able to recoup its investment if the worker is laid off. In addition, the firm would have to pay part of the cost of a new employee gaining the specific skills held by the displaced worker. Firms should therefore be less likely to lay off experienced, older workers who have more specific human capital than less experienced, younger workers (Topel 1991).

Although specific human capital may help protect older workers from displacement, a worker's investment in firm-specific skills raises his or her costs of displacement. Because workers' earnings on the lost job incorporated the value of job- or firm-specific skills that other employers will not value, older and more experienced workers tend to incur higher earnings losses after displacement than do younger and less experienced workers (Valletta 1991). Older displaced workers also tend to experience a longer period of nonemployment before finding another job than do younger displaced workers (Valletta 1991). An increase in the number of older workers who are displaced would raise the social and private costs of displacement, making it important to assess whether the likelihood of displacement has increased over time for older workers.

This article examines whether the likelihood of displacement has risen for older workers relative to younger workers over the 1980s and 1990s. It also examines whether the likelihood that older displaced workers will find another job has declined relative to reemployment trends among younger displaced workers and whether earnings losses among older displaced workers who find other jobs have increased over time relative to losses experienced by their younger counterparts. Data from the 1984–98 Displaced Worker Surveys indicate that displacement rates tend to decline with age.[3] However, relative displacement rates appear to have risen over time for workers in their 40s and 50s. After job loss, older workers tend to have lower reemployment rates and larger earnings losses than do younger workers. The results do not indicate that the costs incurred by older displaced workers have risen significantly over time, except for relative earnings losses for middle-aged managerial and professional workers.

Why Might the Age Profile of Displacement Have Changed?

There are several potential reasons the age distribution of displaced workers and the effects of displacement on workers of different ages may have changed over time. Adoption of new technologies, changes in the age distribution of the labor force, and increased cost-cutting pressures may have led to differential changes across age groups in the likelihood of displacement and in the costs of displacement.

Advances in technology may have shifted the age distribution of displaced workers. As computer use has increased, the specific human capital that traditionally shielded older, more experienced workers from displacement may have become less valuable to employers.[4] As Aaronson and Housinger (1999) discuss, firms may replace older workers with younger workers because older workers may be more expensive to train in new technologies than younger workers; in addition, firms will have a longer time to recoup the costs of training younger workers than older workers. Similarly, postdisplacement outcomes may have worsened over time for older workers if their skills have not kept pace with increases in employers' demand for computer and other technical skills.

Demographics may also have contributed to any changes in the age structure of displacement. The aging of the baby boomers may account for the much-hyped increase in the number of middle-aged

> The conventional wisdom that middle-aged workers face an increased risk of being displaced and increased difficulties after displacement is partially borne out by this analysis.

displaced workers even if the likelihood that a middle-aged individual is displaced has not risen over time. Indeed, Rodriguez and Zavodny (2000) find that almost two-thirds of the shift in the age distribution of displaced workers is due to the aging of the labor force.

The gradual shift from a manufacturing-based to a service-based economy may also be a factor in shifts in the age distribution of displaced workers. Older workers may be more concentrated in declining manufacturing industries than are younger workers. Rodriguez and Zavodny (2000) report that industry shifts have played a small role in changes in the age structure of displacement.

Anecdotal evidence also suggests that cost-cutting pressures have prompted firms to replace older, higher-paid workers with younger workers who earn lower salaries. Labich (1993) declared that "companies have shut their doors to older workers" and quoted a displaced 54-year-old manager who asked why a company would hire him when "they can get someone in their 20s for half the price." Similarly, Munk (1999) quoted a 41-year-old as saying, "For my salary the company could hire two twenty-somethings." The cost savings from hiring a younger worker may outweigh the value of an older worker's years of experience.

Previous research indicates that older workers are less likely to be displaced than are younger workers. Data on involuntary job loss from 1968 to 1992 indicates that the likelihood of involuntary job loss is higher among younger men than among older men with the same educational attainment (Boisjoly, Duncan, and Smeeding 1998). The probability of displacement also declines with age when data on both sexes are used (Farber 1993, 1997).

Although displacement rates decline with age, older workers tend to experience more difficulties after displacement than do younger workers. Data from 1981 to 1995 indicate that displaced workers aged 45–64 are less likely to find another job within a few years after they are displaced than are displaced workers aged 20–24; workers aged 35–44, however, are more likely to be reemployed than are workers aged 20–24 (Farber 1997). In addition, the difference between pre- and postdisplacement earnings among workers who find other jobs increases monotonically with age, indicating that older displaced workers experience larger wage losses than do younger workers (Farber 1997).

Although older workers have always been less likely to be laid off, their probability of displacement may have increased over time. The evidence is mixed.[5] Farber (1993) reports that displacement rates for workers aged 40–59 were significantly higher in 1990–91 than in 1982–83 relative to workers aged 20–24. Using data from the Panel Survey of Income Dynamics, Polsky (1999) finds a sizable increase from 1976–81 to 1986–91 in the probability that a separation was involuntary for men aged 45–54 relative to men aged 25–34, but the effect is significant only at the 10 percent level. Gottschalk and Moffitt (1999) find that the proportion of exits that were involuntary increased significantly over the 1980s and 1990s for older workers; however, the probability of involuntary termination did not rise over time.

Previous studies have found little support for anecdotal claims that the effects of displacement have worsened over time for older workers. Farber (1993) reports that reemployment rates among older displaced workers were unchanged between

1. Workers who are temporarily laid off, quit, or fired for cause are not viewed as displaced workers. Temporarily laid-off workers expect to be recalled to their jobs whereas workers who quit voluntarily leave their jobs. Workers who are fired for cause are not viewed as displaced because the dismissal is due to the workers' poor performance; displaced workers are those who permanently lose their jobs for reasons unrelated to their own performance, such as their firms closing.

2. The costs are shared instead of having either the firm or the worker bear all of the cost. If the firm bears all of the cost, it has no assurance that the worker will not quit before the firm has recouped its investment; the employee has an incentive to stay if the firm raises his or her wage over time. If the worker bears all of the cost, he or she has no assurance that employment with the firm will continue long enough for the worker to recoup the gains from specific skills; the firm has an incentive to keep the worker if the firm has partially paid for specific training.

3. Displaced Worker Surveys are supplements to the Current Population Surveys, which are conducted monthly by the Bureau of Labor Statistics.

4. Krueger (1993) reports that the fraction of workers who use a computer at work declines across the 25–39, 40–54, and 55–65 age groups. Addison, Fox, and Ruhm (1996) and Aaronson and Housinger (1999) find that the likelihood of displacement increases with investment in computer technology. However, Aaronson and Housinger (1999) find little evidence that the relationship between computer investment and displacement varies across age groups.

5. Studies of retention rates have also reached mixed conclusions. Diebold, Neumark, and Polsky (1997) and Neumark, Polsky, and Hansen (1999) report that four-year job retention rates for younger workers relative to older workers declined from 1983–87 to 1987–91 and rose from 1987–91 to 1991–95. (Job retention rates encompass quits as well as involuntary job loss.) Gottschalk and Moffitt (1999) similarly find that the likelihood that a job will end declined over 1981–92, with the largest declines occurring for older workers.

1982–83 and 1990–91 relative to trends among younger displaced workers. Polsky (1999) reports that the probability of reemployment fell for displaced workers aged 35–44 relative to workers aged 25–34 between 1976–81 and 1986–91, but the decline is not statistically significant. Polsky's results also do not indicate that the relative probability of reemployment has changed over time for displaced workers aged 45–54. Neither study examined changes over time in the difference between pre- and postdisplacement earnings across age groups.

Displaced Worker Data

The Displaced Worker Survey supplements to the Current Population Survey are the primary source of data on displaced workers in the United States. The Current Population Survey is a large, nationally representative survey of labor market status and related variables that is conducted monthly. In January of even-numbered years from 1984 to 1992 and February of even-numbered years from 1994 to 1998, the Current Population Survey included a special supplement that asked individuals about displacement. Individuals are included in the Displaced Worker Survey if they answered that they lost or left a job for one of six reasons:

- their plant or company shut down or moved;
- their company had slack or insufficient work;
- their position or shift was abolished;
- a seasonal job was completed;
- a self-operated business failed;
- some other similar reason.

This study focuses on the first three displacement categories, which more closely correspond to most people's idea of displacement.[6] Displacements due to company closure or insufficient work are demand-driven phenomena, reflecting the business cycle, while corporate restructuring is likely to result in positions being abolished.

The Displaced Worker Survey asks workers about characteristics of the lost job, including weekly earnings. The survey also includes questions about individuals' current employment status and weekly earnings in the current job, allowing an examination of postdisplacement outcomes at the time of the survey.

The Displaced Worker Survey has several limitations, including that it records only one job loss per worker. Workers who were displaced more than once during the displacement window are instructed to answer questions for the predisplacement job with the longest tenure. The Displaced Worker Survey therefore leads to an underestimate of the number of displacement incidents during a given period. The data are better regarded as yielding estimates of the fraction of individuals displaced at least once during a given period and of their characteristics relative to workers who report not being displaced than as a count of the total number of displaced workers.

Another limitation of the surveys is a change in the displacement interval. The 1984–92 surveys asked whether individuals were displaced during the previous five years, but the 1994–98 surveys asked about displacement during the previous three years. In the 1984–92 Displaced Worker Surveys, workers who were displaced during the first or second year of the five-year displacement window and then were displaced again during the next three years would report the first displacement episode if they had longer tenure on the first lost job than on the subsequent lost job. As noted above, the result is potential undercounting, in this case for the three years prior to the survey. In the 1994–98 Displaced Worker Surveys, such workers would always report the more recent lost job and be counted as displaced during the previous three years. This study includes only workers who report being displaced within the three years prior to the survey. In the analysis of displacement rates, the change in the Displaced Worker Survey displacement interval is corrected for using the method developed by Farber (1997).[7]

An additional shortcoming of the surveys is a change in the way data were collected for workers with different reasons for displacement. The 1994–98 Displaced Worker Surveys did not follow up with questions about jobs reported lost because of a seasonal job ending, self-employment failing, or other reasons. Workers in those categories were not asked what year they were displaced or their earnings on the lost job, for example. Because of the incomplete information in the surveys, this analysis does not include workers displaced for those three categories of reasons. As Kletzer (1998) and Farber (1997) discuss, the fraction of workers displaced from seasonal jobs or self-employment has remained fairly constant over time; however, workers dis-

> Workers in their 40s are relatively more likely to be displaced in the 1990s than in the 1980s. However, their reemployment and earnings losses have not changed significantly over time relative to younger workers.

placed for other reasons account for an increasing share of displaced workers over time.[8]

This study uses data on individuals aged 20–64 at the time of the survey (not at the time of displacement).[9] Workers over age 64 are not included because retirement decisions may influence their postdisplacement behavior differently than for workers under age 64 and because retirement behavior may have changed over time.[10]

Descriptive Statistics on Displacement

This study evaluates displacement rates across age groups and examines whether older workers are more likely to be displaced than are younger workers. It also examines whether two postdisplacement outcomes, the probability of reemployment and the difference between pre- and postdisplacement earnings, vary across age groups. The analysis focuses on whether the incidence and costs of displacement have changed over time across age groups.

There has been a dramatic shift in the age composition of displacement, as shown in Chart 1. Chart 1 shows kernel density estimates of age-displacement profiles for the 1984, 1990, and 1998 Displaced Worker Surveys. Kernel density estimates are essentially smoothed histograms and provide a useful means of summarizing changes in a distribution over time.[11] These figures display the distribution of displaced workers by age at the time of the surveys; the plot for 1984 in Chart 1, for example, shows the age distribution of workers displaced during the survey period of 1981 to 1983. The fraction of displaced

workers who are middle-aged has clearly risen over time. In the 1984 Displaced Worker Survey, the age of displaced workers is concentrated in the late 20s, whereas the distribution is considerably more evenly spread across ages in the 1998 survey. The chart suggests that much of the "flattening of the hump" occurred in the 1990s.

There are several potential explanations for the shift in the age-displacement profile shown in Chart 1. As discussed above, changes in the age distribution of the labor force may account for the increase in the fraction of displaced workers who are middle-aged. Increased emphasis on computer and other technical skills may have contributed to the shift if older workers' skills are poorer or outdated relative to those of younger workers. The concentration of older workers in declining industries or an increase in cost-cutting pressures also may have contributed to the shift in the age distribution of displaced workers.

Table 1 reports three-year displacement rates for five-year age groups for each Displaced Worker Survey.[12] About 13.6 percent of workers aged 20–24 were displaced during 1981–83, for example, compared with 7.6 percent of workers aged 40–44. Although displacement rates are countercyclical for all age groups, displacement rates are more variable across the business cycle for younger workers than for older workers.

The displacement rates provide some support for the hypothesis that the likelihood of displacement may have risen over time for middle-aged workers relative to younger workers. The recession in the early 1990s appears to have been tougher on

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6. Aaronson and Housinger (1999) discuss the limitations of the Displaced Worker Survey categories of reasons for displacement.

7. Using data from the Panel Survey of Income Dynamics, Farber (1997) calculated that workers displaced in a given year have a 0.3017 percent probability, on average, of being displaced again over the next three years. For workers displaced a year ago, the average probability of being displaced again during the next three years is 0.2705. Workers displaced four and five years ago are assigned these probabilities of being displaced in the three years prior to the survey.

8. Abraham (1997) notes that only 24 percent to 31 percent of workers who said in the 1996 Displaced Worker Survey that they were displaced for "other" reasons should be categorized as displaced, based on follow-up interviews.

9. Approximate age at the time of displacement could be backed out using the year of displacement and the age at the survey, but the age at displacement can only be bracketed within a three-year window.

10. The mean age at withdrawal from the labor force in the United States declined from 62.9 in 1980–85 to 62.2 in 1990–95 for men and from 62.9 to 62.7 for women (Gendell 1998).

11. See Valletta (1997a) for a nontechnical discussion of kernel density estimation or Silverman (1986) for a more technical discussion. The estimates presented here used an Epanechnikov kernel and a bandwidth of 1.4795799, which is the optimal bandwidth for the combined 1984, 1990, and 1998 Displaced Worker Survey samples.

12. The numerator is the number of workers who report being displaced because of plant closure, position abolished, or slack work in the last three years of each survey. As mentioned earlier, Farber's 1997 method is used to correct for the change in the displacement window. The denominator is the number of persons who were employed during that three-year period, based on the Current Population Survey outgoing rotations group data. The Current Population Survey final weights were used to calculate the number of displaced workers and employed persons. Because the Displaced Worker Survey reports age at survey, not age at displacement, the workers in the denominator are "aged"; the denominator for 20–24 year-olds in the 1984 Displaced Worker Survey calculation is the average of the number of 18–22 year-olds employed in 1981, 19–23 year-olds in 1982, and 20–24 year-olds in 1983.

CHART 1
Age Distribution of Displaced Workers, 1984, 1990, and 1998
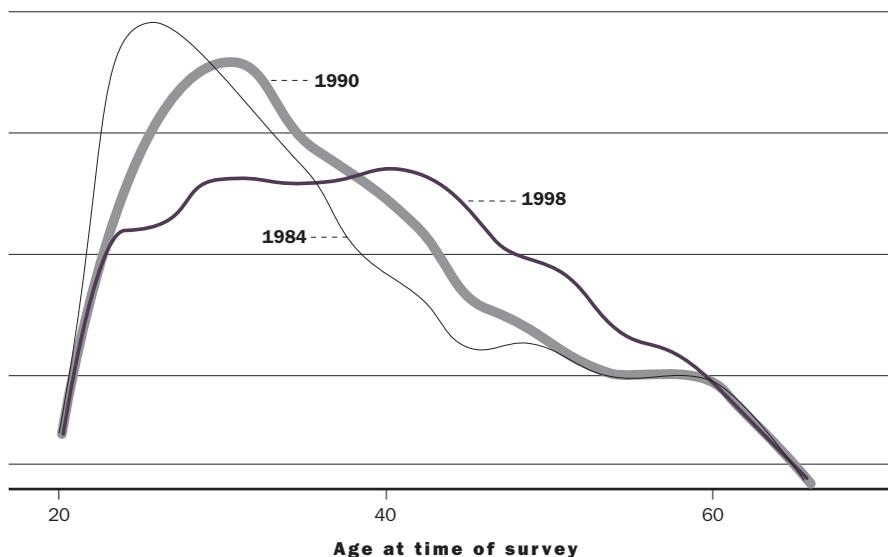
Source: Author's calculations from Displaced Worker Survey data

middle-aged workers than was the recession in the early 1980s. Among workers aged 40–59, displacement rates were higher during 1989–91 than in 1981–83. Among workers aged 20–39, however, displacement rates were lower in 1989–91 than in 1981–83. The displacement rates reported in Table 1 also suggest that the 1990s recovery may have initially been more sluggish for workers in their 40s than younger workers.

Although displacement rates appear to have been relatively high among middle-aged workers during the early and mid-1990s, it is not clear whether middle-aged workers were more likely to be laid off during the most recent period than were younger workers. As Table 1 reports, displacement rates among workers aged 40–54 during 1995–97 were similar to their levels in 1985–87. Workers aged 20–24 were more likely to be displaced in 1995–97 than in 1985–87, while displacement rates were lower in 1995–97 than in 1985–87 for workers aged 25–34. Whether displacement rates remained relatively high for middle-aged workers during the most recent period depends on which comparison group is used.

Among workers who were displaced, reemployment rates differ across age groups. Table 2 reports the fraction of displaced workers who are employed at the time of the survey by five-year age intervals. The fraction of displaced workers who find new jobs is cyclical, with reemployment rates higher during expansions than during recessions. Reemployment rates generally appear to rise with age until age

40–44 and then decline. The decline in reemployment rates among older displaced workers may reflect voluntary withdrawal from the labor force (retirement) or may indicate that displaced workers in their 50s and early 60s have more difficulty finding new jobs than do workers in their 30s and 40s.

Reemployment rates do not appear to have worsened over time for older workers. During the downturn in the early 1990s, reemployment rates for displaced workers in their 40s were higher than during the 1980s recession; about 64 percent of displaced workers aged 40–44 were reemployed at the time of the 1992 Displaced Worker Survey, for example, compared with 59 percent in the 1984 survey. Reemployment rates for workers in their 20s, in contrast, were lower in 1989–91 than in 1981–83, and they were about even for workers in their 30s. Displacement rates during the economic recovery in the 1990s are higher than in the 1980s for all age groups. The rates reported in Table 2 thus do not indicate that reemployment rates have declined among displaced workers in their 40s and 50s relative to displaced workers in their 20s and 30s, as suggested by the media.

The descriptive statistics on reemployment also are not consistent with the popular perception that older downsized workers have been increasingly forced into involuntary retirement over time. If older displaced workers want to find new jobs but are not able to do so, they may withdraw from the labor force before their preferred retirement age. However, the reemployment rates in Table 2 do not

TABLE 1	Three-Year Displacement Rates, by Age							
Age	1981–83	1983–85	1985–87	1987–89	1989–91	1991–93	1993–95	1995–97
20–24	.136	.099	.080	.070	.111	.102	.104	.087
25–29	.132	.100	.090	.077	.106	.104	.101	.076
30–34	.112	.095	.083	.074	.093	.095	.082	.071
35–39	.092	.083	.070	.064	.088	.086	.085	.066
40–44	.076	.067	.066	.058	.080	.086	.076	.066
45–49	.075	.065	.063	.051	.079	.074	.079	.061
50–54	.066	.063	.057	.047	.075	.078	.062	.060
55–59	.067	.061	.054	.048	.071	.075	.062	.065
60–64	.070	.058	.055	.053	.064	.072	.058	.053
All	.099	.082	.073	.063	.088	.088	.082	.068

Note: Shown is the ratio of workers displaced during the three years prior to the Displaced Worker Survey because of plant closure, position abolished, or slack work to the average number of workers in that age group employed during that three-year period.

TABLE 2	Reemployment Rates of Displaced Workers, by Age							
Age	1981–83	1983–85	1985–87	1987–89	1989–91	1991–93	1993–95	1995–97
20–24	.602	.632	.674	.689	.561	.627	.691	.722
25–29	.657	.668	.736	.724	.636	.675	.743	.793
30–34	.627	.680	.702	.756	.630	.744	.757	.814
35–39	.630	.690	.686	.737	.634	.704	.724	.786
40–44	.592	.660	.741	.749	.643	.713	.747	.820
45–49	.561	.642	.660	.673	.649	.693	.754	.786
50–54	.519	.561	.625	.673	.517	.609	.657	.743
55–59	.377	.519	.583	.563	.541	.598	.573	.668
60–64	.302	.376	.417	.504	.389	.408	.458	.477
All	.589	.639	.682	.706	.604	.672	.715	.767

Note: Data include only workers displaced during the three years prior to the Displaced Worker Survey because of plant closure, position abolished, or slack work. Observations are weighted using the Current Population Survey final weights. Each column is estimated from a separate Displaced Worker Survey.

suggest an increased trend toward involuntary retirement among older displaced workers.[13]

Table 3 shows the average percentage difference between pre- and postdisplacement real weekly earnings for displaced workers who were employed at the time of the survey.[14] Almost all age groups incurred wage losses after displacement in each survey. Wage losses show a cyclical pattern, with the difference between pre- and postdisplacement earnings rising during recessions and shrinking during expansions. The average weekly earnings loss after displacement, given reemployment, tends to increase with age, perhaps indicating that older dis-

placed workers have more difficulty earning as much per hour in their new jobs than do younger workers or reflecting a relative decline in hours worked per week among older displaced workers.

The sample means reported in Table 3 provide little evidence that wage losses increased over time for older displaced workers relative to younger workers. The youngest displaced workers, those aged 20–24, experienced earnings losses during recessions and the early stages of economic recoveries but actually experienced earnings increases after displacement in the later phases of the 1980s and 1990s expansions. Workers aged 25–29 who

13. The Displaced Worker Survey data are not ideal for examining whether workers have been forced or pressured into retiring from their jobs before their preferred age of retirement. If such workers view themselves as involuntarily displaced, they would presumably be included in the survey. However, such workers may not view themselves as displaced if they received an early retirement compensation or incentive package from their employers.

14. The wages are deflated using the consumer price index (CPI) for urban workers. The wage at the time of the survey is deflated using the CPI for the survey month, and the predisplacement wage is deflated using the CPI annual average for the year of displacement.

Age	1981–83	1983–85	1985–87	1987–89	1989–91	1991–93	1993–95	1995–97
20–24	–.062	–.005	.044	.048	–.097	–.069	.045	.144
25–29	–.128	–.090	–.047	–.082	–.125	–.060	.022	–.001
30–34	–.106	–.119	–.112	–.108	–.106	–.096	–.071	–.039
35–39	–.143	–.133	–.147	–.085	–.234	–.166	–.144	–.124
40–44	–.186	–.180	–.152	–.131	–.235	–.244	–.181	–.081
45–49	–.243	–.145	–.119	–.108	–.208	–.235	–.197	–.084
50–54	–.274	–.304	–.328	–.308	–.203	–.169	–.189	–.103
55–59	–.290	–.404	–.320	–.288	–.264	–.443	–.275	–.164
60–64	–.587	–.374	–.627	–.187	–.409	–.576	–.357	–.340
All	–.146	–.128	–.116	–.099	–.173	–.161	–.104	–.056

Note: Shown are the mean values of the natural log of real postdisplacement earnings minus the natural log of real predisplacement earnings for each age group. Data include only workers displaced during the three years prior to the Displaced Worker Survey because of plant closure, position abolished, or slack work who are reemployed at the time of the survey. Observations are weighted using the Current Population Survey final weights. Each column is estimated from a separate Displaced Worker Survey.

were displaced in 1993–95 or 1995–97 also do not appear to experience earnings losses. Although displaced workers aged 30 and older continue to experience a decline in earnings after displacement, the magnitude of the average loss is smaller for age 30-plus workers displaced in the mid-1990s than for those displaced in the mid-1980s.

The descriptive statistics suggest that the likelihood of displacement may have risen over time for middle-aged workers, relative to younger workers, particularly during the 1990s recession. The sample means do not suggest that postdisplacement outcomes have worsened for older workers relative to younger workers. However, other factors that affect postdisplacement outcomes, such as tenure or education, may have changed differently across age groups and may mask a change in postdisplacement outcomes across age groups. The next section uses a multivariate framework to examine differences across age groups in the probability of displacement and in postdisplacement outcomes.

Regression Analysis Methods

The likelihood that a worker is displaced because of plant closure, position abolished, or slack work is estimated using probit regressions.[15] The dependent variable is one if a worker reports being displaced during the three years prior to the survey and zero otherwise, and a separate regression is estimated for each Displaced Worker Survey.[16] The probability that a displaced worker is reemployed at the time of the survey is similarly estimated using a separate probit regression for each survey year, where the dependent variable is one if a displaced worker has found a new job and zero otherwise. The ordinary least squares (OLS) regression method is used to estimate the

determinants of the percentage difference between pre- and postdisplacement earnings among workers who are reemployed.

This study focuses on the effect of age, which is measured using five-year age intervals. If the probability of displacement has risen over time for older workers, the estimated relationship between the likelihood of displacement and the age indicator variables should increase over time for older workers relative to younger workers. Similarly, the estimated relationship between the probability of reemployment or earnings losses and the age indicator variables should decline over time for older workers relative to younger workers if the consequences of displacement have worsened over time for older workers. The 20–24 age group is omitted in the regressions for identification, so the estimated coefficients on the other age variables are relative to workers aged 20–24.

The regressions include other variables that are likely to affect postdisplacement outcomes and may vary over time within age groups. For example, the likelihood of displacement may decrease with education, and the probability of reemployment may increase with education. If the educational composition of workers within five-year age groups has changed over time, the coefficients on the age variables might reflect changes in education if the regressions do not control for education. The regressions include indicator variables for three of four educational categories as well as female, nonwhite, and married indicator variables.[17]

The postdisplacement outcomes regressions also control for reason for displacement and years since displacement. Reason for displacement may affect the likelihood of reemployment because plant closure or slack work may indicate an industry down-

turn, which affects the likelihood of finding another job in the same industry. Earnings losses tend to be larger if a displaced worker switches industries (Jacobson, Lalonde, and Sullivan 1993), which may be more likely if the reason for displacement is plant closure or slack work. The longer the period since displacement, the more time workers have had to find another job and to receive raises on a new job.

The postdisplacement outcomes regressions also control for years worked at the predisplacement job (tenure) because job security may have changed over time. The earnings losses experienced by displaced workers tend to increase with the level of tenure on the predisplacement job (Topel 1991; Farber 1993). If tenure levels have fallen over time among older workers who are displaced, earnings losses among older displaced workers may fall over time because of changes in tenure, not because of changes in earnings losses directly due to age.[18] In addition, the relationship between tenure and wages may have weakened over time. Older workers tend to have higher tenure levels than younger workers, a tendency that partially underlies the age-earnings gap. If the relationship between tenure and wages has weakened over time, older workers may not be earning as much in predisplacement jobs relative to younger workers. The observed age gap in earnings losses would then narrow over time if tenure is not controlled for in the regressions. Tenure at the lost job is measured using a linear variable.[19]

For the displacement and reemployment probit regressions, the marginal coefficients, evaluated at the sample means, are presented for ease of interpretation. For the age-group indicator variables, the coefficients indicate the estimated change in the probability of reemployment if the indicator variable changes from zero to one. Observations are weighted using the Current Population Survey final weights.

Results

The likelihood that a worker is displaced generally declined with age in the 1980s. As Table 4 shows, the probability that a worker aged 40–44 was displaced in 1981–83 was 3.5 percent lower than the probability for a 20–24 year-old. Among workers aged 45–54, the relative probability of displacement was 4.4 percent lower than for workers aged 20–24. The negative relationship between displacement and age holds through the period 1989–91; however, the coefficients generally become less negative through the 1980s, suggesting that the relative probability of displacement increased for middle-aged workers during the 1980s.

The negative relationship between the probability of displacement and age is less evident in the 1990s. During the 1991–93 period, workers aged 35–44 were more likely to be displaced than workers aged 20–24, in sharp contrast to the previous period. In another change from previous trends, workers above age 44 were as likely to be displaced as workers aged 20–24 during 1991–93. During 1993–97, middle-aged workers did not regain the relatively protected status they enjoyed during the 1980s; workers aged 35–49 remained as likely to be laid off as workers aged 20–24. These results indicate that the likelihood of displacement has increased for older workers relative to workers aged 20–24.

In results not reported in Table 4, women are significantly less likely to be displaced than are men, but the relationship weakens over time. There is no

> **The data presented in this article suggest that much of the concern about displacement may soon begin to abate. Displacement rates during 1995–97 returned to levels similar to those during the 1980s expansion.**

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15. A regression gives the mathematical relationship between a dependent variable and a set of independent variables. A probit regression has a dependent variable that equals zero or one.

16. The displacement sample includes individuals who were displaced in the three years prior to the Displaced Worker Survey because of plant closure, position abolished, or slack work and nondisplaced individuals who are employed at the time of the survey. As in Farber (1997), the weights of individuals who were displaced four or five years ago are adjusted to reflect the probability of being displaced in the three years prior to the survey.

17. There are four educational categories: less than high school diploma, high school diploma only, some college, and college degree or higher.

18. The evidence on changes in tenure over time is mixed, with some studies suggesting a small decline in tenure (Aaronson and Sullivan 1998; Marcotte 1999; Neumark, Polsky, and Hansen 1999).

19. The tenure question changes slightly across the Displaced Worker Surveys. In 1984–92, the survey asks, "How many years had [the displaced worker] worked continuously there when that job ended?" The 1994 survey asks, "How many years had you worked for that employer when you lost that job?" The 1996–98 surveys ask, "How long had you worked for [that employer] when that job ended?" and displaced workers were asked to specify the periodicity (days/weeks/months/years) of their answer. The 1996–98 answers were converted into years for this analysis.

TABLE 4
Regression Estimates of Probability of Displacement, by Age

Covariate	1981–83	1983–85	1985–87	1987–89	1989–91	1991–93	1993–95	1995–97
Age 25–29	.008*	.008*	.015**	.013**	.007	.019**	.009*	.005
	(.004)	(.004)	(.004)	(.004)	(.004)	(.005)	(.005)	(.004)
Age 30–34	–.002	.007	.011**	.012**	–.005	.017**	–.001	.005
	(.004)	(.004)	(.004)	(.004)	(.004)	(.005)	(.004)	(.004)
Age 35–39	–.019**	–.003	.001	.005	–.009*	.010*	.001	.001
	(.004)	(.004)	(.001)	(.004)	(.004)	(.005)	(.004)	(.004)
Age 40–44	–.035**	–.017**	–.002	–.001	–.012**	.012**	–.005	–.001
	(.003)	(.004)	(.004)	(.004)	(.004)	(.005)	(.004)	(.004)
Age 45–49	–.038**	–.021**	–.009*	–.009*	–.017**	.001	–.003	–.004
	(.004)	(.004)	(.004)	(.004)	(.004)	(.005)	(.005)	(.004)
Age 50–54	–.044**	–.023**	–.014**	–.013**	–.020**	.004	–.016**	–.005
	(.003)	(.004)	(.004)	(.004)	(.004)	(.005)	(.005)	(.004)
Age 55–59	–.044**	–.025**	–.016**	–.012**	–.024**	.004	–.016**	–.001
	(.004)	(.004)	(.004)	(.004)	(.005)	(.005)	(.005)	(.005)
Age 60–64	–.037**	–.023**	–.013**	–.005	–.027**	.010	–.018**	–.009
	(.002)	(.004)	(.005)	(.005)	(.005)	(.007)	(.006)	(.006)
N	65,153	66,023	65,697	66,606	65,716	63,958	54,898	56,247

* significant at the .05 level
** significant at the .01 level

Note: Shown are the marginal probit coefficients evaluated at the sample means. The dependent variable is one if a worker reports being displaced in the three years prior to the survey because of plant closure, position abolished, or slack work and zero otherwise. Other variables in the regressions are indicator variables for female, nonwhite, married, and three of four educational categories (less than high school, some college, college graduate). The omitted age category is 20–24, so the other age groups are relative to workers aged 20–24. Observations are weighted using the Current Population Survey final weights. Each column is from a separate regression.

TABLE 5
Regression Estimates of Probability of Reemployment after Displacement, by Age

Covariate	1981–83	1983–85	1985–87	1987–89	1989–91	1991–93	1993–95	1995–97
Age 25–29	.015	–.006	.037	.003	.046	.018	.023	.057*
	(.022)	(.026)	(.026)	(.028)	(.025)	(.026)	(.028)	(.025)
Age 30–34	–.017	–.003	–.015	.040	.035	.077**	.018	.061*
	(.024)	(.027)	(.028)	(.028)	(.026)	(.025)	(.029)	(.026)
Age 35–39	–.014	.013	–.055	.014	.029	.016	–.022	.027
	(.027)	(.028)	(.031)	(.030)	(.027)	(.028)	(.030)	(.028)
Age 40–44	–.037	–.009	–.005	.032	.029	.005	–.011	.061*
	(.031)	(.033)	(.032)	(.031)	(.029)	(.029)	(.032)	(.026)
Age 45–49	–.040	–.008	–.080*	–.032	.049	–.007	.001	.028
	(.034)	(.036)	(.037)	(.038)	(.031)	(.032)	(.031)	(.030)
Age 50–54	–.106**	–.078*	–.128**	–.029	–.088*	–.078*	–.118**	–.002
	(.036)	(.040)	(.042)	(.043)	(.037)	(.036)	(.041)	(.034)
Age 55–59	–.237**	–.099*	–.164**	–.102*	–.066	–.106**	–.217**	–.098*
	(.037)	(.043)	(.047)	(.048)	(.041)	(.041)	(.049)	(.043)
Age 60–64	–.339**	–.273**	–.376**	–.181**	–.222**	–.301**	–.313**	–.294**
	(.037)	(.048)	(.048)	(.054)	(.047)	(.047)	(.056)	(.060)
N	5,251	4,175	3,833	3,342	4,905	4,565	3,667	3,178

* significant at the .05 level
** significant at the .01 level

Note: Shown are the marginal probit coefficients evaluated at the sample means. The dependent variable is one if a displaced worker is reemployed at the time of the survey and zero otherwise. Other variables in the regressions are indicator variables for female, nonwhite, married, three of four educational categories (less than high school, some college, college graduate), years since displacement (two or three), reason for displacement (plant closed or slack work), and a linear variable for tenure on the predisplacement job. The omitted age category is age 20–24. Observations are weighted using the Current Population Survey final weights. Each column is from a separate regression.

Covariate	1981–83	1983–85	1985–87	1987–89	1989–91	1991–93	1993–95	1995–97
Age 25–29	–.094* (.041)	–.108** (.039)	–.076 (.040)	–.147** (.046)	–.031 (.042)	.013 (.058)	–.005 (.050)	–.119 (.064)
Age 30–34	–.072 (.045)	–.141** (.042)	–.140** (.042)	–.159** (.047)	–.017 (.044)	–.009 (.057)	–.096 (.051)	–.126* (.063)
Age 35–39	–.098* (.049)	–.151** (.044)	–.155** (.046)	–.127* (.050)	–.125** (.045)	–.063 (.060)	–.142** (.052)	–.176** (.064)
Age 40–44	–.119* (.058)	–.176** (.051)	–.147** (.049)	–.156** (.053)	–.109* (.048)	–.118 (.063)	–.155** (.055)	–.129* (.064)
Age 45–49	–.151* (.063)	–.126* (.057)	–.088 (.054)	–.139* (.064)	–.073 (.052)	–.093 (.068)	–.159** (.055)	–.105 (.069)
Age 50–54	–.136 (.076)	–.253** (.065)	–.262** (.062)	–.301** (.069)	–.043 (.061)	–.007* (.077)	–.151* (.066)	–.071 (.076)
Age 55–59	–.129 (.084)	–.312** (.071)	–.241** (.070)	–.267** (.081)	–.083 (.067)	–.223* (.090)	–.189* (.080)	–.139* (.087)
Age 60–64	–.421** (.099)	–.313** (.092)	–.528** (.090)	–.172 (.095)	–.255** (.094)	–.448** (.123)	–.305** (.104)	–.274* (.120)
N	1,948	2,212	2,197	1,917	2,397	2,065	2,205	2,058

* significant at the .05 level
** significant at the .01 level

Note: The dependent variable is the natural log of real postdisplacement earnings minus the natural log of real predisplacement earnings. Other variables in the regressions are indicator variables for female, nonwhite, married, three of four educational categories (less than high school, some college, college graduate), years since displacement (two or three), reason for displacement (plant closed or slack work), and a linear variable for tenure on the predisplacement job. The omitted age category is age 20–24. Observations are weighted using the Current Population Survey final weights. Each column is from a separate regression.

clear relationship between race and the probability of displacement, and married individuals are less likely to be displaced than are unmarried workers. The likelihood of displacement declines monotonically with educational attainment.

Table 5 presents the reemployment probit regression results. Displaced workers aged 50 and older are significantly less likely to find new jobs than are workers aged 20–24 in most of the Displaced Worker Surveys. Workers aged 50–54 who were displaced in 1981–83, for example, are 10.6 percent less likely to have been reemployed at the time of the survey than workers aged 20–24. In general, workers in their 30s and 40s are as likely to find other jobs as are workers aged 20–24. In results not shown in Table 5, women are less likely to find new jobs than are men, and nonwhites are less likely to be reemployed than are whites. Reemployment probabilities increase with education and with time elapsed since displacement. In most survey years, workers who were displaced because of slack work are significantly less likely to find new jobs than workers displaced because their jobs were abolished.

The results do not indicate that the relative probability of finding other jobs has deteriorated over time for older displaced workers. The estimated coefficients do not become significantly more negative over

time for any age group; indeed, relative reemployment probabilities generally appear higher for workers displaced in 1995–97 than for workers of the same age displaced in the 1980s. These results provide little evidence for the hypothesis that displaced workers over age 40 face increased difficulties finding new jobs. Instead, they suggest that the likelihood of reemployment among older workers may be more sensitive to the business cycle than it is among younger workers. As the economy boomed during the mid-1990s, older displaced workers appear to have had relatively little difficulty finding new jobs.

Table 6 shows the results of the OLS regressions for the percentage change in real weekly earnings among displaced workers who are reemployed at the time of the survey. The first entry in column 1, for example, indicates that earnings losses of workers aged 25–29 who were displaced in 1981–83 are 9.4 percent larger than the earnings losses among workers aged 20–24. Earnings losses generally increase with age, although the relationship is not monotonic. In results not reported in the table, earnings losses decrease with educational attainment, and earnings losses increase by 1.1 to 1.9 percent for each year of tenure on the lost job.

Older displaced workers who find new jobs do not appear to experience larger earnings losses in

the 1990s than in the 1980s relative to the youngest displaced workers. Earnings losses for middle-aged workers displaced in 1993–95 appear higher than in the surrounding periods, but the differences are not significant. These results do not indicate that relative earnings losses have risen over time for middle-aged workers.

Middle-Aged Managers

Middle-aged managers and professionals have been the focus of many media reports about corporate downsizing. The *New York Times* noted in 1996, for example, "Increasingly the jobs that are disappearing are those of higher-paid, white-collar workers, many at large corporations, women as well as men, many at the peak of their careers." Farber (1997) reports that rates of job loss among managers rose substantially over 1987–89 to 1991–93 but then fell during 1993–95.

Chart 2 displays displacement rates for private-sector middle-aged managerial and professional workers, blue collar workers, and all workers aged 40–54. Displacement rates of managerial and professional workers are considerably lower than displacement rates for blue-collar workers, but the difference is not constant over time. As Farber (1997) notes, the 1990s recession was more evenly spread across occupations than the 1980s recession, which was concentrated among blue-collar workers.

During the 1990s, displacement rates among blue-collar workers have declined more than have displacement rates among managerial workers.

Reemployment rates do not appear to have worsened over time for managerial and professional workers who are displaced relative to other workers. As Chart 3 indicates, reemployment rates have risen during the 1990s for all workers aged 40–54, and the trends are similar for blue-collar and managerial and professional workers.

Earnings losses appear to have worsened over time for managerial and professional workers who are displaced and find other jobs. As Chart 4 shows, until 1989–91, middle-aged managerial and professional workers experienced smaller-than-average wage losses. Beginning with the 1992 Displaced Worker Survey, managerial and professional workers experienced larger wage losses than the average middle-aged worker and than the average blue-collar middle-aged worker. Earnings losses among managerial and professional workers appear to have rebounded particularly slowly during the early phases of the 1990s recovery in comparison with blue-collar workers.

Conclusion

Displacement and corporate downsizing have received considerable attention from the media in recent years. The conventional

CHART 2
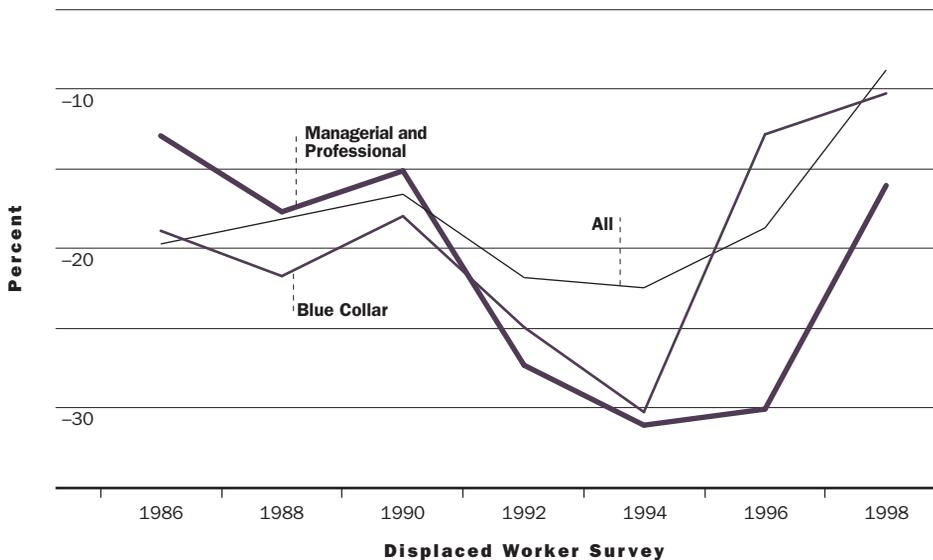## Displacement Rates, Workers Aged 40–54, by Occupation
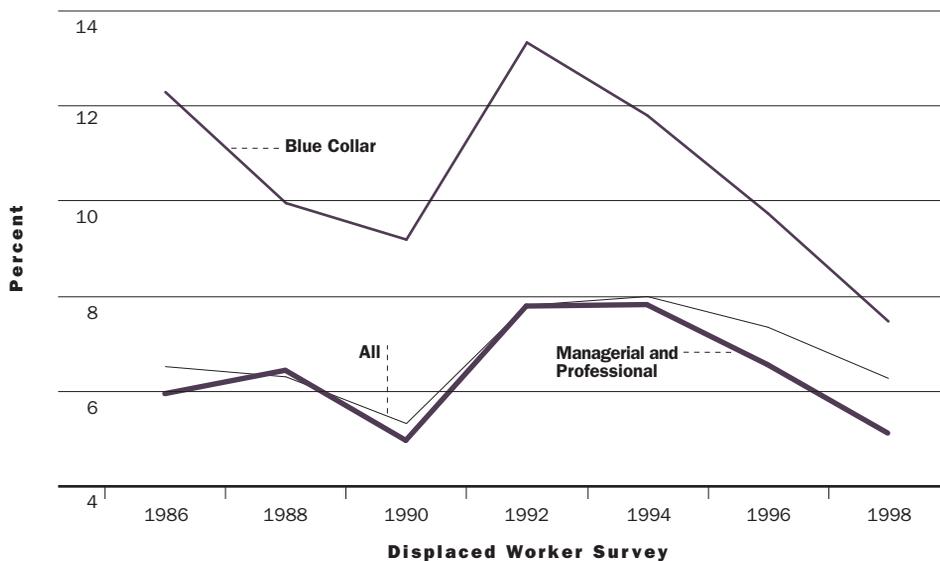
Note: Shown is the ratio of workers aged 40–54 at the time of the survey who were displaced during the three years prior to the Displaced Worker Survey because of plant closure, position abolished, or slack work to the average number of workers in that age and occupation group employed during the three-year period.
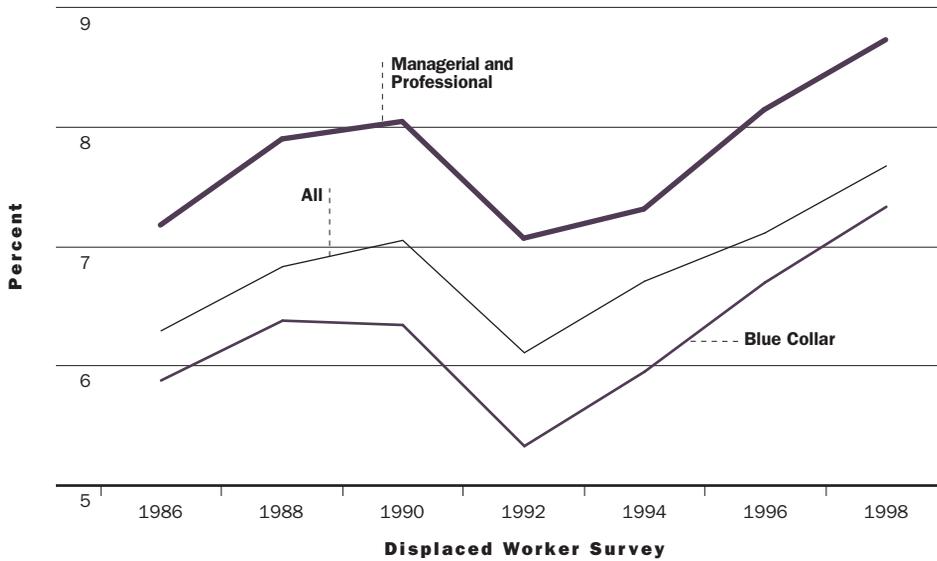
Note: Shown is the percent of workers aged 40–54 at the time of the survey who were displaced during the three years prior to the Displaced Worker Survey because of plant closure, position abolished, or slack work and were reemployed at the time of the survey.

Note: Shown is the average percentage difference between real weekly earnings at the predisplacement job and the postdisplacement job for workers aged 40–54 at the time of the survey who were displaced during the three years prior to the Displaced Worker Survey because of plant closure, position abolished, or slack work and were reemployed at the time of the survey.

wisdom that middle-aged workers face an increased risk of being displaced and increased difficulties after displacement is partially borne out by this analysis. Displacement rates among middle-aged workers rose relative to younger workers during the 1990s recession, and the relative likelihood of displacement for middle-aged workers has not returned to the levels of the 1980s. Thus, workers in their 40s are relatively more likely to be displaced in the 1990s than they were in the 1980s. However, the two postdisplacement outcomes examined here, reemployment and earnings losses, have not changed significantly over time for older workers relative to younger workers. Middle-aged managerial and professional workers do not appear to face increased risks of displacement relative to middle-aged blue-collar workers, but their relative earnings losses following displacement and reemployment appear to have worsened over time.

Future research should examine why the relative likelihood of displacement has increased over time for older workers and why relative earnings losses and the probability of reemployment have worsened over time for middle-aged managers. One potential explanation is increased use of technology in the workplace, which might create a relative disadvantage for older workers if technological change has rendered their human capital obsolete.

The data presented in this article also suggest that much of the concern about displacement may soon begin to abate. Displacement rates during 1995–97, the most recent period for which data are available, returned to levels similar to those during the 1980s expansion. Reemployment rates for workers displaced during 1995–97 were at their highest levels for all age groups since the Displaced Worker Survey began in 1984, and the gap between pre- and postdisplacement earnings has shrunk during the most recent period.

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