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Have Employment Patterns of Older Displaced Workers Improved Since the Late 1970s?

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Abstract

In this paper, we document the post-displacement employment patterns observed between 1979 and 2004 for displaced workers aged 50 to 54. We uncover four key patterns. First, we detect no upward trend in the re-employment rates of male displaced workers in the aggregate, in manufacturing or outside manufacturing. Second, we show that re-employment rates of displaced women generally increased over time. Third, we find substantial evidence that median and average earnings losses of males displaced from manufacturing in recent years (i.e. between 2000 and 2004) were higher than those of comparable cohorts displaced during the 1980s. Part of this increase is related to the lower re-employment rates observed in recent years for males displaced from manufacturing. These lower re-employment rates suggest that, following displacement, aggregate working hours likely fell for males displaced from manufacturing. Finally, we show that median and average earnings losses of women displaced from non-manufacturing firms fell over time.

Keywords: Layoffs; Job Losses; Employment; Worker Displacement; Earnings Losses; Labour Supply.

Executive summary

Over the next few years, a substantial number of baby boomers will approach retirement. This trend is expected to reduce the percentage of individuals aged 15 to 64 in the total population, thereby inducing downward pressures on the growth of aggregate labour supply, with potentially adverse consequences for potential output growth (Barnett, 2007). This demographic shock has received a lot of attention in recent years and, as exemplified by OECD (2006), has led to an intense search of ways to increase the labour supply of various demographic groups.

Every year, job displacement affects several thousands of Canadian workers aged 50 and over. After being laid-off, many of these older displaced workers may permanently leave the labour force or experience substantial spells of non-employment if they have difficulty finding a new job. Hence, these individuals represent a potentially important source of labour supply. In light of the demographic pressures outlined above, an important question is whether their post-displacement employment patterns have improved over the past decades.

There are several reasons why post-displacement employment patterns of older workers might have improved since the late 1970s. First, older workers (like their younger counterparts) have increased substantially their educational attainment over the past few decades. Census data shows that in 1980, only 7.8% of paid workers aged 50 to 54 had a university degree. Twenty-five years later, that proportion had almost tripled to 21.4%. Since highly educated workers have higher re-employment rates than their less educated counterparts after job loss (Kletzer, 1998), one would expect this increase in educational attainment to better the employment prospects of older displaced workers.

Second, as long as many of them are in jobs that are physically less demanding than those held by their counterparts in the late 1970s, recent cohorts of workers aged 50 and over might be healthier than their counterparts were 25 years ago. If so, their ability to remain active following job loss might have increased over time.

Finally, the labour market participation of women married to older workers rose substantially over the last two decades. In 1980, 52.6% of women married to (or living in common-law relationships with) men aged 50 to 54 had positive wages and salaries, compared to 76.1% in 2005. If spouses coordinate the timing of their retirement, this growing labour market involvement of women may provide older displaced males an additional incentive to stay in the labour market for some additional time.

Other factors may have tended to reduce the employment rates of older displaced workers, however. Following the introduction of computer-based technologies in the 1980s and the 1990s, some skills might have become less portable across industries, thereby leading some displaced workers (especially the older ones) to face greater problems finding a new job now than their counterparts did in the past. Second, recent cohorts of older workers have generally accumulated more wealth than their counterparts did in the early 1980s (Morissette and Zhang, 2006) and thus, might be more prone to retire following job loss. Furthermore, the growing labour market participation of wives might also allow some older displaced male workers to retire as the financial impact of their job loss can now be cushioned, at least to some extent, by their spouse.

Hence, whether post-displacement employment patterns of older displaced workers have improved over the last two decades is an empirical question. The goal of this paper is to answer this question for displaced workers aged 50 to 54.

Our main findings are the following. First, we detect no upward trend in the re-employment rates of male displaced workers in the aggregate, in manufacturing or outside manufacturing. This absence of improvement in the re-employment rates of male displaced workers took place in a period where the educational attainment of male workers rose substantially. Since highly educated workers have higher re-employment rates than their less educated counterparts after job loss (Kletzer, 1998), this suggests that re-employment rates of displaced men might have fallen *within some educational groups*.

Second, we show that re-employment rates of displaced women generally increased over time. While this finding might result both from changes in labour demand and labour supply, a substantial portion is likely driven by the growing attachment of women to the labour force as well as increases in their educational attainment.

Third, we find substantial evidence that median and average earnings losses of males displaced from manufacturing in recent years (i.e. between 2000 and 2004) were higher than those of comparable cohorts displaced during the 1980s. Part of this increase is related to the lower re-employment rates observed in recent years for males displaced from manufacturing. Since the data used in this study contain no information on individuals' labour force status, we cannot distinguish whether the lower re-employment rates are due to higher unemployment, higher levels of inactivity or a greater propensity of older displaced workers to retire following job loss. Nevertheless, these lower re-employment rates suggest that, following displacement, aggregate working hours likely fell for males displaced from manufacturing.

Finally, we show that median and average earnings losses of women displaced from non-manufacturing firms fell over time.

Our findings should be interpreted with considerable caution. Specifically, the high sensitivity of earnings losses and re-employment rates to the business cycle makes inferences about "structural changes" in employment patterns of older displaced workers a very difficult exercise. We refrain from conducting such exercise and simply compare the employment patterns of recent cohorts to those of previous cohorts who faced roughly comparable labour market conditions. Furthermore, our analyses focus on a very narrow sample of displaced workers, those aged 50 to 54. Different qualitative patterns might have been observed over the past two decades for younger displaced workers. The question of whether or not this is the case should be investigated in future research.

I. Introduction

Over the next few years, a substantial number of baby boomers will approach retirement. This trend is expected to reduce the percentage of individuals aged 15 to 64 in the total population, thereby inducing downward pressures on the growth of aggregate labour supply, with potentially adverse consequences for potential output growth (Barnett, 2007). This demographic shock has received a lot of attention in recent years and, as exemplified by OECD (2006), has led to an intense search of ways to increase the labour supply of various demographic groups.

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Other factors may have tended to reduce the employment rates of older displaced workers, however. Following the introduction of computer-based technologies in the 1980s and the 1990s, some skills might have become less portable across industries, thereby leading some displaced workers (especially the older ones) to face greater problems finding a new job now than their counterparts did in the past. Second, recent cohorts of older workers have generally accumulated more wealth than their counterparts did in the early 1980s (Morissette and Zhang, 2006) and thus, might be more prone to retire following job loss. Furthermore, the growing labour market participation of wives might also allow some older displaced male workers to retire as the financial impact of their job loss can now be cushioned, at least to some extent, by their spouse.

Hence, whether post-displacement employment patterns of older displaced workers have improved over the last two decades is an empirical question. The goal of this paper is to answer this question.

To do so, we use the Longitudinal Worker File constructed by Statistics Canada. Using data that covers the period 1979-2004, we document the evolution of the employment rates of displaced workers aged 50 to 54 as well as the extent to which their annual earnings changed following job loss (Section IV). Before doing so, we provide a brief survey of the literature on worker displacement (Section II) and then describe the data and concepts used in this study (Section III). We conclude in Section V.

II. Previous Canadian studies

So far, Canadian research on displacement has examined both the risk of job loss and the magnitude of workers' earnings losses following displacement.

Picot and Lin (1997) examine the evolution of permanent layoff rates over the 1978 to 1994 period. Looking at years which are comparable in the business cycle, they find no upward trend in permanent layoff rates in the aggregate. However, they observe an increase in the probability of permanent layoffs among older and high-paid workers. Morissette (2004) updates the work of Picot and Lin (1997) and finds little evidence that Canadian workers' chances of being permanently laid-off rose substantially between the late 1980s and the late 1990s. He shows that while the risk of job loss has increased in a non-negligible way in some industries and in large firms of the private sector, men and women of different age groups have generally not experienced drastic increases in their likelihood of being permanently laid-off. Both studies implicitly include in their measure of job loss: a) layoffs resulting from firm closures, b) mass layoffs not resulting from firm closures (e.g., mass layoff due to downsizing) and, c) layoffs that occur on an individual basis.

Picot and Wannell (1987), Crossley, Jones and Kuhn (1994) and Kuhn and Sweetman (1998, 1999) were the first Canadian studies to analyze workers' earnings losses following displacement. Picot and Wannell (1987) use the 1986 Survey of Displaced Workers and compare weekly earnings in the new job obtained after displacement to weekly earnings in the job held prior to displacement. Using data from a survey of 1,736 workers involved in mass layoffs in the early 1980s in 21 establishments in Ontario Crossley, Jones and Kuhn (1994) compare hourly wage rates in the new job obtained after displacement to hourly wage rates in the job held prior to displacement. Kuhn and Sweetman (1998, 1999) perform a similar exercise using data from the Canadian Displaced Worker Survey (henceforth DWS) and the Canadian Out-of-Employment Panel (COEP), both of which were conducted in the early or mid-1980s. Because they essentially compute the earnings changes observed between the two types of jobs held by displaced individuals (with or without a set of additional controls), none of these studies uses a control group and thus, can account for the potential earnings growth displaced workers might have enjoyed in the absence of displacement. Furthermore, the numbers presented are short-run

estimates and thus, cannot be used to assess the magnitude of the earnings losses experienced by Canadian workers several years after displacement.¹

Using a fixed-effects approach pioneered by Jacobson, Lalonde and Sullivan (1993), Morissette, Zhang and Frenette (2007) overcome these limitations and assess the magnitude of workers' earnings losses up to five years after displacement. They find that while the long-term earnings losses experienced on average by workers who are displaced through firm closures or mass layoffs are important, those experienced by displaced workers with considerable seniority appear to be even more substantial. Consistent with findings from the United States by Jacobson, Lalonde and Sullivan (1993), high-seniority displaced Canadian men experience, five years after displacement, average earnings losses that represent between 18% and 35% of their pre-displacement earnings. For their female counterparts, the corresponding estimates vary between 24% and 35%.

In the United States, numerous studies have documented the magnitude of the long-term earnings losses due to displacement (see the reviews by Fallick, 1996 and Kletzer, 1998). Using Pennsylvania administrative data, Jacobson, Lalonde and Sullivan (1993) show that the earnings losses of high-tenure prime-age workers persist well beyond a period of unemployment due to mass layoffs. Earnings fall even before the displacement takes place and drop sharply at the time of the displacement. Even five years after the displacement took place, high-seniority displaced workers report quarterly earnings that are about 25% lower than their pre-displacement earnings. Worse still, it seems very likely that the earnings of displaced workers do not return to their expected levels at any time. Ruhm (1991) and Stevens (1997) also analyze the earnings losses of displaced workers, using data from the Panel Study of Income Dynamics (PSID). While Ruhm (1991) finds that, four years after displacement, weekly earnings of displaced workers are 10-13% lower than those of their non-displaced counterparts, Stevens (1997) shows that the annual earnings of displaced workers remain about 9% below their expected levels 6 or more years after displacement.²

While the Canadian studies mentioned above have documented the evolution of layoff rates over the past two decades and the magnitude of the earnings losses suffered on average by displaced workers, none has examined in detail the evolution of the employment patterns of older displaced workers³. In this paper, we fill this gap using a unique longitudinal data set.

¹ Crossley, Jones and Kuhn (1994) report that an average of about 21 months elapsed between displacement and the time workers reported their post-displacement wages. Individuals in the COEP were interviewed three times after being laid-off. Since the last interview occurred about one year after the separation, post-displacement wages in the COEP will be reported *at most* one year after displacement. In the DWS, displaced workers who lost full-time jobs and found full-time jobs spent about 24 weeks looking for work (Picot and Wannell, 1987). This implies that post-displacement wages will, in the DWS as well as in the two other surveys, generally be reported shortly after displacement.

² While Jacobson et al. (1993) require displaced workers to have at least 6 years of tenure with their employer, Ruhm (1991) and Stevens (1997) do not impose this restriction.

³ Finnie and Gray (2007) examine the evolution of income sources of older workers following a layoff but do not analyze re-employment probabilities or earnings changes following a layoff. Furthermore, they are unable to distinguish permanent layoffs from temporary layoffs, a critical distinction in analyses of worker displacement.

III. Data and sample selection

We use the Longitudinal Worker File (LWF) constructed by Statistics Canada. The LWF is a 10% random sample of all Canadian workers, created by integrating data from four administrative sources: the Record of Employment (ROE) files of Human Resources and Social Development Canada (on worker separations), the T1 and T4 files of Canada Customs and Revenue Agency, and the Longitudinal Employment Analysis Program (LEAP) of Statistics Canada.⁴ The combined information offers a unique and superior source to identify our targeted sample: workers who are permanently laid-off.

Whether workers are laid-off, quit, or separate from their employer for other reasons can be identified according to the reason for separation indicated in the ROE. The LEAP file (a longitudinal file that tracks all Canadian companies) allows us to distinguish permanent layoffs from temporary layoffs. Permanent layoffs occur when the separated worker does not return to the same employer in the same or following year. The T1 files allow us to measure the age and gender of workers while the T4 files provide information on the earnings they receive in a given year.

Two versions of LWF are used in this paper. The first and earlier version covers the period 1978-1989 while the current version includes a 23-year (1983-2005) longitudinal window. Both versions are basically constructed in the same way, except that the current version is enriched by adding indicators of marital status, CMA identifiers and more recent industry codes based on the 1997 North American Industry Classification System (NAICS).

We document the employment patterns of older workers up to 5 years after their job loss. To do so, we restrict our sample to workers who were permanently laid-off at the age of 50 to 54. We exclude workers aged 55 and over because their long-term re-employment rates might be affected by retirement decisions. To allow meaningful comparisons of pre- and post-displacement earnings, we further restrict our attention to displaced workers who, in the year preceding the permanent layoff, received positive earnings and were not permanently laid-off.⁵

Since 2005 is the latest year available in our dataset and since the identification of permanent layoffs and pre-displacement earnings both require one (1) year of data, data on 26 cohorts (1979-2004) will be used to document re-employment patterns one year after the layoff ($t+1$), while data on 24 cohorts (1979-2002) and 22 cohorts (1979-2000) will be used for the analysis of mid-term ($t+3$) and long-term ($t+5$) re-employment outcomes, respectively. The aforementioned sample selection criteria yield a sample of nearly 80,000 observations over the period 1979-2004 (see Appendix Table A1).⁶

⁴ See Morissette et al. (2007) for a detailed description of this dataset.

⁵ Annual earnings are constructed by summing earnings received across all jobs in a given year. In line with Morissette (2004), we require that individuals earn at least \$500 (1989 constant dollars) in year t , the year during which they were permanently laid-off. We impose no restriction on their earnings in subsequent years, thereby allowing workers to have no employment income at some point after the year of the layoff.

⁶ The 1979 to 1983 cohorts are drawn from the first version of LWF while subsequent cohorts are drawn from the current version of LWF (which covers the period 1983-2005).

To assess whether employment patterns of older displaced workers have improved over time, we proceed in two steps. First, we examine how employment rates following job loss have evolved since the late 1970s. Second, we assess whether permanent layoffs led to greater earnings declines in the late 1970s/early 1980s than in recent years. The analyses are conducted separately for men and women. Given recent concerns about manufacturing workers, we provide separate estimates for manufacturing and non-manufacturing.⁷

Since the LWF has no information on labour force status, we cannot distinguish whether, say, decreases in re-employment rates are due to higher unemployment, higher levels of inactivity or a greater propensity of older displaced workers to retire following job loss.

Since employment patterns of older displaced workers are influenced by cyclical fluctuations, cross-cohort differences in employment outcomes (re-employment rates and earnings changes) will be assessed by comparing cohorts of displaced workers which faced comparable labour market conditions.

To get a sense of which years are most comparable in terms of labour market conditions for the group of workers considered in this paper, we plot the unemployment rates of men aged 25 to 54 and men aged 50 to 54 in Figure 1.⁸ The data come from the Labour Force Survey (LFS) and are shown for the period 1976-2007.

They indicate that male unemployment rates were relatively low during the late 1970s. Unemployment rates of men aged 50 to 54 were no higher than 4.7% between 1976 and 1981. In contrast, they averaged roughly 5% in 1988-1989 and varied between 5.0% and 5.4% between 2004 and 2005, the last year of data in the current version of LWF. Hence, cohorts of older workers displaced in 1988 and 2004 appeared to have faced very similar labour market conditions. As a result, comparisons of short-term outcomes (i.e. in year t+1) will be based mainly on these two cohorts.

Comparisons of mid-term outcomes, those observed three years after the layoff (i.e. in year t+3), will be based mainly on the 1986 and 2002 cohorts. Many factors motivate this choice. First, unemployment rates of men aged 50 to 54 were almost identical in 1986 and 2002: they amounted to 5.8% and 5.9%, respectively. Second, unemployment rates of men aged 50 to 54 averaged 5.4% both in 1987-1989 and 2003-2005, the three-year periods that followed the layoffs

⁷ The industry codes for manufacturing changed over the last decades. The early LWF contains only the 1980 SIC (Standard Industrial Classification) codes while the current LWF carries both SIC 1980 (between 1983 and 2000) and NAICS 1997 codes (from 1991 and onward). For consistency, we use SIC 1980 codes for the years 1979 to 2000 and NAICS 1997 codes for the years 2001 to 2004. We also assessed the robustness of our findings using SIC 1980 codes for the years 1979 to 1990 and NAICS 1997 codes for the years 1991 to 2004. Both methods led to very similar patterns.

⁸ Unemployment rates of women of similar age are likely influenced by the substantial increases in female labour market participation observed over the past two decades and thus, are less reliable indicators of labour market tightness.

observed in these cohorts. Finally, unemployment rates of men aged 55 to 59 averaged 6.3% in 1987-1989 and 6.1% in 2003-2005 and thus, were fairly similar.⁹

Comparisons of long-term outcomes, those observed five years after the layoff (i.e. in year $t+5$), are more difficult since they require stringent restrictions on (the similarity of) unemployment rates several years after a layoff. Three cohorts will be considered: workers laid-off in 1984, 1995 and 2000. The first two cohorts experienced layoffs in years that were followed by five years of steady declines in unemployment (Figure 1). Unemployment rates of men aged 50 to 54 and those of men aged 55 to 59 averaged 5.9% and 6.9%, respectively, in 1985-1989, and thus were fairly close (or identical) to those experienced by their counterparts in 1996-2000 (6.3% and 6.9%). In contrast, the period 2001-2005 saw men aged 50 to 54 and those aged 55 to 59 display lower average unemployment rates of 5.5% and 6.1%, respectively. This suggests that, during the five years that followed their layoff, men displaced in 2000 faced better labour market conditions and thus, might have fared better than their counterparts displaced in 1984 or 1995.

IV. Employment rates following job loss

We begin by showing the proportion of displaced workers who were employed in subsequent years after being permanently layoff (Figure 2). Employment rates following job loss display cyclical patterns: chances of returning to work are generally higher in expansionary years and lower in recessions. For instance, workers displaced in 1988 tended to have relatively high re-employment rates in 1989, thanks to a booming economy during that year. Conversely, chances of being re-employed in the following year were much lower for the 1991 cohort as the economy hit the bottom in 1992.

Differences also emerge for long-term outcomes: the strong economic growth during the period 1984-1989 likely boosted the long-run ($t+5$) re-employment rate for the 1984 displaced cohort, while the 1987 and 1988 cohorts suffered more severe hardship five years later as they reached the troughs of the early 1990s recession.

Do employment rates appear to have improved or worsened over time across cohorts of displaced males that faced similar labour market conditions? The answer is no. About 80% of male workers laid-off in 1988 or 2004 returned to work as paid workers the following year. Employment rates three years after the layoff and five years after the layoff also changed little when comparing the 1986 and 2002 cohorts (three years after the layoff) or the 1984, 1995 and 2000 cohorts (five years after the layoff).

Likewise, there is little evidence of an upward trend or downward trend in re-employment rates among men displaced from manufacturing (Figure 3) or non-manufacturing (Figure 4). The fairly high employment rates in year $t+1$ for the 1988 cohort displaced from manufacturing and in year $t+3$ for the 1986 cohort displaced from manufacturing no doubt reflect the strong economic conditions that prevailed in Canada in 1989.

⁹ Employment rates in the three years following layoffs were also fairly similar. Among men aged 50 to 54, they averaged 84.7% in 1987-1989 and 83.3% in 2003-2005. Among those aged 55 to 59, the corresponding estimates were 72.9% and 71.2%.

In contrast, employment rates of displaced women display an upward trend. This is seen most clearly when the focus is on the comparable cohorts identified above. For instance, the proportion of displaced women who were employed in $t+3$ increased substantially between 1986 and 2002. A similar pattern is observed in $t+5$ when comparing the 1984 and 2000 cohorts. This upward trend is also observed in manufacturing (Figure 3) and non-manufacturing (Figure 4).

The trends displayed in Figures 2-4 might partly reflect compositional effects. To account for these, we perform multivariate analyses where the probability of being employed after a layoff is modeled as a function of workers' annual earnings in year $t-1$, age indicators, province indicators (at the time of layoff), and cohort indicators (1979-2004). Results for both men and women are presented in Table 1.¹⁰ For each gender, we provide separate estimates for manufacturing and non-manufacturing jobs. Our primary goal is to compare coefficients of cohort dummies focusing on comparable cohorts (as defined above). We also report coefficients of recent cohorts since year 2000 in order to provide information on recent trends.

To a large extent, Table 1 confirms the patterns found in Figures 2-4. Overall, we find no evidence that re-employment probabilities of older displaced men increased over time, either in the short-term or in the long-term. However, we find evidence that, compared to their counterparts displaced during the second half of the 1980s, men displaced from manufacturing in recent years had lower probabilities of re-employment. Probabilities of re-employment in year $t+1$ for men displaced from manufacturing firms (in year t) dropped by 8 percentage points between 1988 and 2004. Similarly, probabilities of re-employment in year $t+3$ for men displaced from manufacturing firms dropped by 7 percentage points between 1986 and 2002.

Yet chances of being re-employed clearly increased for women. Between 1988 and 2004, displaced women's chances of being re-employed in year $t+1$ rose by almost 5 percentage points in the aggregate.¹¹ Between 1986 and 2002, probabilities of re-employment in year $t+3$ for women displaced in year t increased by 8 percentage points. Very similar estimates are obtained in manufacturing and non-manufacturing. Likewise, probabilities of re-employment in year $t+5$ increased by 10-11 percentage points between 1984 and 2000. To a large extent, this improvement in women's chances of re-employment is likely driven by changes in women's labour supply, i.e. by their growing labour market involvement and career-orientedness over the past three decades.

V. *Earnings changes following job loss*

While probabilities of re-employment following job loss are an important indicator of workers' success (or lack thereof) in adjusting to job loss, they provide no information on the magnitude of the earnings variation workers experience as a result of displacement. In this section, we document the earnings changes experienced by displaced workers throughout the period 1979-

¹⁰ The dependent variable equals 1 if a displaced worker is employed in a subsequent year ($t+1$, $t+3$ or $t+5$), 0 otherwise.

¹¹ The increase in short-term re-employment probabilities was concentrated outside of manufacturing.

2004. We analyze earnings changes both in absolute terms (i.e. dollar amounts) and in terms percentage changes.

When analyzing earnings changes in absolute terms, we consider both mean values and median values. When analyzing earnings changes in percentage terms, we focus on median values, as means of percentage changes can be heavily influenced by extreme values and thus might provide a misleading picture. Our analyses of earnings changes are based solely on a comparison of pre- and post-displacement earnings and thus, they do not account for the earnings growth workers would have experienced in the absence of displacement.¹²

V.1 Earnings changes in absolute terms

In Figures 5-8, we provide descriptive evidence on the earnings variation experienced by displaced workers in absolute terms. We start by comparing the pre-displacement earnings, i.e. annual earnings in year $t-1$, of workers permanently laid-off in year t to the earnings observed in year $t-1$ for workers not laid-off in year t (Figure 5). Two patterns are worth noting. First, pre-displacement earnings of displaced workers are much lower than earnings of other workers. This is consistent with previous findings (e.g. Jacobson et al. 1993; Morissette et al. 2007) and might reflect: a) possibly lower skill levels of displaced workers, b) lower levels of seniority of displaced workers, c) the concentration of displaced workers in small firms. Second, pre-displacement earnings of displaced workers are much more volatile than earnings of other workers.

Figure 6 shows the mean and median earnings changes of displaced men and women in the aggregate. Three types of earnings changes are displayed:

- a) earnings in year $t+1$ minus earnings in year $t-1$
- b) earnings in year $t+3$ minus earnings in year $t-1$
- c) earnings in year $t+5$ minus earnings in year $t-1$.

Figures 7 and 8 replicate Figure 6 for manufacturing and non-manufacturing, respectively. Consistent with the patterns observed for re-employment rates, all figures highlight the strong cyclical sensitivity of earnings changes. While detecting some “structural” changes from these figures is not a trivial task, the upper panel of Figure 7 highlights an interesting pattern. Mean and median earnings losses of men displaced from manufacturing firms during the mid to late 1980s were, three years after the layoff, hovering around \$5,000. In contrast, the corresponding numbers for their counterparts displaced between 1999 and 2002 appear to amount to at least \$10,000. This suggests that earnings losses of men displaced from manufacturing might have worsened in recent years.

In Tables 2 and 3, we confirm this hypothesis by running mean regressions (through ordinary least squares methods) and median regressions, respectively. Both types of regressions model earnings changes as a function of the set of regressors defined in Section IV. Regression results indicate that mean and median earnings losses of men displaced from manufacturing were, one year after the layoff, at least \$13,400 higher for the 2004 cohort than they were for the 1988 cohort. Similarly, mean and median earnings losses of men displaced from manufacturing were,

¹² For such analysis on Canadian data, see Morissette et al. (2007).

three years after the layoff, at least \$5,500 higher for the 2002 cohort than they were for the 1986 cohort. A similar qualitative conclusion emerges when comparing long-term outcomes for the 1984 cohort and the 2000 cohort.

The evidence regarding the evolution of earnings changes of men displaced outside manufacturing is mixed. While both OLS and median regressions indicate that some recent cohorts have experienced greater earnings losses than the cohorts laid-off in 1988 (for t+1), 1986 (for t+3) or 1984 (for t+5), this conclusion does not hold when: a) the 1988 and 2004 cohorts are compared (for t+1), b) the 1986 and 2002 cohorts are compared (for t+3), c) the 1984 and 2000 cohorts are compared (for t+5).

In contrast, there is clear evidence that mean and median earnings losses of women displaced from *non-manufacturing* firms fell over time. For instance, median earnings changes of these women were, three years after the layoff, \$3,300 higher for the 2002 cohort than they were for the 1986 cohort (Table 3). Statements regarding the evolution of earnings changes of women displaced from manufacturing are sensitive to the choice of the metric used (mean values versus median values) and to the outcome considered (short-term versus long-term).

V.2 Earnings changes in percentage terms

To make our analyses of earnings changes in percentage terms meaningful, we now restrict our sample of displaced workers to those whose pre-displacement earnings amounted to at least \$10,000 (in 2007 dollars). We do so to avoid capturing large percentage changes that might reflect earnings variation of insignificant magnitude in absolute terms.¹³

Figures 9 to 11 display the median values of percentage changes in earnings for the whole economy, manufacturing and non-manufacturing. Table 4 shows median regression results of these percentage changes in earnings.

Consistent with our findings in Section V.1, Table 4 indicates that percentage changes in earnings of males displaced from manufacturing were less favourable in recent years than they were during the 1980s. For instance, median values of percentage changes in earnings were, three years after the layoff, 14 percentage points lower for the 2002 cohort than for the 1986 cohort. Although increases in earnings losses in recent years (captured by a negative parameter estimate for a cohort indicator) are sometimes estimated imprecisely, they generally point to a worsening of earnings changes for displaced manufacturing male workers.

Conversely, Table 4 unambiguously confirms that earnings losses of women displaced outside manufacturing fell over time. Statements regarding the evolution of earnings changes of women displaced from manufacturing are, once again, sensitive to the choice of the outcome considered.¹⁴

¹³ For instance, a worker earning \$600 in year t-1 and \$300 in year t+1 would experience a 50% drop in earnings but would see his employment income fall by only \$300.

¹⁴ Specifically, the data suggest an improvement in earnings changes measured between year t+5 and year t-1 but a worsening of short-term earnings changes.

In sum, earnings losses of men displaced from manufacturing in recent years (i.e. 2000, 2002 and 2004) appear to be higher than those experienced in the past by their counterparts during roughly comparable years (i.e. 1984, 1986 and 1988). In contrast, earnings losses of women displaced outside manufacturing fell. These conclusions hold whether we measure earnings changes in absolute terms (using mean changes or median changes) or in terms of percentage changes in earnings (using median values on a sub-sample of displaced workers).

VI. Incidence of large earnings losses

The measures of earnings changes used so far capture either what has been happening on “average” to displaced workers or what has been happening to those in the “middle” of the distribution of earnings changes. However, they fail to show whether workers who suffer large earnings losses have become relatively more important over time. For policy purposes, answering this question is an important task.

We address this issue in Figures 12-14 and Tables 5-7. Regression results in Table 6 show that males displaced from manufacturing between 2000 and 2004 have displayed probabilities of experiencing large earnings losses—those amounting to \$37,500 or more—in the short-term that were 10 percentage points or more higher than those observed for the 1988 cohort. Similarly, probabilities of experiencing large earnings losses five years after the layoff have been 6 percentage points higher among the cohort displaced in 2000 than among the 1984 cohort.¹⁵

In contrast, chances of experiencing earnings losses of \$20,000 to \$37,499 three years after the layoff or five years after the layoff fell by 3 to 5 percentage points for women displaced from non-manufacturing firms (Table 7).

In Figures 15-17 and Tables 8-10, we analyze the incidence of large earnings losses defined in *percentage terms*. Comparisons involving roughly comparable cohorts yield substantial evidence of: a) increases in the incidence of large earnings losses—amounting to between 75% and 100% of pre-displacement earnings—among men displaced from manufacturing (Table 9), and b) decreases in the incidence of large earnings losses among women displaced from non-manufacturing firms (Table 10).¹⁶

Taken together, these results suggest that the recent increase in (median and mean) earnings losses of men displaced from manufacturing, which was shown in Section V, was partly driven by increases in the incidence of large earnings losses, rather than solely resulting from a decrease in the incidence of large earnings gains (among those who experienced such gains).

VII. Looking at the cumulative distribution of earnings changes

¹⁵ Note that the difference between the 1986 cohort and the 2002 cohort is estimated imprecisely.

¹⁶ For instance, chances of experiencing large earnings losses three years after the layoff were 13 percentage points higher for the 2002 cohort of men displaced from manufacturing than for their counterparts displaced in 1986 (Table 9). All numbers reported in Figures 15-17 and Tables 8-10 are based on displaced workers whose pre-displacement earnings were at least \$10,000 (in 2007 dollars).

While average and median earnings losses rose in recent years for displaced manufacturing male workers and while the incidence of large earnings losses (defined in absolute terms or in terms of percentage changes) generally increased for this group, it is unclear whether the proportion of displaced manufacturing male workers who experienced *losses of at least x\$* (or *at least x percent*) increased for *all values of earnings losses* (expressed in dollar amounts or percentage changes) considered.

To investigate this issue, we compare the cumulative density function of earnings changes for a recent cohort to that of a previous cohort. If the cumulative density function of earnings changes for a recent cohort (e.g. 2002) lies *above* that of a preceding cohort (e.g. 1986) *for all negative values of earnings changes*, then we can unambiguously conclude that the proportion of displaced manufacturing male workers who experienced losses of *at least x\$* (or *at least x percent*) increased between the two cohorts for all values of earnings losses. If so, the *difference* between the two cumulative density functions (CDF) will be positive and statistically significant for all values of earnings losses considered.

It should be noted that, contrary to regression analyses, comparisons of CDF across cohorts *do not control* for workers' pre-displacement earnings. Since median and average pre-displacement earnings of women clearly trended upwards after the mid-1980s (Figure 5), qualitative patterns obtained from regression analyses might differ from those obtained from the comparison of CDF across cohorts. Specifically, comparisons of CDF across cohorts of women might reveal, in some instances, bigger losses in absolute terms that are simply due to the growing presence of displaced women in highly paid jobs. If so, comparisons of CDF based on earnings changes expressed in percentage terms will be more informative.

VII.1 Earnings changes in absolute terms

In Figures 18-20, we plot these differences in CDF while measuring earnings changes in absolute terms. The differences themselves are plotted as solid lines while 95% confidence intervals are shown by the shaded areas that surround these lines. A shaded area that lies above the horizontal axis over a given interval of earnings changes implies that the *difference* between the CDF of a recent cohort and that of a previous one is statistically significant at conventional levels over this interval. The earnings changes considered vary between -\$100,000 and \$100,000 and thus cover most displaced workers (see Appendix Table A2).

Figure 18 shows that, one year, three years or five years after the layoff, the proportion of displaced males who experienced *some* losses (i.e. losses of *at least 1\$*) has been higher for recent cohorts (2004, 2002 and 2000) than for previous ones (1988, 1986, 1984). The strongest evidence that the increase is statistically significant for earnings losses of at least \$37,500 is found when considering earnings changes five years after the layoff: for virtually all earnings losses exceeding this threshold (in absolute value), shaded areas lie above the horizontal axis in this case.

Figure 19 shows strong evidence that earnings losses experienced three years after the layoff were higher for men displaced from manufacturing in 2002 than for their counterparts displaced in 1986. Consistent with the lower panel of Table 6, there is also clear evidence that the

proportion of displaced males who experienced losses of at least \$37,500 five years after being laid-off from manufacturing was higher for the 2000 cohort than for the 1984 cohort.

In contrast, differences in CDF across cohorts of men displaced from non-manufacturing firms are much smaller and often not statistically significant (Figure 20).

As Figures 21-23 show, the qualitative patterns documented above for men are generally observed when we measure earnings changes in absolute terms on our restricted sample, i.e. men whose pre-displacement earnings amounted to \$10,000 or more. In particular, Figure 22 confirms that the proportion of males displaced from manufacturing who experienced losses of at least \$37,500 five years after being laid-off from manufacturing was higher for the 2000 cohort than for the 1984 cohort.

Contrary to our expectations, Figure 20 shows that the chances that women displaced from non-manufacturing firms experience large earnings losses (i.e. losses of \$37,500 or more) have *increased* across comparable cohorts. A similar conclusion generally holds when attention is restricted to women with pre-displacement earnings of at least \$10,000 (Figure 23). Why is this so? The puzzle can be resolved by examining earnings changes in percentage terms.

VII.2 Earnings changes in percentage terms

If the increase in the incidence of large earnings losses among women displaced from non-manufacturing firms reflects their growing presence in high paying jobs, comparisons of CDF based on earnings changes expressed in percentage changes should reveal a quite different picture.

As Figures 23 and 26 clearly show, this is what happens. Among women with pre-displacement earnings of at least \$10,000 (and laid-off from non-manufacturing firms), the CDF of earnings changes (expressed in absolute terms) of recent cohorts generally lie *above* that of previous cohorts for most values of earnings losses. However, the CDF of earnings changes (expressed in percentage changes) of recent cohorts generally lie *below* that of previous cohorts for most values of earnings losses. This suggests that while many displaced women now experience bigger earnings losses in absolute terms than their counterparts displaced earlier, these losses represent smaller declines in percentage terms. In fact, Figure 26 clearly indicates that for all outcomes considered, the probability of experiencing large relative earnings losses (i.e. earnings losses of at least 75%) has fallen for women displaced from non-manufacturing. This in turn is consistent with the results of Table 10.

Conversely, Figure 25 shows that one year or three years after the layoff, the probability of experiencing large relative earnings losses has increased for men displaced from manufacturing. This is consistent with the results shown in the upper and middle panels of Table 9.

VIII. Conclusion

The prospect of forthcoming labour shortages has generated, over the past few years, an intense search of ways to increase aggregate labour supply in many OECD countries. Older workers are one of the demographic groups that have been identified as a potential source of growth of aggregate labour supply. In this paper, we have examined whether older displaced workers have seen their post-displacement employment patterns improve over the last two decades.

We uncover four key patterns. First, we detect no upward trend in the re-employment rates of male displaced workers in the aggregate, in manufacturing or outside manufacturing. This absence of improvement in the re-employment rates of male displaced workers took place in a period where the educational attainment of male workers rose substantially. Since highly educated workers have higher re-employment rates than their less educated counterparts after job loss (Kletzer, 1998), this suggests that re-employment rates of displaced men might have fallen *within some educational groups*.

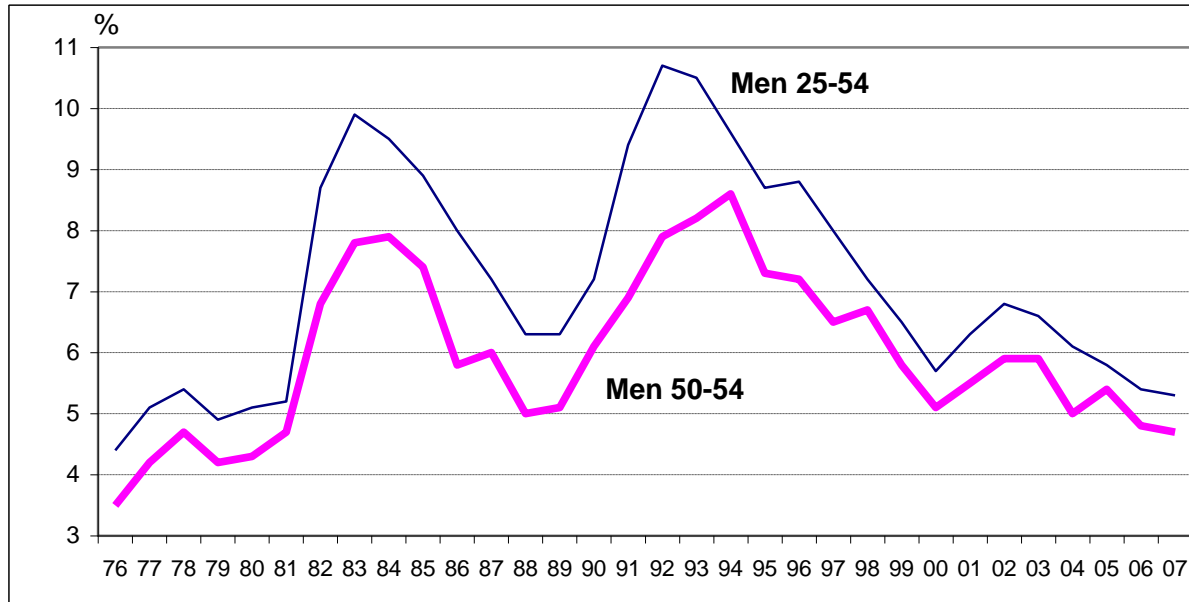
Second, we show that re-employment rates of displaced women generally increased over time. While this finding might result both from changes in labour demand and labour supply, a substantial portion is likely driven by the growing attachment of women to the labour force as well as increases in their educational attainment.

Third, we find substantial evidence that median and average earnings losses of males displaced from manufacturing in recent years (i.e. between 2000 and 2004) were higher than those of comparable cohorts displaced during the 1980s. Part of this increase is related to the lower re-employment rates observed in recent years for males displaced from manufacturing. Since the data used in this study contain no information on individuals' labour force status, we cannot distinguish whether the lower re-employment rates are due to higher unemployment, higher levels of inactivity or a greater propensity of older displaced workers to retire following job loss. Nevertheless, these lower re-employment rates suggest that, following displacement, aggregate working hours likely fell for males displaced from manufacturing.

Finally, we show that median and average earnings losses of women displaced from non-manufacturing firms fell over time.

Our findings should be interpreted with considerable caution. Specifically, the high sensitivity of earnings losses and re-employment rates to the business cycle (displayed in most figures shown in this paper) makes inferences about "structural changes" in employment patterns of older displaced workers a very difficult exercise. We refrain from conducting such exercise and simply compare the employment patterns of recent cohorts to those of previous cohorts who faced roughly comparable labour market conditions. Furthermore, our analyses focus on a very narrow sample of displaced workers, those aged 50 to 54. Different qualitative patterns might have been observed over the past two decades for younger displaced workers. The question of whether or not this is the case should be investigated in future research.

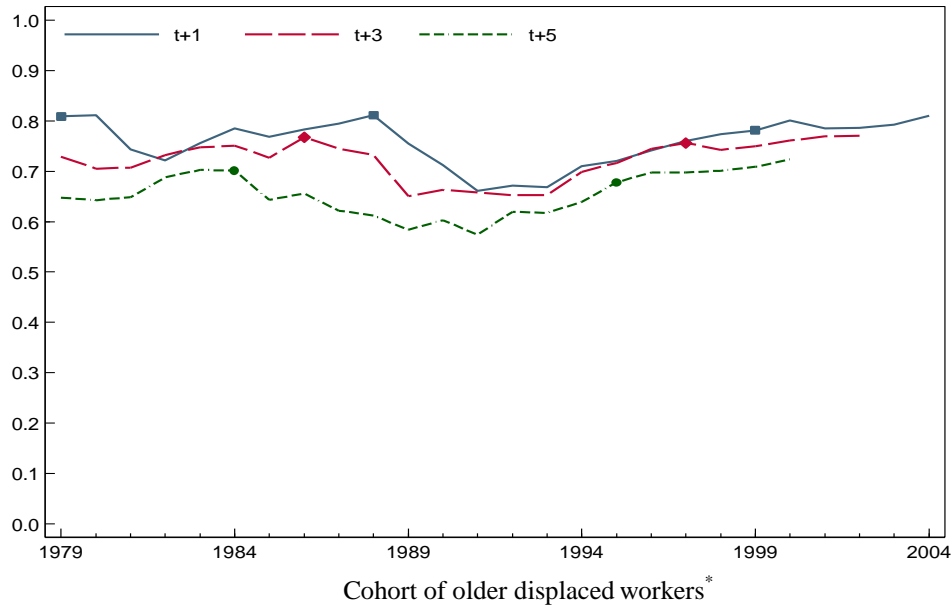
Figure 1: Unemployment rates of men, 1976-2007



Source: Labour Force Survey.

Figure 2
Reemployment rates in subsequent years after permanent layoff, men

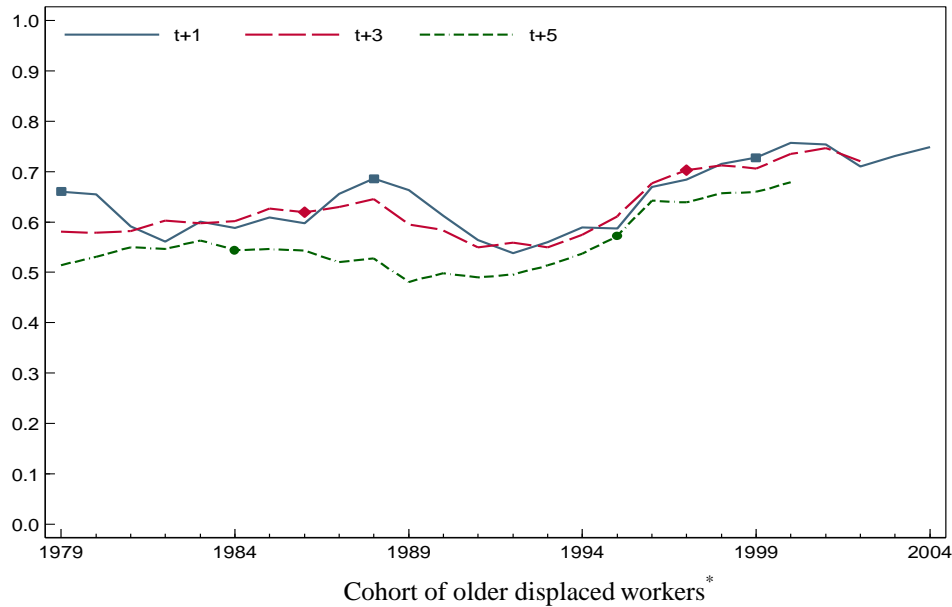
Proportion



* Aged 50-54 at the time of permanently layoff

Reemployment rates in subsequent years after permanent layoff, women

Proportion

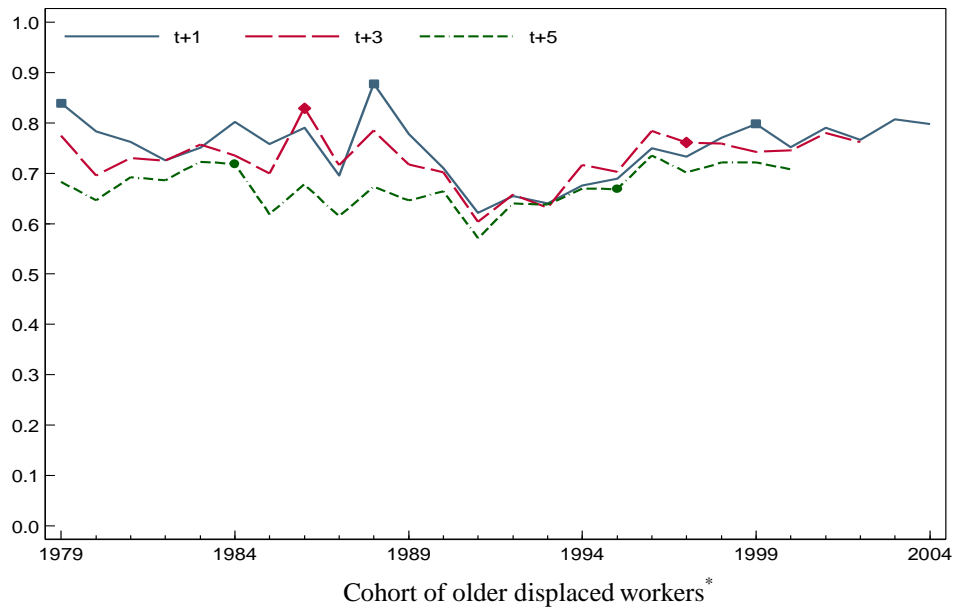


* Aged 50-54 at the time of permanently layoff

Source: Longitudinal worker files (1978-2005)

Figure 3
Reemployment rates in subsequent years after permanent layoff, *manufacturing men*

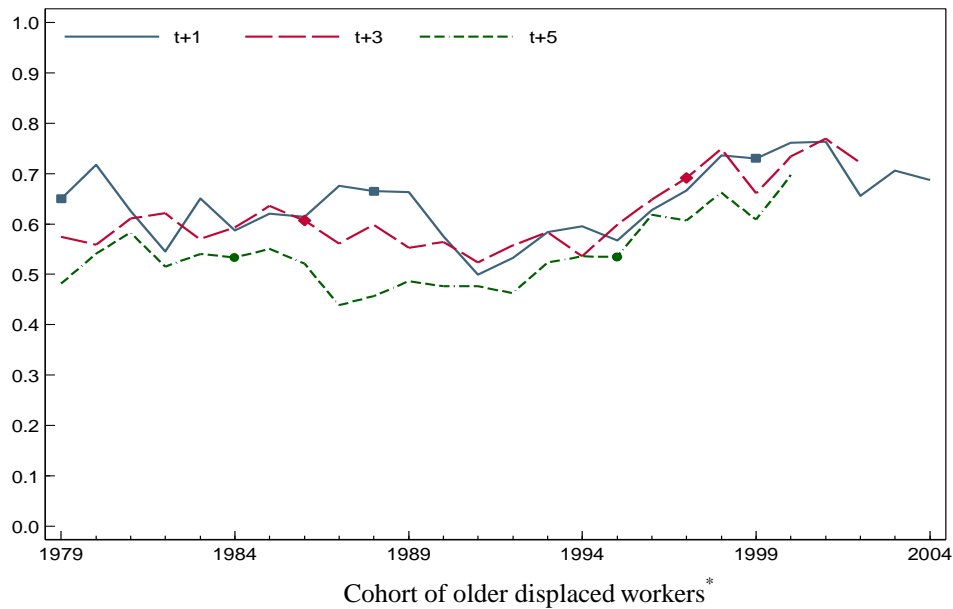
Proportion



* Aged 50-54 at the time of permanently layoff

Reemployment rates in subsequent years after permanent layoff, *manufacturing women*

Proportion

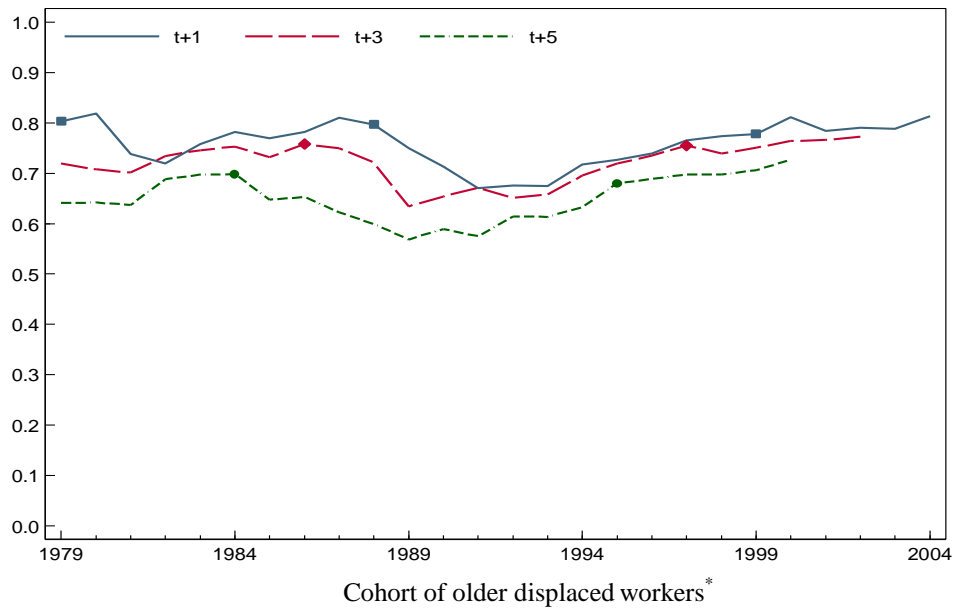


* Aged 50-54 at the time of permanently layoff

Source: Longitudinal worker files (1978-2005)

Figure 4
Reemployment rates in subsequent years after permanent layoff, *non-manufacturing men*

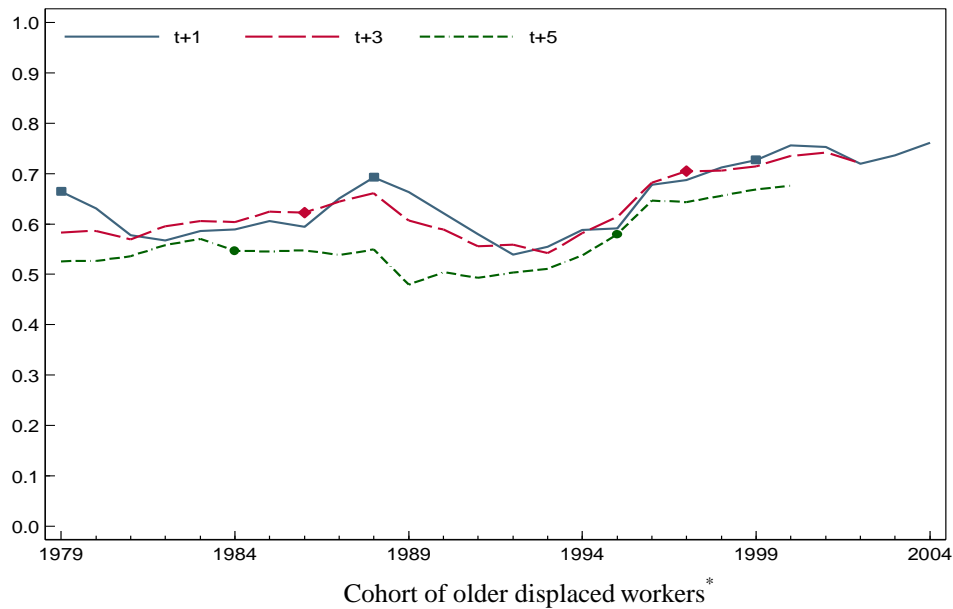
Proportion



* Aged 50-54 at the time of permanently layoff

Reemployment rates in subsequent years after permanent layoff, *non-manufacturing women*

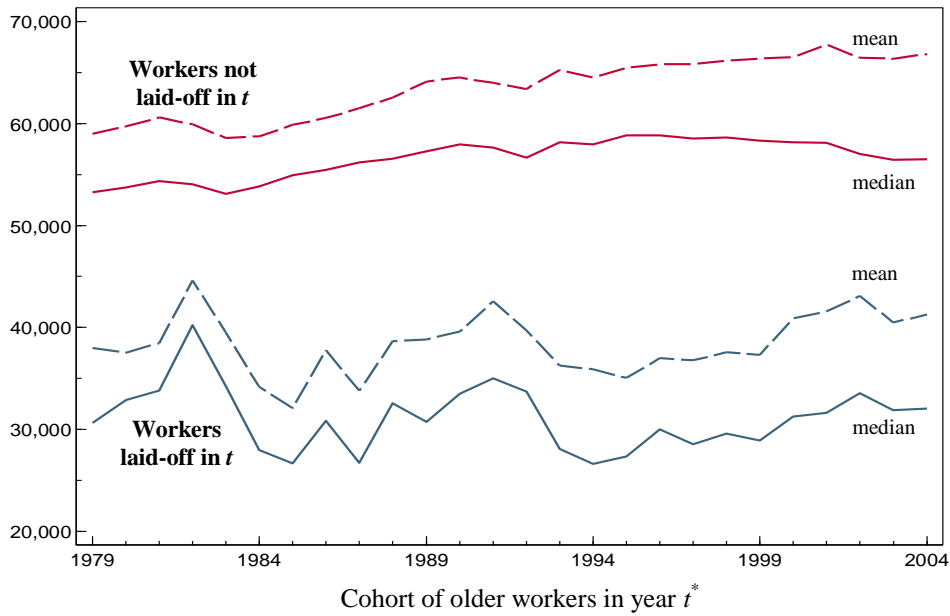
Proportion



* Aged 50-54 at the time of permanently layoff

Source: Longitudinal worker files (1978-2005)

Figure 5
Mean and median earnings in $t-1$, laid-off versus non-laid-off workers, men
Dollars (2007 constant)



* Aged 50-54 at year t

Mean and median earnings in $t-1$, laid-off versus non-laid-off workers, women
Dollars (2007 constant)

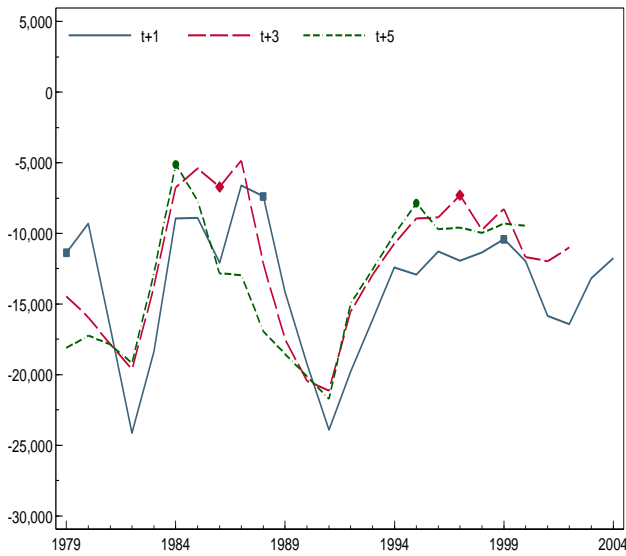


* Aged 50-54 at year t

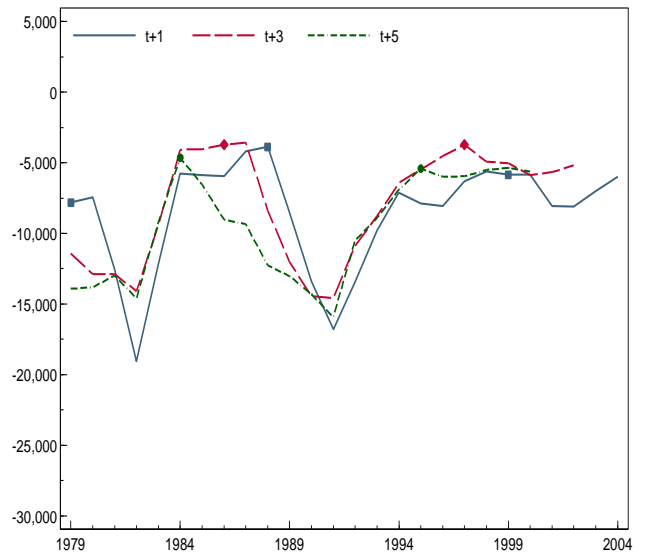
Source: Longitudinal worker files (1978-2005)

Figure 6
Mean and median earnings changes of laid-off workers, men

Dollars (2007 constant) Mean



Median

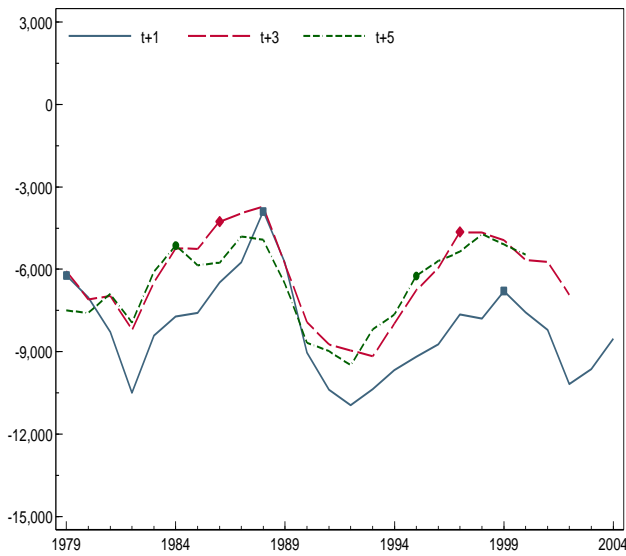


Cohort of older displaced workers*

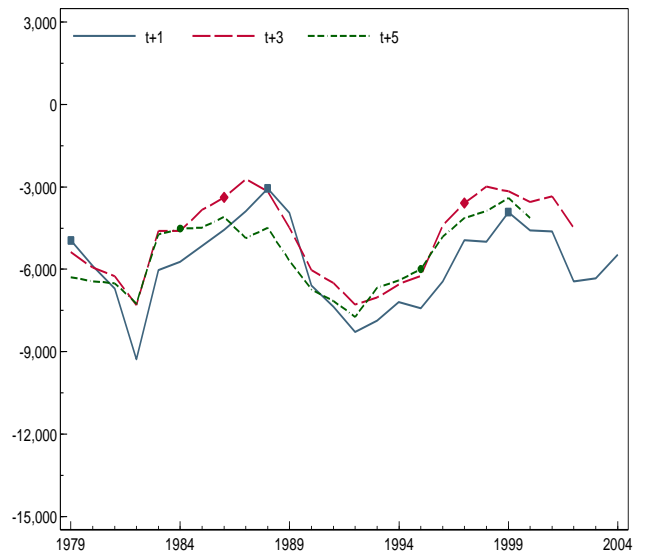
* Aged 50-54 at the time of permanently layoff

Mean and median earnings changes of laid-off workers, women

Dollars (2007 constant) Mean



Median



Cohort of older displaced workers*

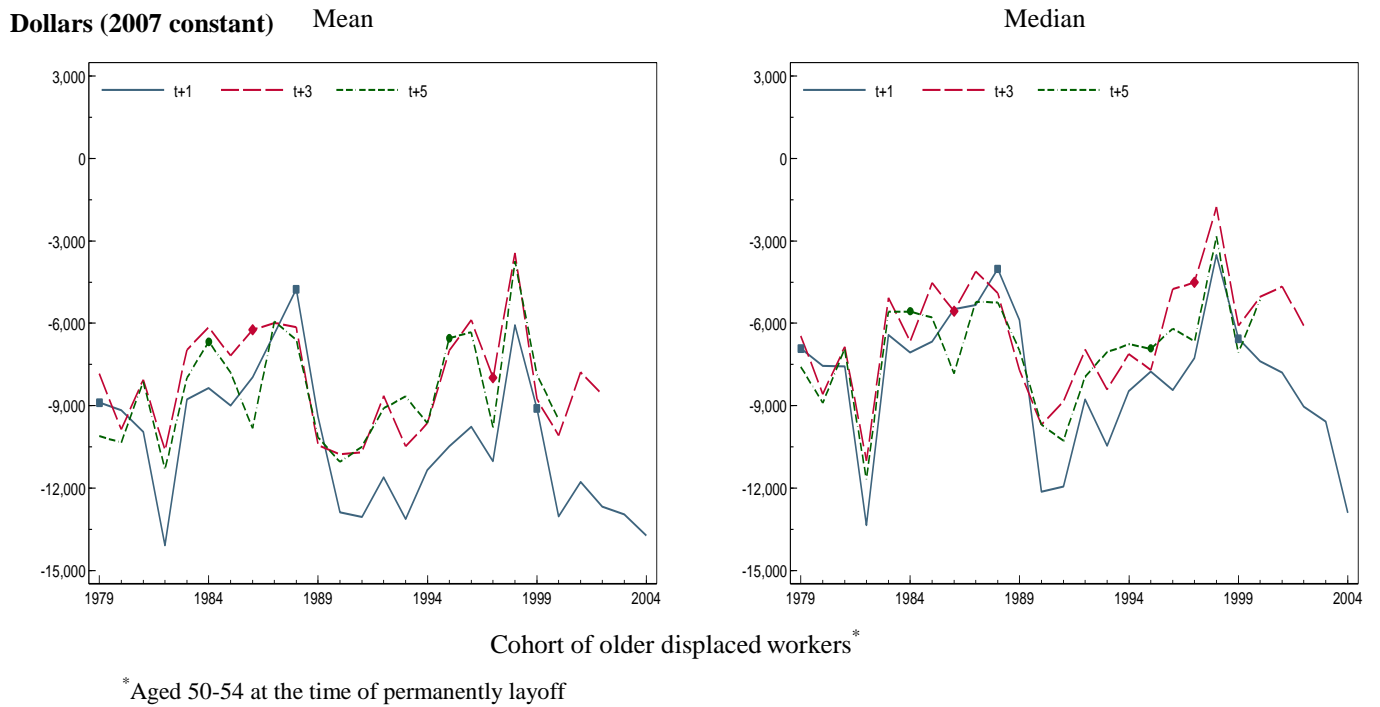
* Aged 50-54 at the time of permanently layoff

Source: Longitudinal worker files (1978-2005)

Figure 7
Mean and median earnings changes of laid-off workers, *manufacturing men*



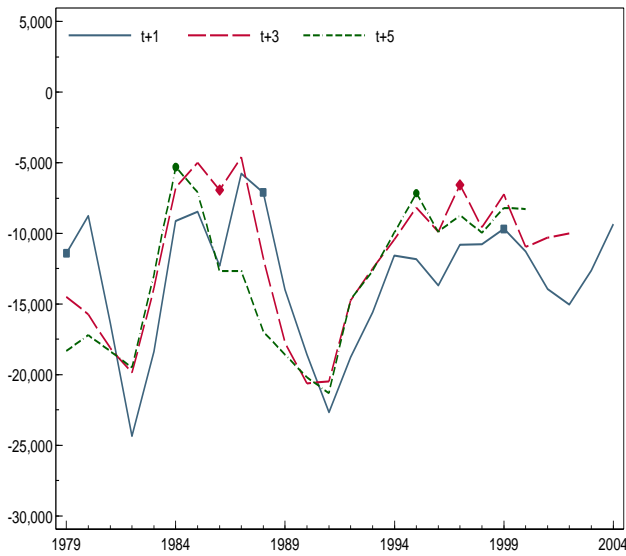
Mean and median earnings changes of laid-off workers, *manufacturing women*



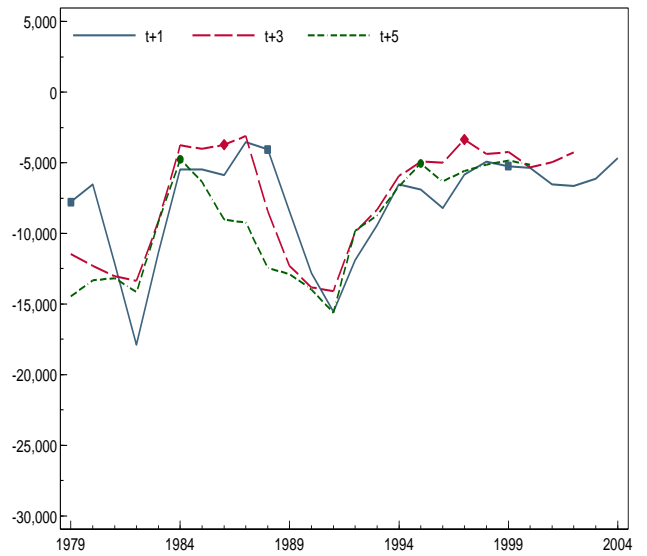
Source: Longitudinal worker files (1978-2005)

Figure 8
Mean and median earnings changes of laid-off workers, *non-manufacturing men*

Dollars (2007 constant) Mean



Median

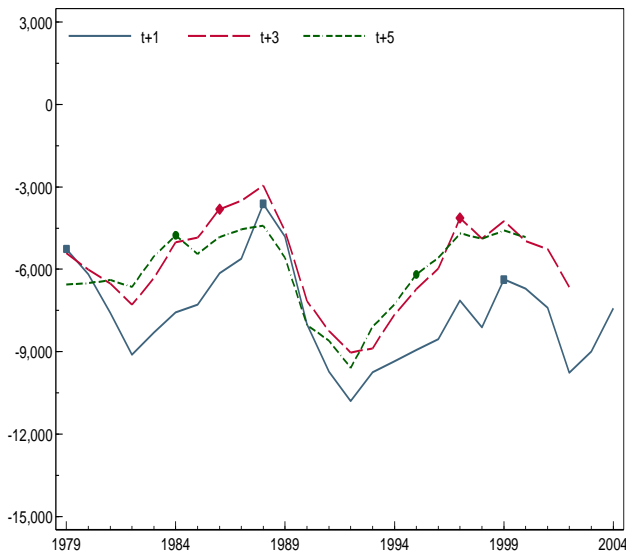


Cohort of older displaced workers*

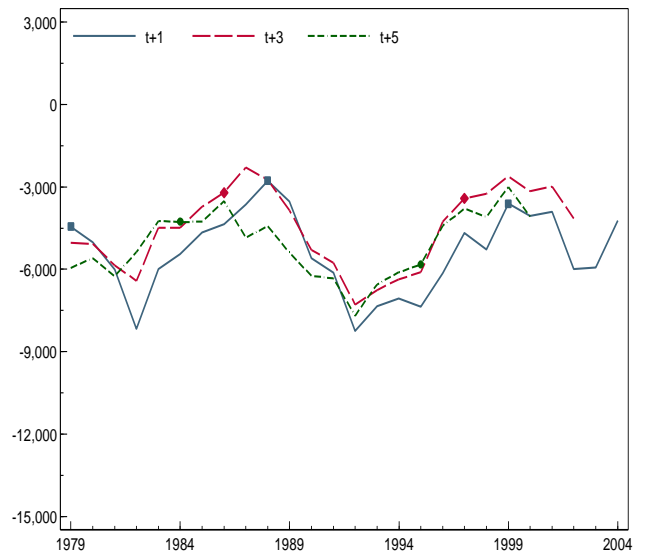
* Aged 50-54 at the time of permanently layoff

Mean and median earnings changes of laid-off workers, *non-manufacturing women*

Dollars (1989 constant) Mean



Median



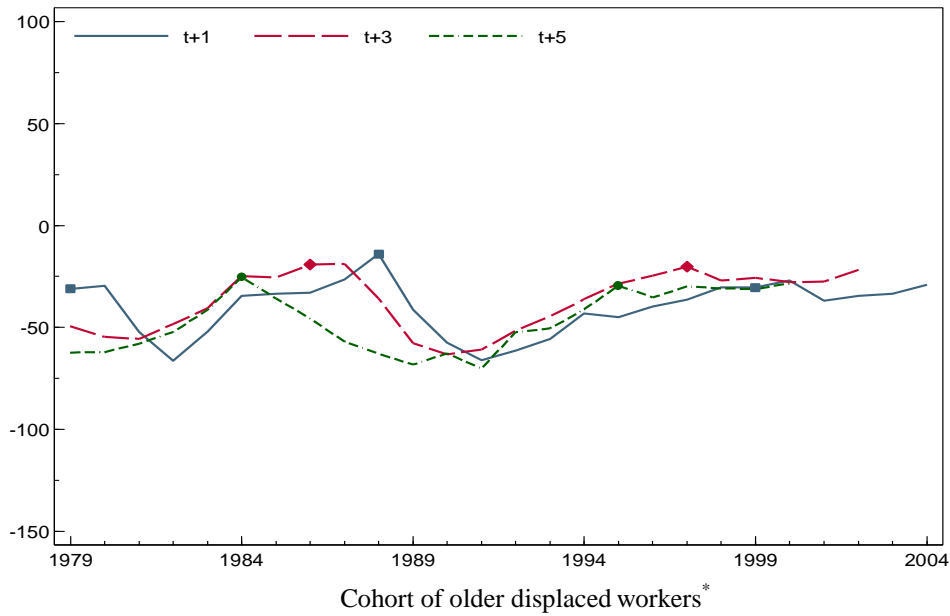
Cohort of older displaced workers*

* Aged 50-54 at the time of permanently layoff

Source: Longitudinal worker files (1978-2005)

Figure 9
Median percentage changes in earnings*, men

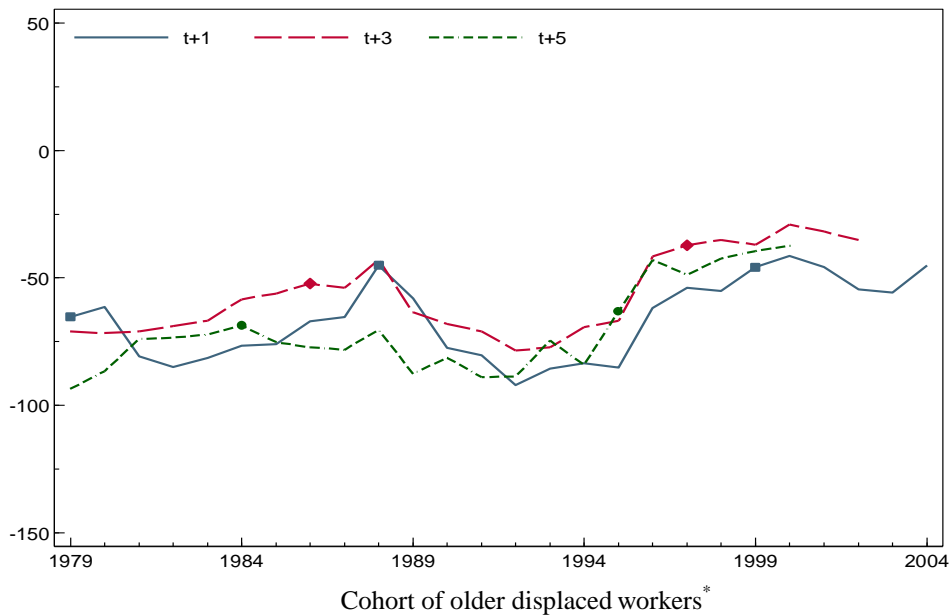
Percent (%)



* Aged 50-54 at the time of permanently layoff, conditional on earnings \geq \$10,000 in $t-1$. The imposed condition excluded 16.7% of male samples.

Median percentage changes in earnings*, women

Percent (%)

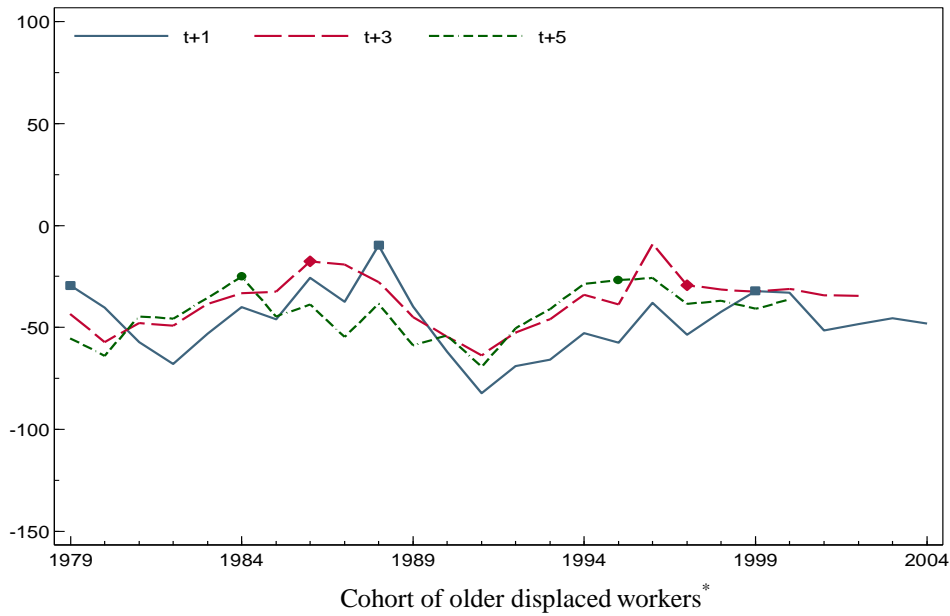


* Aged 50-54 at the time of permanently layoff, conditional on earnings \geq \$10,000 in $t-1$. The imposed condition excluded 34.8% of female samples.

Source: Longitudinal worker files (1978-2005)

Figure 10
Median percentage changes in earnings*, manufacturing men

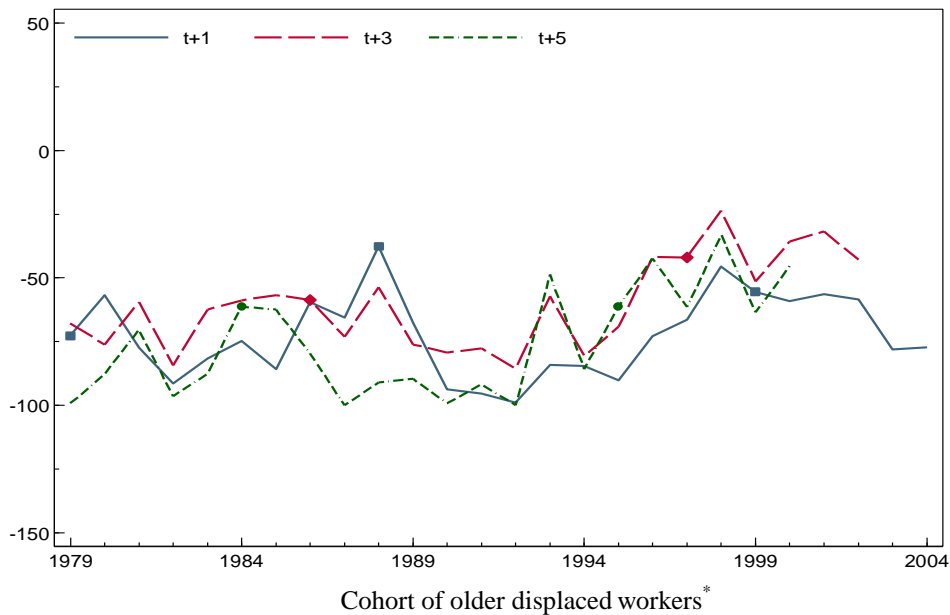
Percent (%)



* Aged 50-54 at the time of permanently layoff, conditional on earnings \geq \$10,000 in $t-1$. The imposed condition excluded 12.0% of manufacturing male samples.

Median percentage changes in earnings*, manufacturing women

Percent (%)

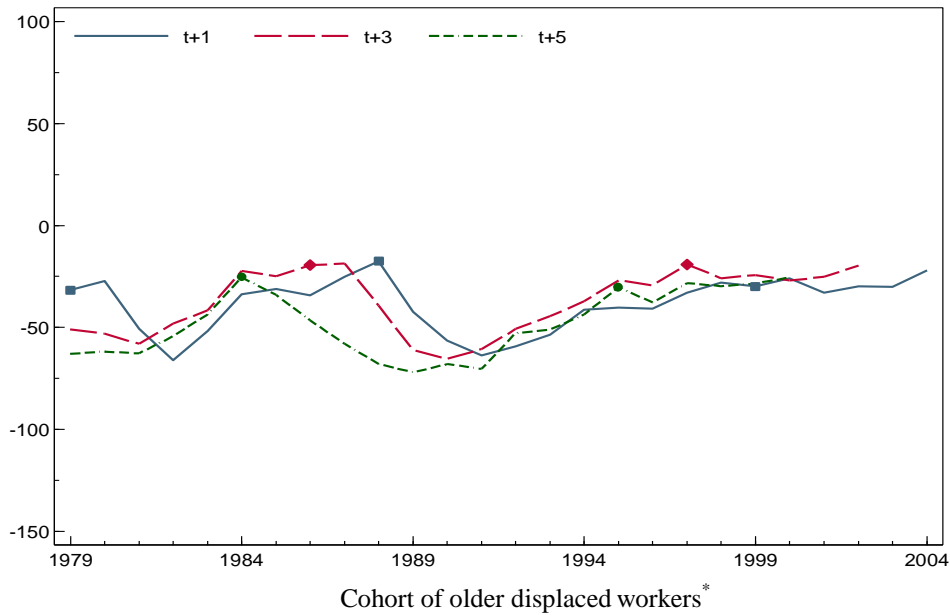


* Aged 50-54 at the time of permanently layoff, conditional on earnings \geq \$10,000 in $t-1$. The imposed condition excluded 28.1% of manufacturing female samples.

Source: Longitudinal worker files (1978-2005)

Figure 11
Median percentage changes in earnings* , non-manufacturing men

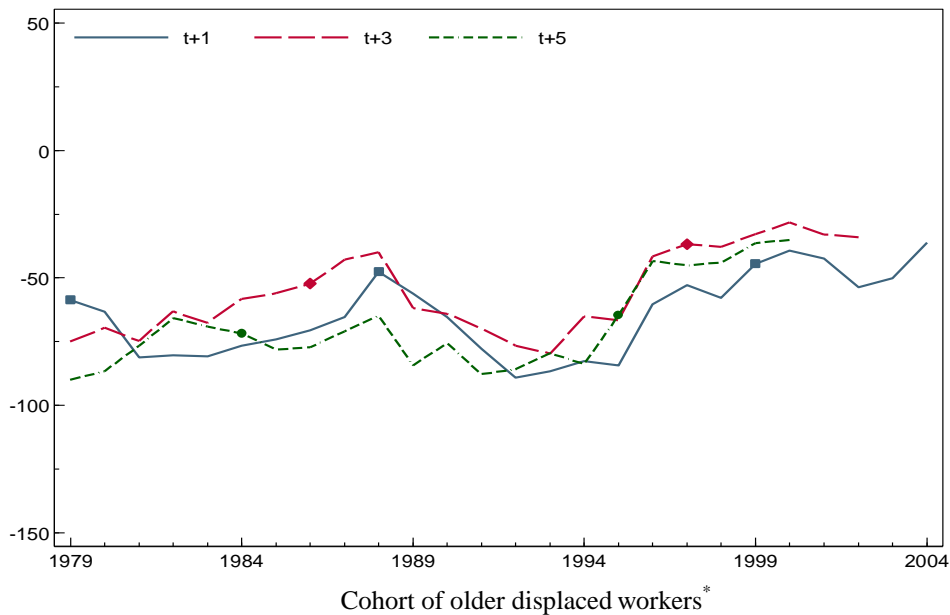
Percent (%)



* Aged 50-54 at the time of permanently layoff, conditional on earnings \geq \$10,000 in $t-1$. The imposed condition excluded 17.7% of non-manufacturing male samples.

Median percentage changes in earnings* , non-manufacturing women

Percent (%)



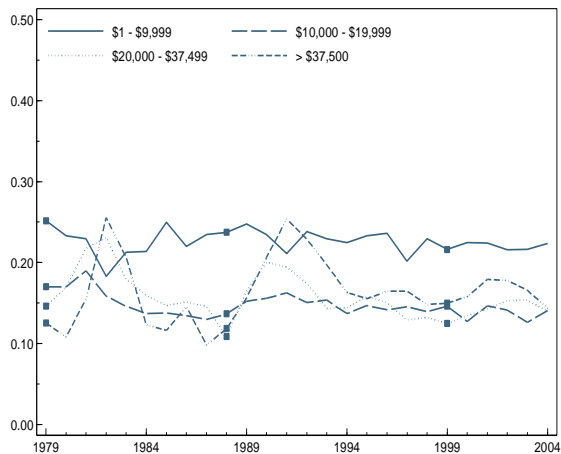
* Aged 50-54 at the time of permanently layoff, conditional on earnings \geq \$10,000 in $t-1$. The imposed condition excluded 36.3% of non-manufacturing female samples.

Source: Longitudinal worker files (1978-2005)

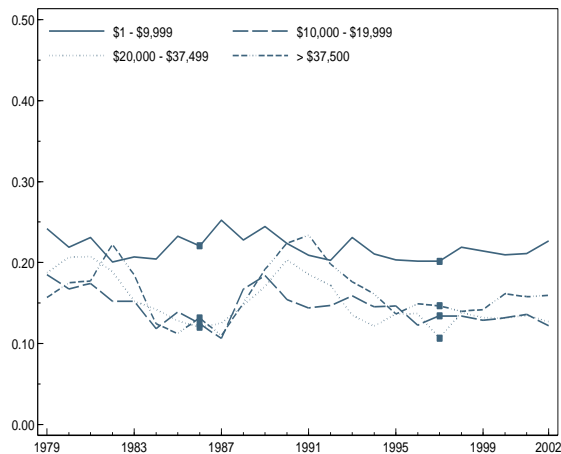
Figure 12
Percentage of laid-off workers who experienced a loss in earnings, all

Percent

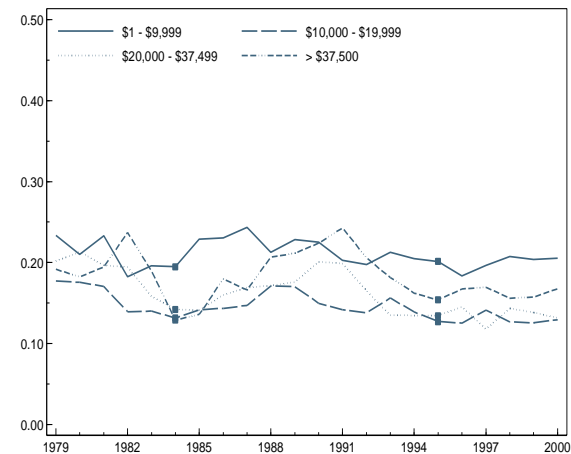
$t + 1$ outcome



$t + 3$ outcome



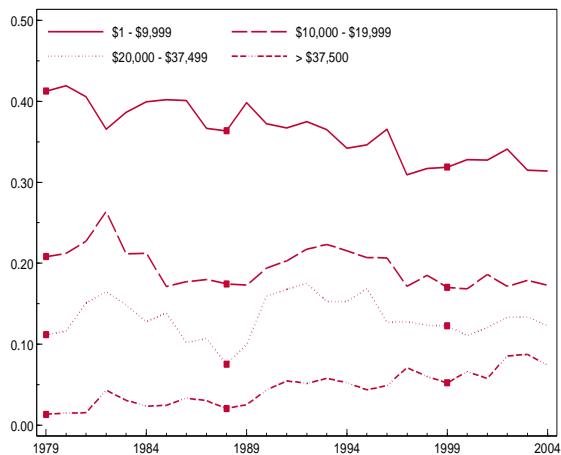
$t + 5$ outcome



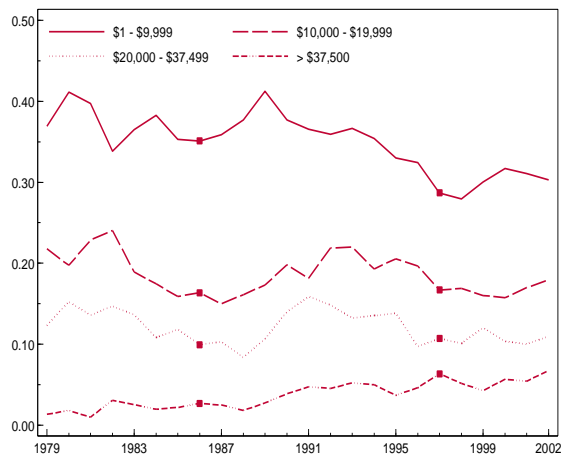
Cohort of older displaced male workers*

Percent

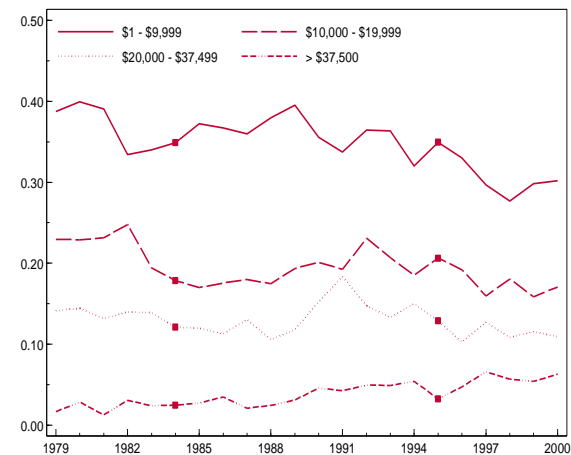
$t + 1$ outcome



$t + 3$ outcome



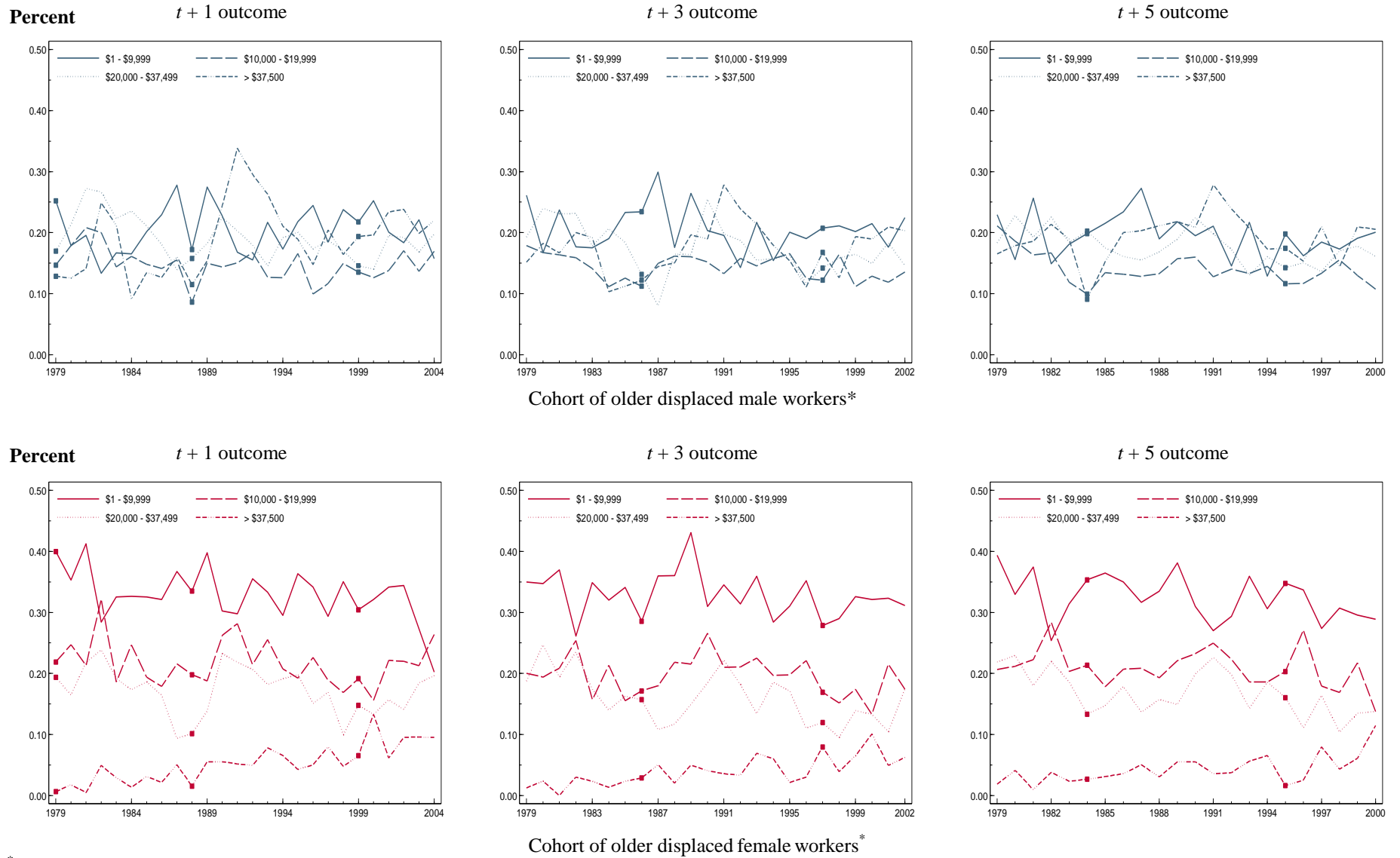
$t + 5$ outcome



Cohort of older displaced female workers*

* Aged 50-54 at the time of permanent layoff
 Source: Longitudinal worker files (1978-2005)

Figure 13
Percentage of laid-off workers who experienced a loss in earnings, manufacturing

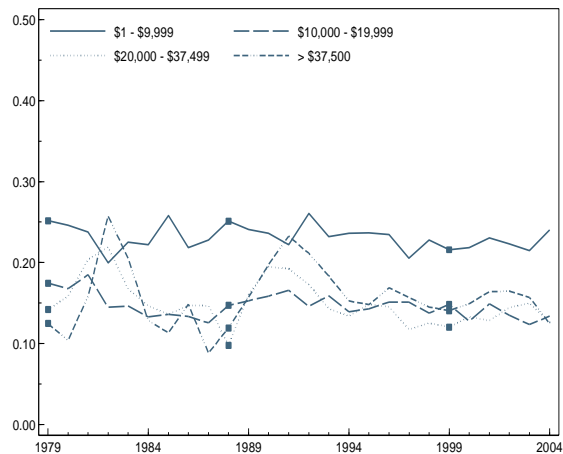


* Aged 50-54 at the time of permanent layoff
 Source: Longitudinal worker files (1978-2005)

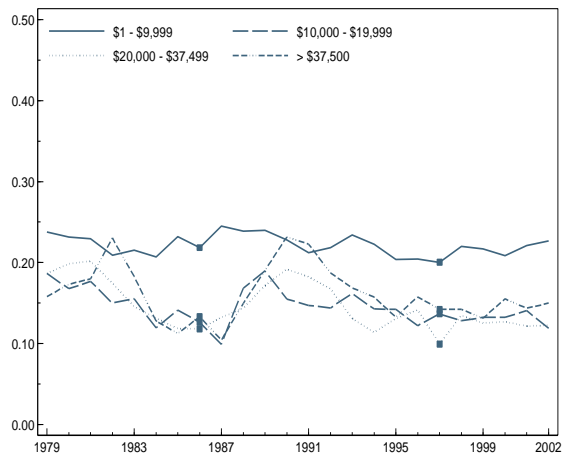
Figure 14
Percentage of laid-off workers who experienced a loss in earnings, non-manufacturing

Percent

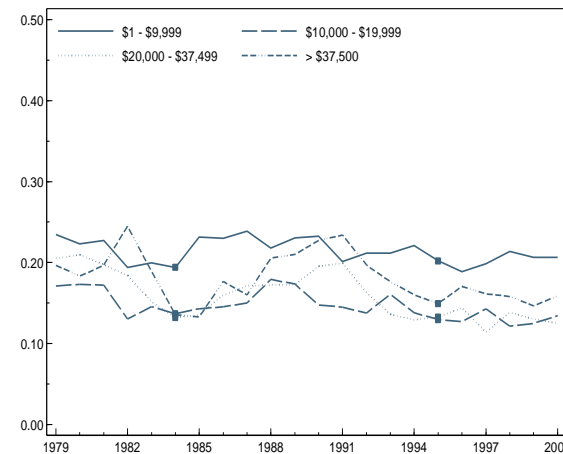
$t + 1$ outcome



$t + 3$ outcome



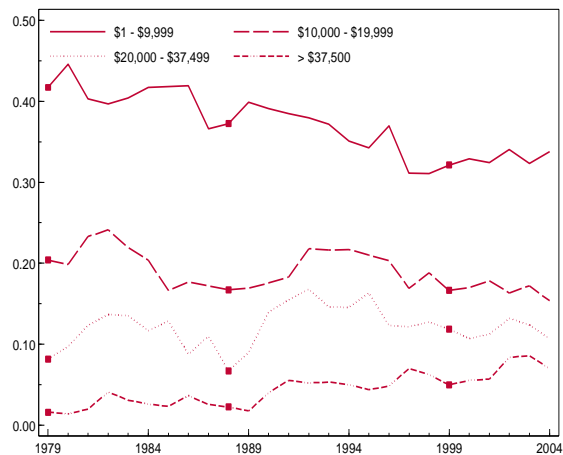
$t + 5$ outcome



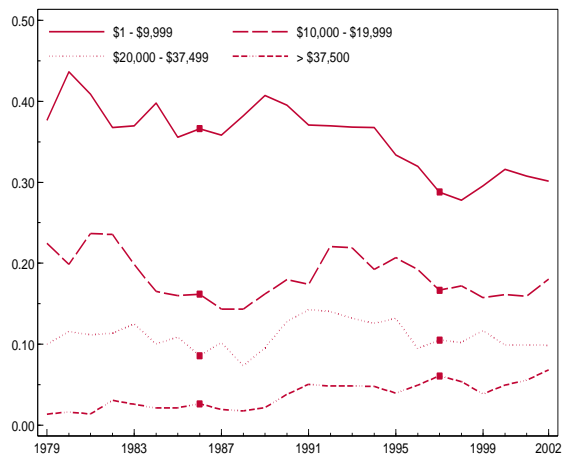
Cohort of older displaced male workers*

Percent

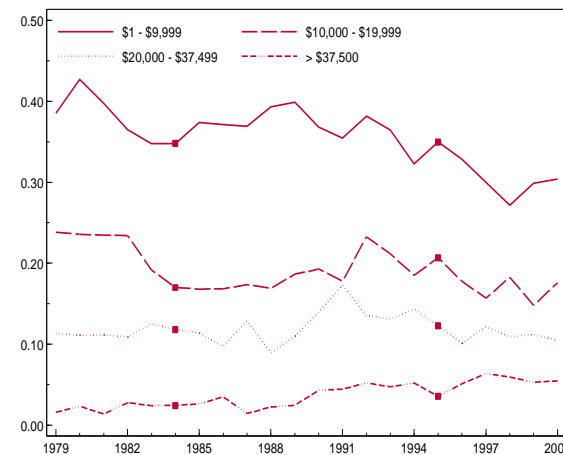
$t + 1$ outcome



$t + 3$ outcome



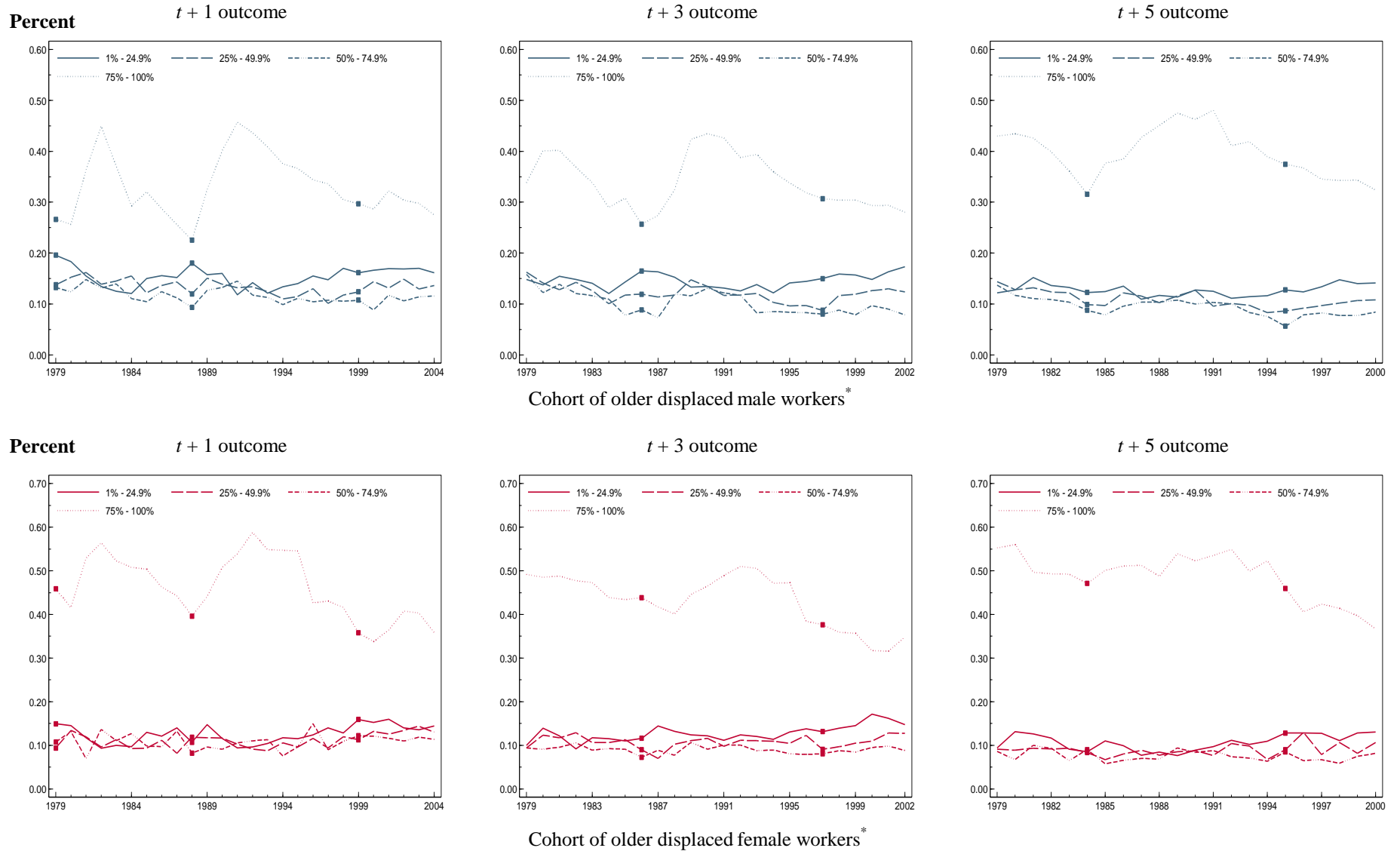
$t + 5$ outcome



Cohort of older displaced female workers*

* Aged 50-54 at the time of permanent layoff
 Source: Longitudinal worker files (1978-2005).

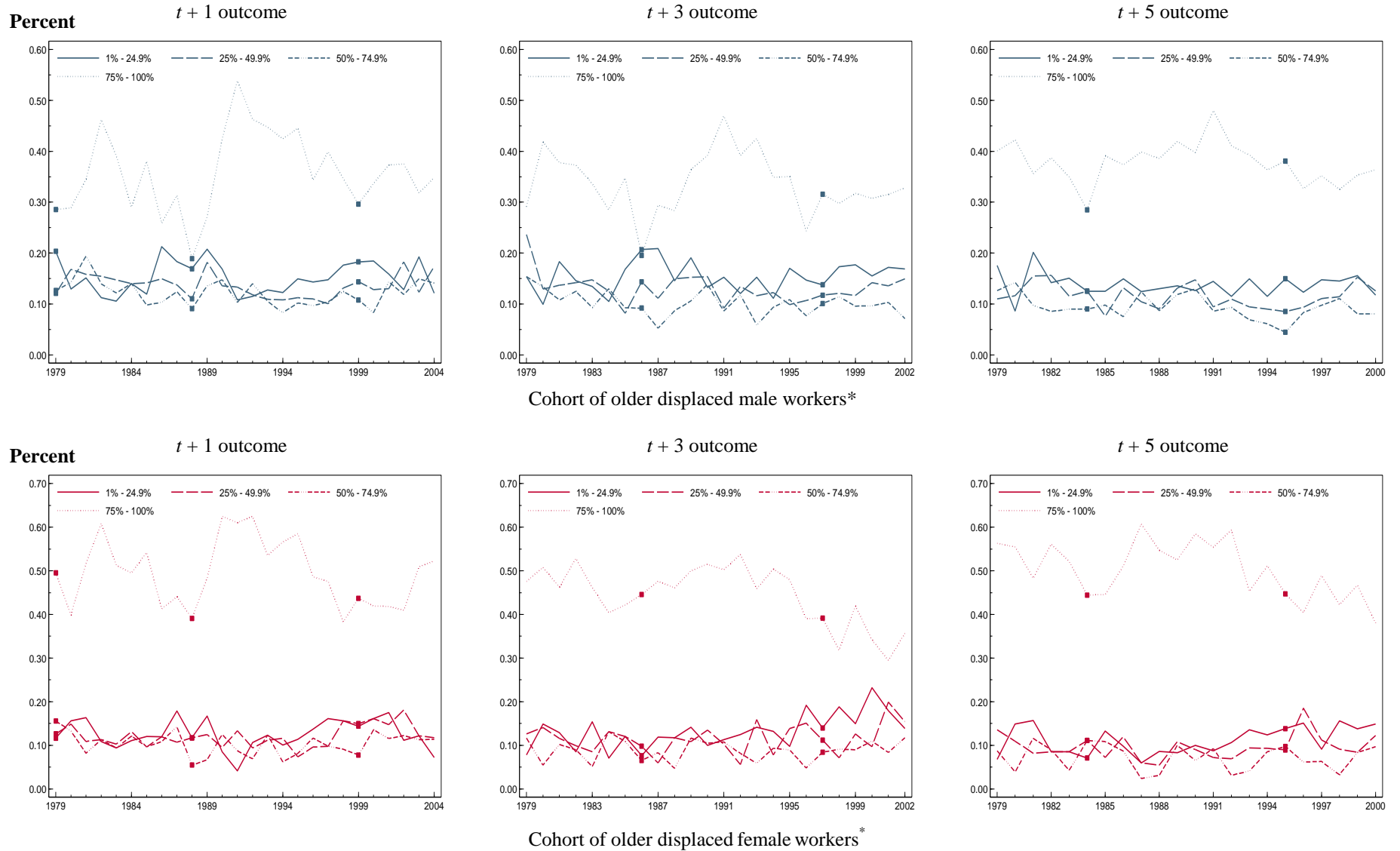
Figure 15
Percentage of laid-off workers who experienced earnings losses (in % terms), all



* Aged 50-54 at the time of permanent layoff, conditional on earnings \geq \$10,000 in $t-1$.

Source: Longitudinal worker files (1978-2005)

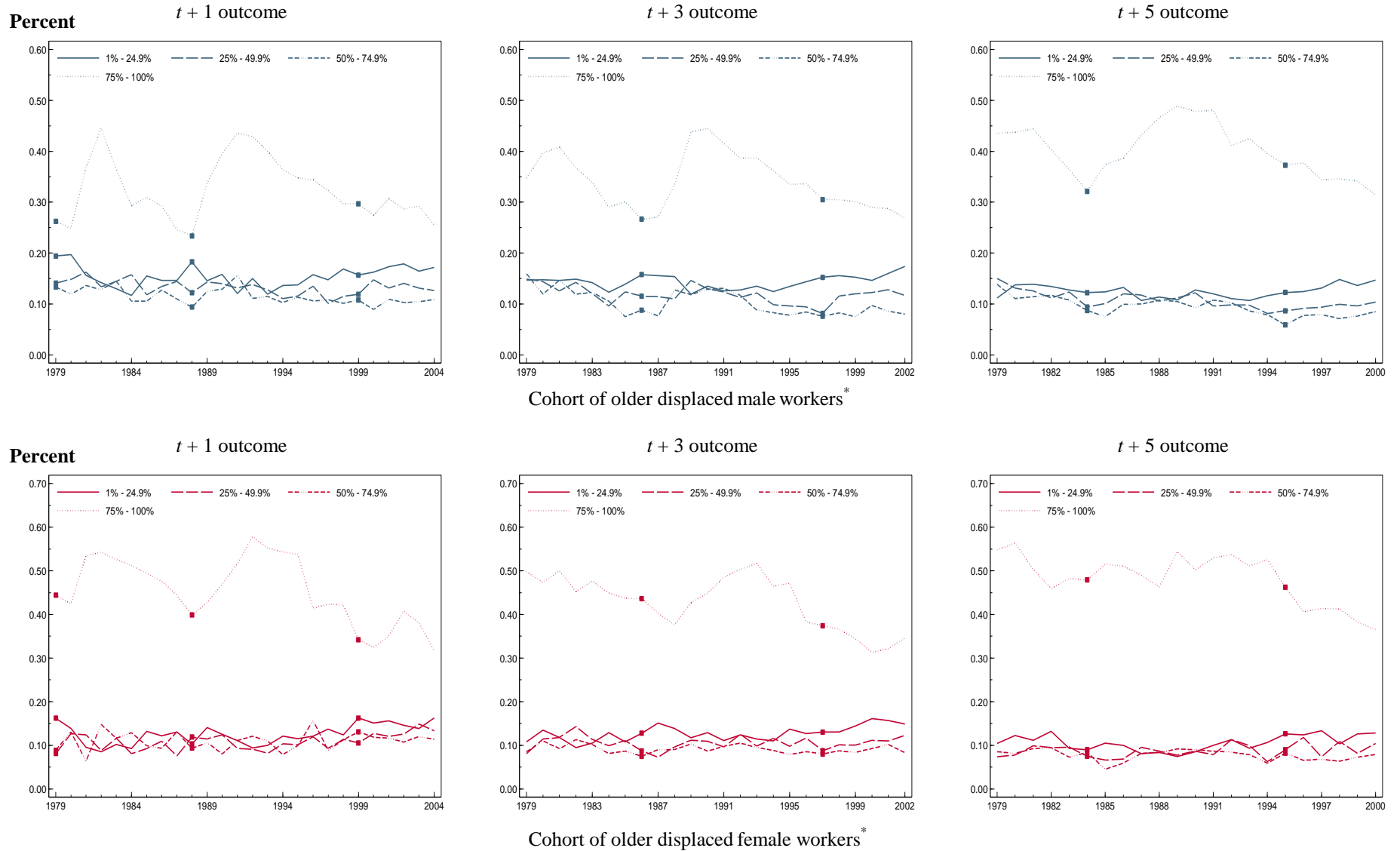
Figure 16
Percentage of laid-off workers who experienced earnings losses (in % terms), manufacturing



* Aged 50-54 at the time of permanent layoff, conditional on earnings \geq \$10,000 in $t-1$.

Source: Longitudinal worker files (1978-2005)

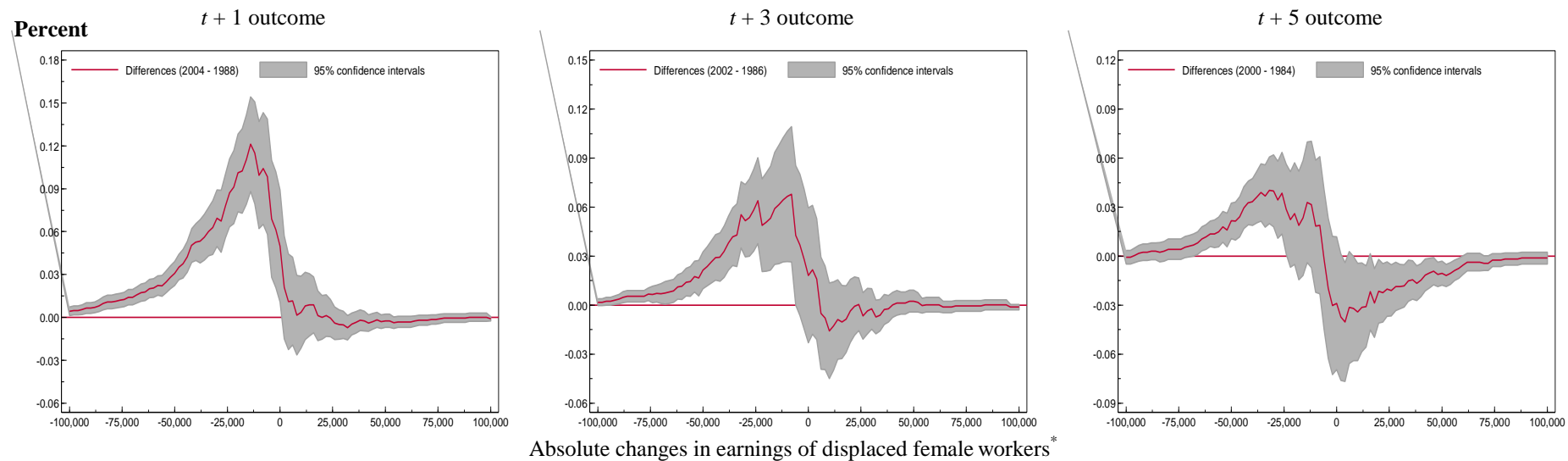
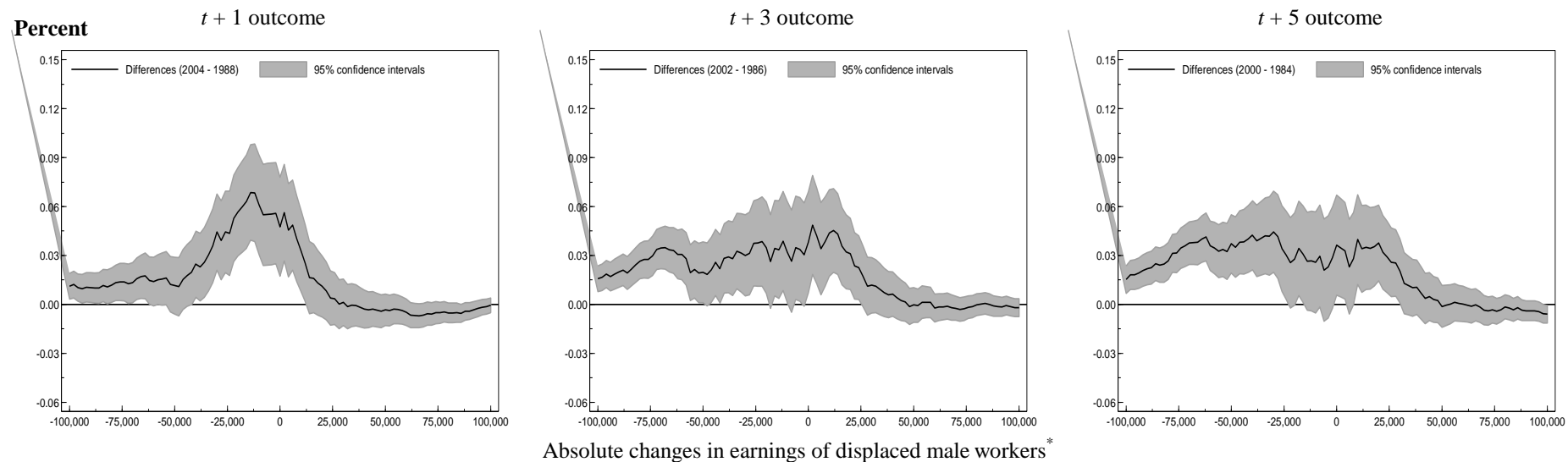
Figure 17
Percentage of laid-off workers who experienced earnings losses (in % terms), non-manufacturing



* Aged 50-54 at the time of permanent layoff, conditional on earnings \geq \$10,000 in $t-1$.

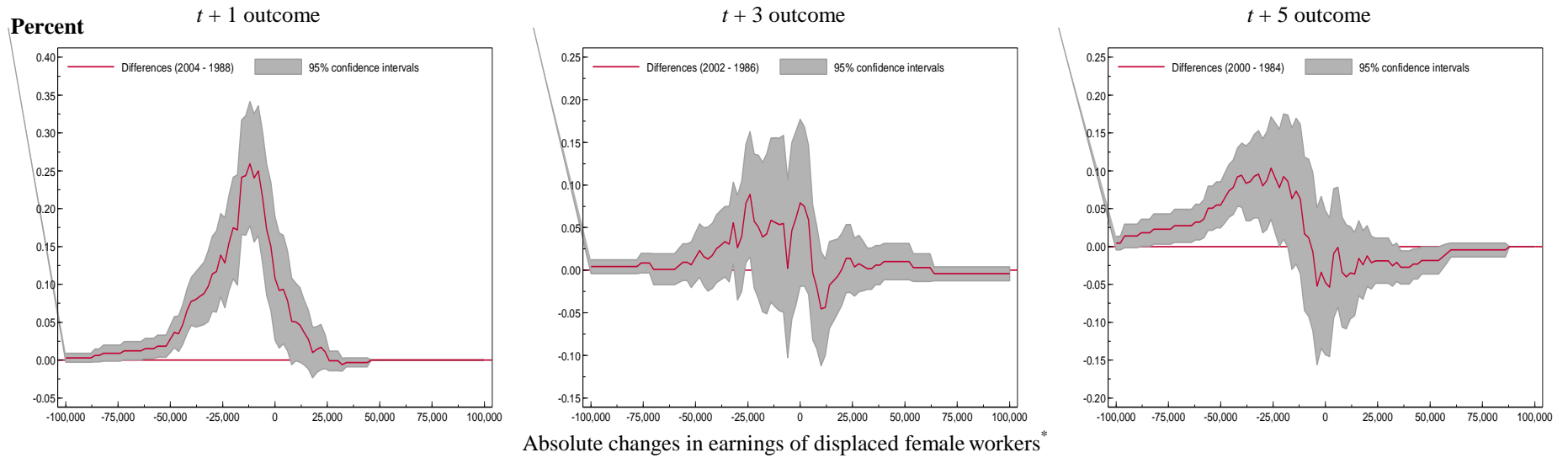
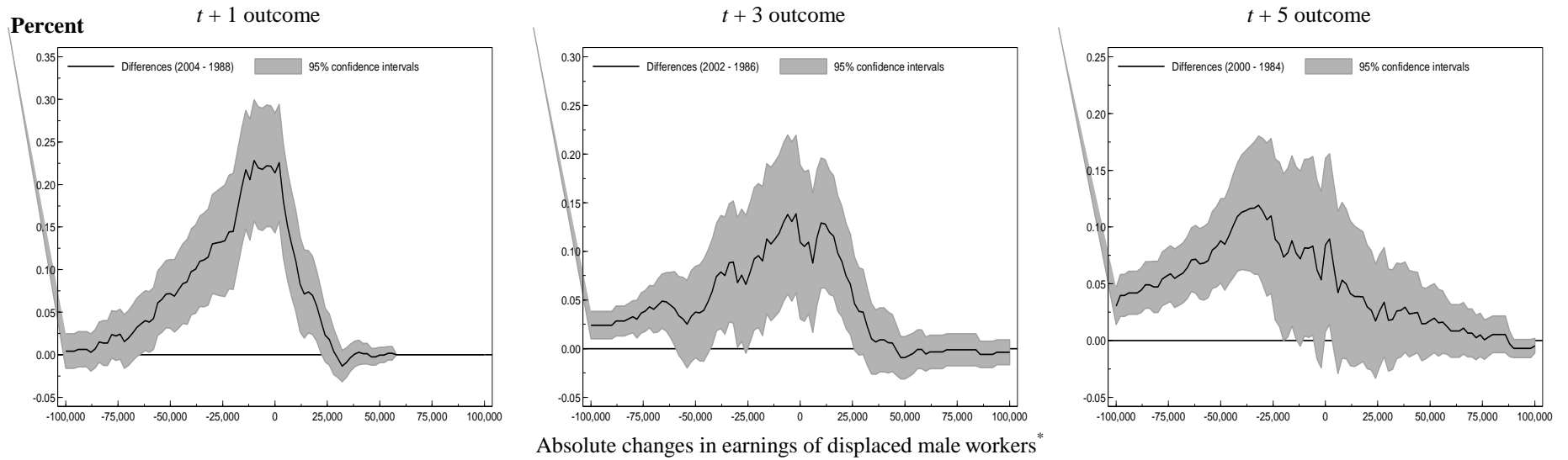
Source: Longitudinal worker files (1978-2005)

Figure 18
Test for differences in CDF (absolute earnings losses), all displaced workers



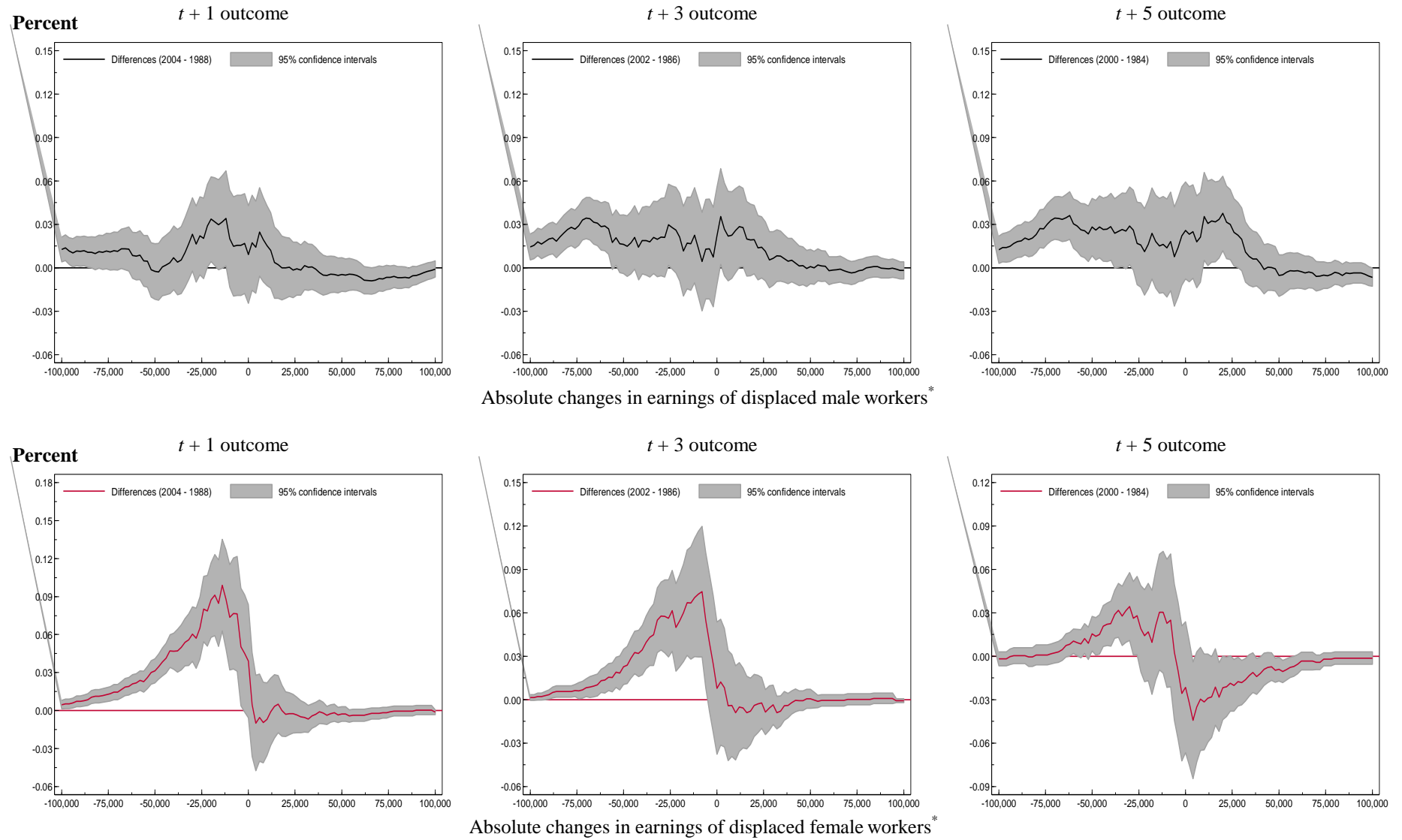
* Aged 50-54 at the time of permanently layoff.
Source: Longitudinal worker files (1978-2005)

Figure 19
Test for differences in CDF (absolute earnings losses), manufacturing workers



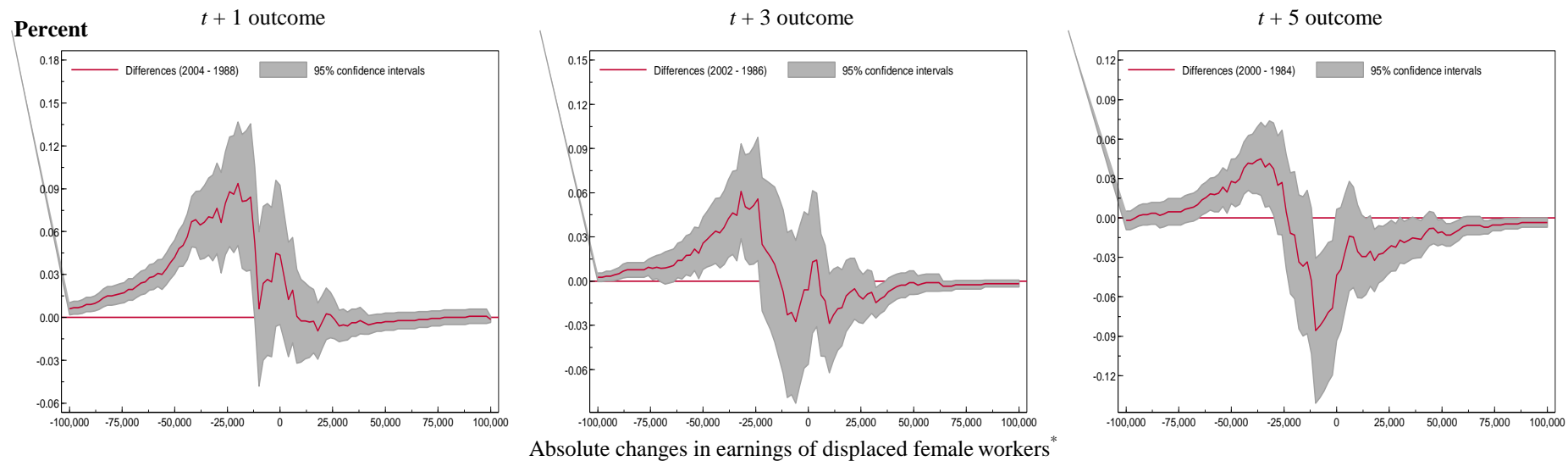
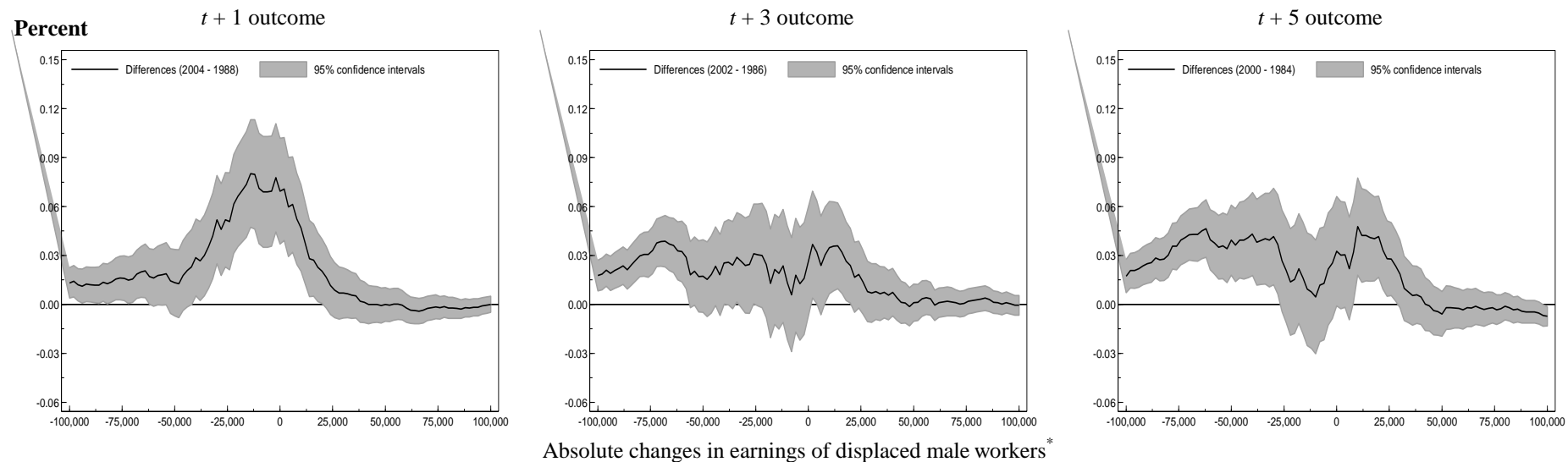
* Aged 50-54 at the time of permanent layoff
 Source: Longitudinal worker files (1978-2005)

Figure 20
Test for differences in CDF (absolute earnings losses), non-manufacturing workers



* Aged 50-54 at the time of permanently layoff.
Source: Longitudinal worker files (1978-2005)

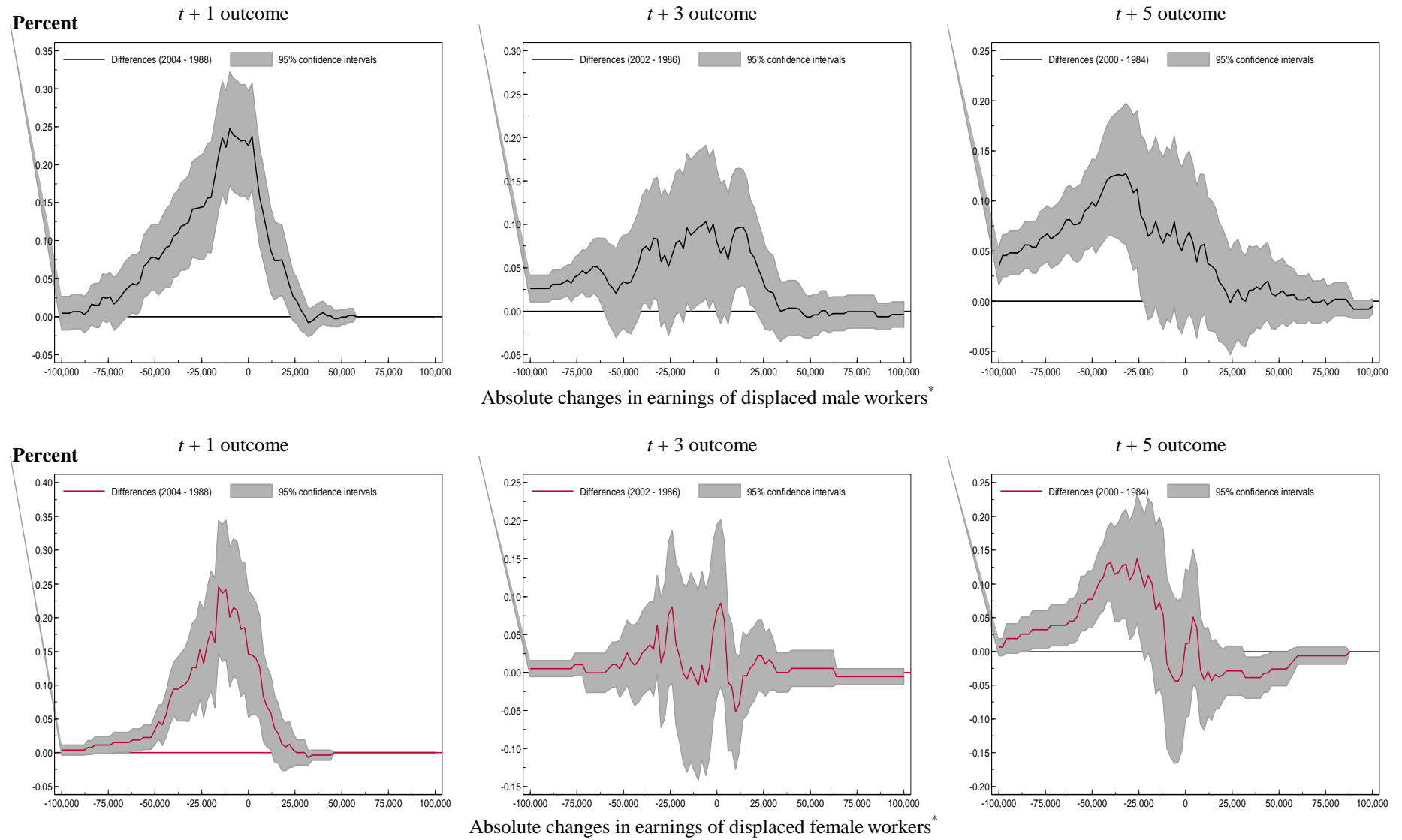
Figure 21
Test for differences in CDF (absolute earnings losses), all displaced workers



* Aged 50-54 at the time of permanent layoff, conditional on $t-1$ earnings \geq \$10,000.

Source: Longitudinal worker files (1978-2005)

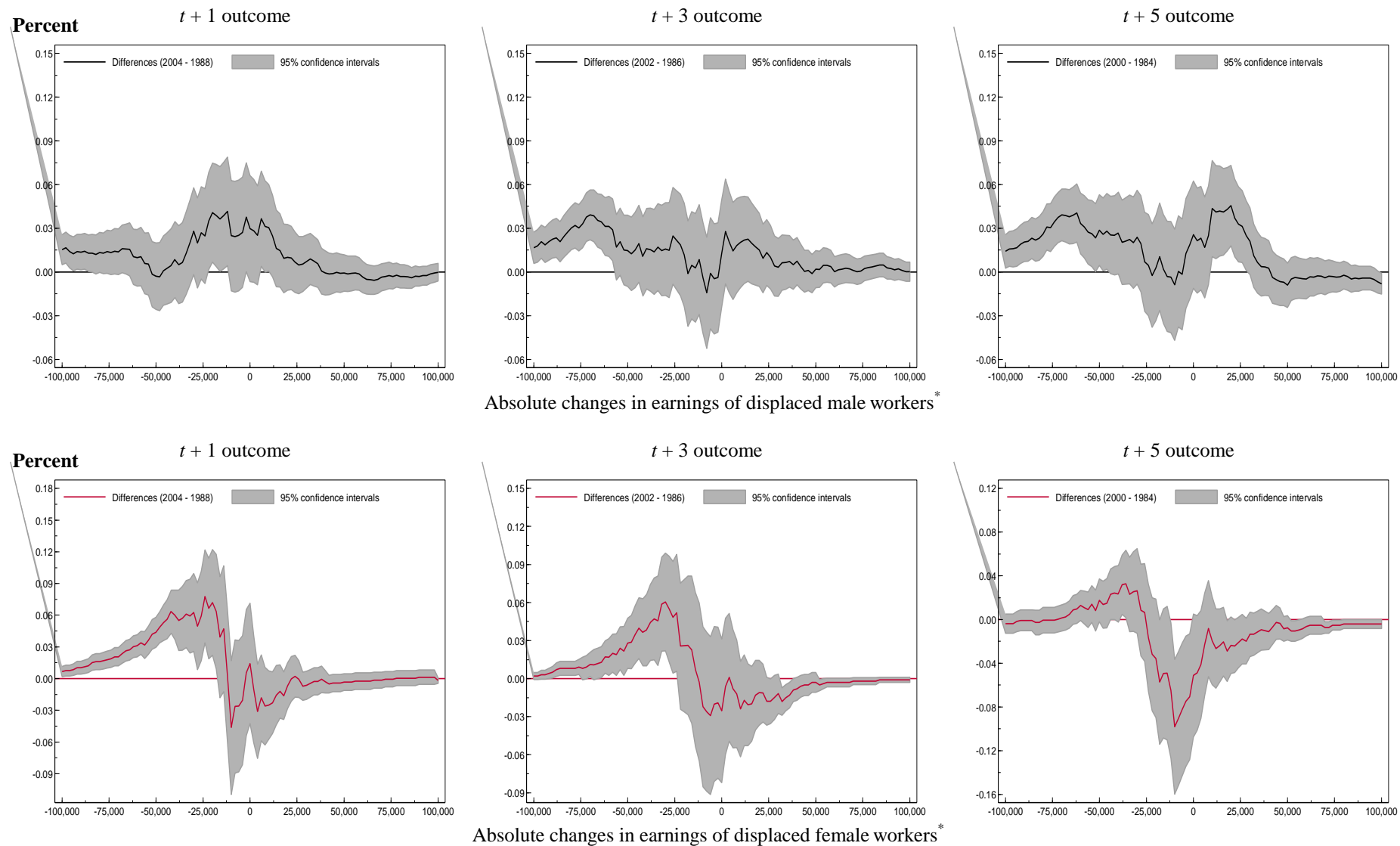
Figure 22
Test for differences in CDF (absolute earnings losses), manufacturing workers



* Aged 50-54 at the time of permanent layoff, conditional on $t-1$ earnings \geq \$10,000

Source: Longitudinal worker files (1978-2005)

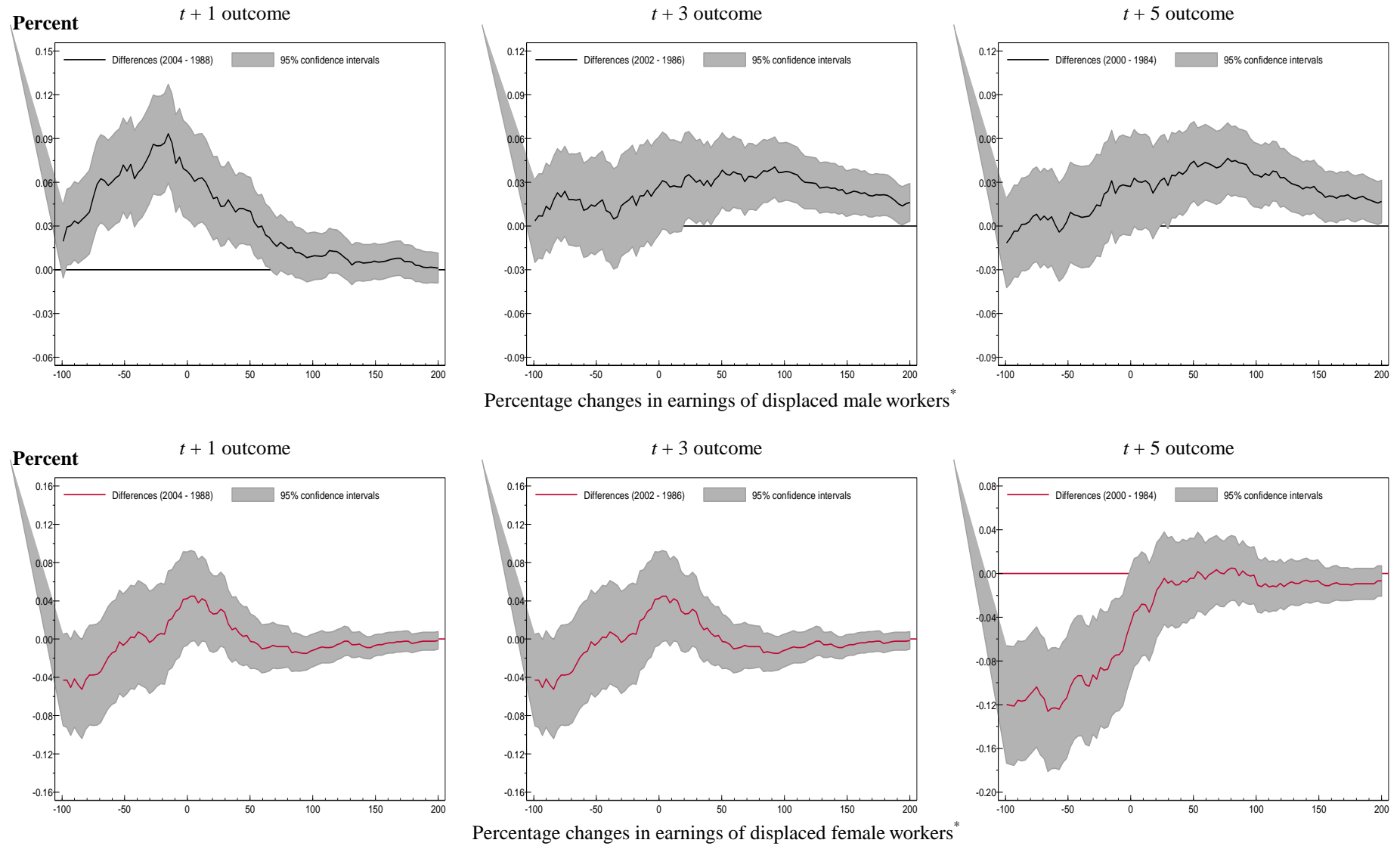
Figure 23
Test for differences in CDF (absolute earnings losses), non-manufacturing workers



* Aged 50-54 at the time of permanent layoff, conditional on $t-1$ earnings \geq \$10,000.

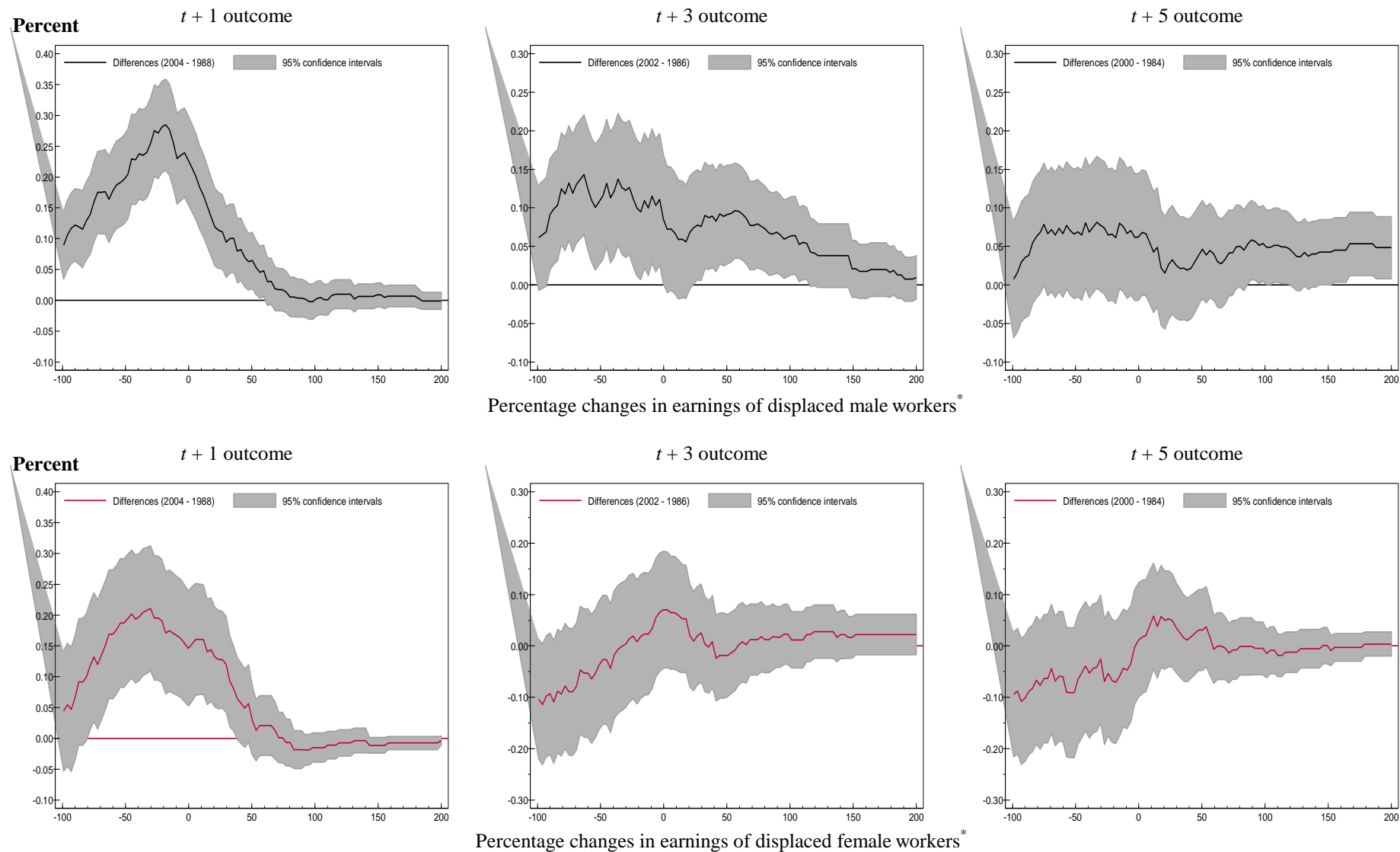
Source: Longitudinal worker files (1978-2005)

Figure 24
Test for differences in CDF (relative earnings losses), all displaced workers



* Aged 50-54 at the time of permanent layoff, conditional on earnings \geq \$10,000 in $t-1$.
Source: Longitudinal worker files (1978-2005)

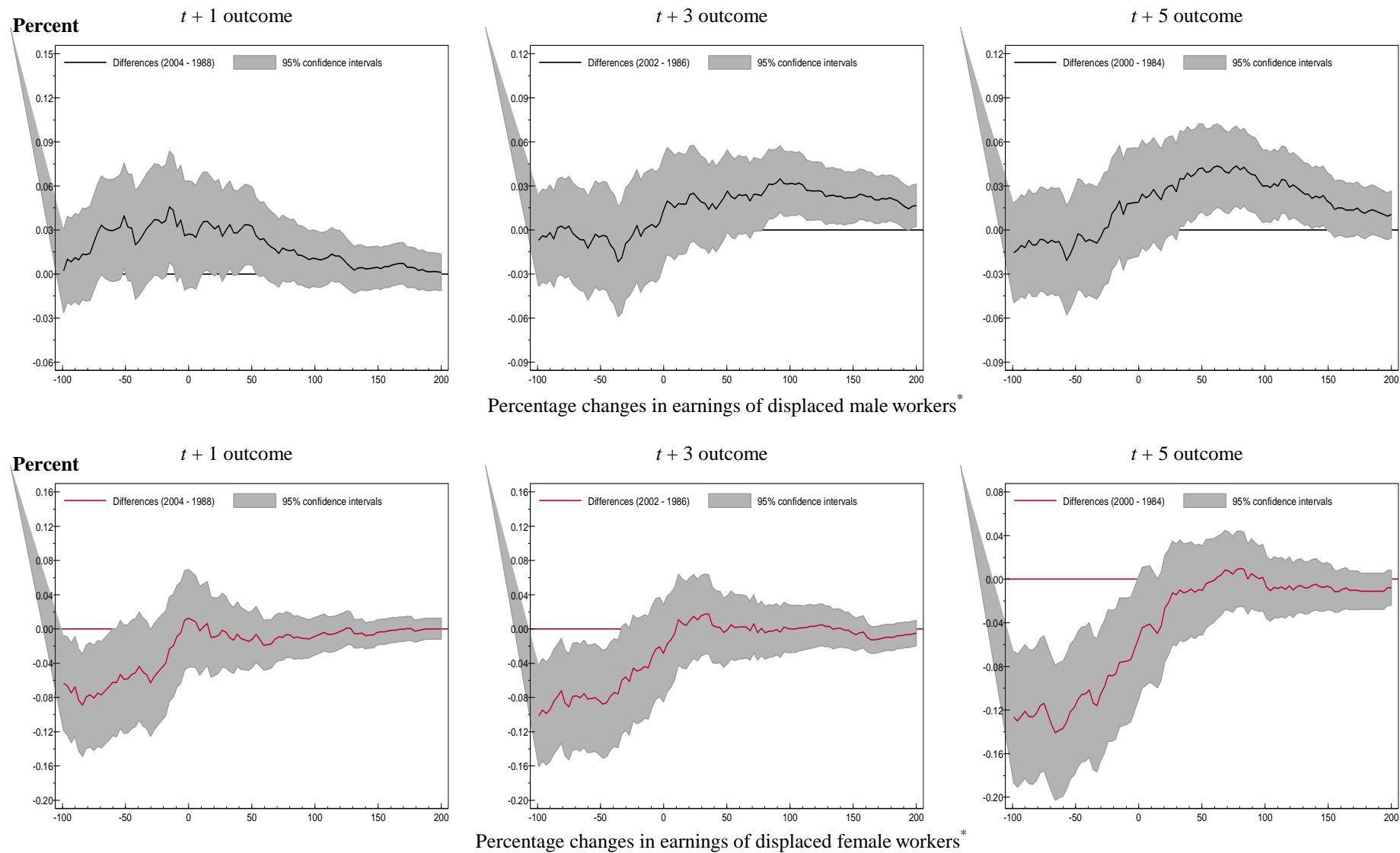
Figure 25
Test for differences in CDF (relative earnings losses), manufacturing workers



* Aged 50-54 at the time of permanent layoff, conditional on earnings \geq \$10,000 in $t-1$.

Source: Longitudinal worker files (1978-2005)

Figure 26
Test for differences in CDF (relative earnings losses), non-manufacturing workers



* Aged 50-54 at the time of permanent layoff, conditional on earnings \geq \$10,000 in $t-1$.

Source: Longitudinal worker files (1978-2005)

Table 1
Linear probability estimates of reemployment regression, older displaced workers*

	Men			Women		
	<i>All</i>	<i>Manuf.</i>	<i>Non-Manuf.</i>	<i>All</i>	<i>Manuf.</i>	<i>Non-Manuf.</i>
<u>Short-term (t+1) outcome⁺</u>						
Cohorts (base=1988)						
1979	-0.002 (0.016)	-0.035 (0.039)	0.004 (0.017)	-0.026 (0.025)	-0.008 (0.050)	-0.031 (0.029)
1999	-0.027* (0.014)	-0.081** (0.034)	-0.016 (0.015)	0.033* (0.020)	0.066 (0.046)	0.023 (0.023)
2000	-0.011 (0.014)	-0.122*** (0.033)	0.011 (0.015)	0.059*** (0.020)	0.079* (0.046)	0.051** (0.022)
2001	-0.024* (0.013)	-0.087*** (0.031)	-0.012 (0.015)	0.059*** (0.020)	0.098** (0.043)	0.049** (0.022)
2002	-0.028* (0.014)	-0.112*** (0.032)	-0.011 (0.015)	0.009 (0.020)	-0.023 (0.045)	0.010 (0.022)
2003	-0.018 (0.014)	-0.065** (0.031)	-0.010 (0.015)	0.030 (0.020)	0.026 (0.044)	0.028 (0.022)
2004	-0.001 (0.014)	-0.083*** (0.032)	0.016 (0.015)	0.048** (0.020)	0.015 (0.043)	0.052** (0.022)
Sample size	49,661	9,143	40,518	30,166	5,532	24,634
<u>Mid-term (t+3) outcome⁺</u>						
Cohorts (base=1986)						
1997	-0.012 (.015)	-0.069* (.039)	-0.003 (.016)	0.070*** (.021)	0.070 (.052)	0.069*** (.023)
2000	-0.011 (.015)	-0.085** (.038)	0.001 (.016)	0.098*** (.021)	0.082 (.052)	0.099*** (.023)
2001	-0.003 (.014)	-0.057 (.036)	0.005 (.016)	0.112*** (.021)	0.145*** (.048)	0.105*** (.023)
2002	-0.003 (.014)	-0.073** (.037)	0.008 (.016)	0.081*** (.021)	0.089* (.051)	0.079*** (.023)
Sample size	44,588	8,113	36,475	26,593	4,924	21,669
<u>Long-term (t+5) outcome⁺</u>						
Cohorts (base=1984)						
1995	-0.027* (.016)	-0.059 (.039)	-0.021 (.017)	0.017 (.023)	-0.007 (.054)	0.021 (.025)
2000	0.011 (.015)	-0.021 (.037)	0.018 (.016)	0.110*** (.021)	0.104** (.052)	0.108*** (.024)
Sample size	39,400	7,082	32,318	23,174	4,358	18,816

* Aged 50-54 at the time of permanently layoff.

⁺ Controls in the regression include earnings in *t*-1, dummies for age, province (when laid-off), and for all cohorts (from 1979 to 2004), and a constant term.

Table 2
OLS regression on earnings changes (\$), older displaced workers*

	Men			Women		
	<i>All</i>	<i>Manuf.</i>	<i>Non-Manuf.</i>	<i>All</i>	<i>Manuf.</i>	<i>Non-Manuf.</i>
<u><i>Short-term (t+1) outcome</i>⁺</u>						
Cohorts (base=1988)						
1979	-4230.7*** (1205.5)	-8171.7* (4706.1)	-3516.5*** (1070.8)	-1976.0*** (714.2)	-4074.4*** (1248.7)	-1243.6 (843.4)
1999	-3795.1*** (1078.9)	-8747.3** (4105.8)	-2843.2*** (962.8)	404.4 (578.9)	-944.0 (1140.2)	701.1 (664.5)
2000	-2987.8*** (1067.2)	-9459.3** (4010.4)	-1647.9* (955.3)	967.3* (572.0)	-1252.0 (1158.8)	1415.6** (654.6)
2001	-6424.2*** (1040.1)	-13358.5*** (3795.4)	-4846.6*** (938.2)	397.6 (562.3)	-1244.5 (1061.7)	853.4 (650.0)
2002	-6102.7*** (1047.4)	-15068.9*** (3948.5)	-4211.8*** (936.6)	-956.9* (569.0)	-3033.0*** (1128.8)	-589.9 (652.9)
2003	-4544.1*** (1046.4)	-11004.1*** (3841.0)	-3117.9*** (942.2)	-408.2 (564.7)	-3351.2*** (1093.1)	182.2 (650.2)
2004	-2504.3** (1049.8)	-13439.7*** (3890.9)	-69.4 (942.7)	1163.2** (559.2)	-3258.2*** (1060.6)	2142.4*** (645.9)
Sample size	49,661	9,143	40,518	30,166	5,532	24,634
<u><i>Mid-term (t+3) outcome</i>⁺</u>						
Cohorts (base=1986)						
1997	-1266.4 (974.4)	-4121.8* (2441.5)	-724.3 (1065.1)	3123.5*** (652.9)	651.0 (1496.6)	3423.0*** (727.1)
2000	-2919.6*** (957.3)	-6776.0*** (2365.6)	-2096.3** (1050.6)	2850.1*** (649.0)	1549.5 (1477.8)	3002.6*** (723.3)
2001	-2880.8*** (933.9)	-6579.5*** (2260.4)	-1966.6* (1031.8)	2881.4*** (638.7)	2896.2** (1375.9)	2863.7*** (718.3)
2002	-1000.4 (940.0)	-5495.3** (2337.6)	-32.9 (1030.0)	2264.3*** (645.9)	1330.8 (1446.2)	2355.5*** (721.5)
Sample size	44,588	8,113	36,475	26,593	4,924	21,669
<u><i>Long-term (t+5) outcome</i>⁺</u>						
Cohorts (base=1984)						
1995	-2088.5** (1052.4)	-4660.8** (2349.5)	-1537.1 (1174.6)	901.4 (712.7)	911.1 (1584.4)	834.9 (797.9)
2000	47.8 (1009.2)	-5080.1** (2256.7)	1225.6 (1126.6)	3674.9*** (675.7)	2761.1* (1545.2)	3678.2*** (754.1)
Sample size	39,400	7,082	32,318	23,174	4,358	18,816

* Aged 50-54 at the time of permanently layoff.

⁺ Controls in the regression include earnings in $t-1$, dummies for age, province (when laid-off), and for all cohorts (from 1979 to 2004), and a constant term.

Table 3
Median regression on earnings changes (\$), older displaced workers*

	Men			Women		
	<i>All</i>	<i>Manuf.</i>	<i>Non-Manuf.</i>	<i>All</i>	<i>Manuf.</i>	<i>Non-Manuf.</i>
<u><i>Short-term (t+1) outcome</i>⁺</u>						
Cohorts (base=1988)						
1979	-4085.2*** (967.2)	-13903.7*** (2504.4)	-2652.0*** (962.2)	-1184.0* (642.5)	-1173.6 (1259.3)	-550.4 (767.5)
1999	-3584.6*** (865.7)	-12868.8*** (2187.8)	-2043.7** (865.3)	2098.8*** (520.9)	2053.5* (1152.4)	2203.9*** (604.8)
2000	-3016.9*** (856.2)	-16547.8*** (2136.1)	-1313.4 (858.5)	2525.1*** (514.7)	2458.0** (1170.0)	2591.2*** (595.8)
2001	-5553.0*** (834.4)	-18681.4*** (2021.3)	-3509.8*** (843.1)	1896.9*** (506.0)	2353.9** (1072.5)	2093.8*** (591.5)
2002	-4496.2*** (840.4)	-18512.1*** (2102.4)	-2166.9*** (841.7)	576.8 (512.0)	985.1 (1140.8)	753.6 (594.0)
2003	-4429.9*** (839.6)	-16454.9*** (2046.2)	-2404.1*** (846.7)	1184.8* (508.2)	-555.2 (1104.5)	1615.0*** (591.8)
2004	-3562.5*** (842.3)	-17660.5*** (2073.4)	1108.0 (847.1)	2290.3*** (503.2)	-1209.2 (1072.2)	3360.5*** (587.8)
Sample size	49,661	9,143	40,518	30,166	5,532	24,634
<u><i>Mid-term (t+3) outcome</i>⁺</u>						
Cohorts (base=1986)						
1997	-625.9 (969.1)	-5781.9** (2766.9)	-198.6 (1000.1)	2876.3*** (610.3)	4379.0*** (1582.3)	2453.7*** (618.6)
2000	-2935.2*** (952.1)	-7958.8*** (2680.2)	-1896.4* (986.2)	4027.4*** (606.5)	4868.6*** (1562.0)	3760.4*** (615.4)
2001	-2684.0*** (928.7)	-6571.8*** (2565.0)	-1857.9* (968.8)	4024.2*** (596.9)	6310.3*** (1453.5)	3364.4*** (611.1)
2002	-1377.0 (935.0)	-7723.5*** (2648.4)	-177.9 (967.1)	3430.6*** (603.6)	3082.0** (1527.6)	3330.0*** (613.8)
Sample size	44,588	8,113	36,475	26,593	4,924	21,669
<u><i>Long-term (t+5) outcome</i>⁺</u>						
Cohorts (base=1984)						
1995	-908.9 (967.5)	-3879.7 (2860.2)	-1088.7 (1054.3)	-107.1 (483.1)	-726.2 (1173.5)	58.6 (508.7)
2000	227.8 (927.6)	-7035.2*** (2747.3)	1058.3 (1011.4)	4771.6*** (458.1)	3866.0*** (1144.8)	4849.5*** (480.8)
Sample size	39,400	7,082	32,318	23,174	4,358	18,816

* Aged 50-54 at the time of permanently layoff.

⁺ Controls in the regression include earnings in $t-1$, dummies for age, province (when laid-off), and for all cohorts (from 1979 to 2004), and a constant term.

Table 4
Median regression on percentage changes in earnings, older displaced workers*

	Men			Women		
	<i>All</i>	<i>Manuf.</i>	<i>Non-Manuf.</i>	<i>All</i>	<i>Manuf.</i>	<i>Non-Manuf.</i>
<u><i>Short-term (t+1) outcome</i>⁺</u>						
Cohorts (base=1988)						
1979	-14.65*** (3.76)	-20.07** (8.36)	-12.14*** (3.71)	-16.22** (6.50)	-24.66*** (6.49)	-9.75 (7.45)
1999	-13.39*** (3.37)	-25.82*** (7.16)	-9.95*** (3.36)	-0.12 (5.25)	-22.73*** (5.78)	3.12 (5.89)
2000	-11.29*** (3.32)	-26.08*** (7.02)	-7.33** (3.31)	4.76 (5.17)	-23.98*** (5.92)	10.90* (5.78)
2001	-19.83*** (3.23)	-42.93*** (6.58)	-13.56*** (3.26)	3.20 (5.09)	-14.41*** (5.34)	8.51 (5.77)
2002	-17.11*** (3.24)	-41.11*** (6.83)	9.71*** (3.24)	-8.02 (5.13)	-19.04*** (5.66)	-5.78 (5.77)
2003	-16.36*** (3.25)	-37.09*** (6.72)	-10.56*** (3.26)	-8.13 (5.10)	-31.46*** (5.47)	-0.92 (5.75)
2004	-12.54*** (3.26)	-41.06*** (6.73)	-4.14 (3.27)	2.39 (5.05)	-33.13*** (5.31)	12.45** (5.72)
Sample size	41,380	8,044	33,336	19,666	3,980	15,686
<u><i>Mid-term (t+3) outcome</i>⁺</u>						
Cohorts (base=1986)						
1997	-2.37 (3.65)	-7.42 (8.54)	-0.49 (3.79)	19.07*** (6.57)	15.36 (9.38)	18.27** (7.32)
2000	-8.07** (3.57)	-13.53 (8.24)	-6.53* (3.72)	28.18*** (6.53)	16.02* (9.29)	28.43*** (7.26)
2001	-8.30** (3.48)	-15.51** (7.84)	-5.76 (3.67)	25.37*** (6.44)	18.91** (8.56)	23.82*** (7.25)
2002	-2.78 (3.50)	-14.10* (8.07)	-0.24 (3.64)	22.53*** (6.48)	12.05 (8.94)	22.39*** (7.25)
Sample size	37,090	7,128	29,962	17,107	3,494	13,613
<u><i>Long-term (t+5) outcome</i>⁺</u>						
Cohorts (base=1984)						
1995	-3.99 (4.16)	-1.92 (8.97)	-3.03 (4.18)	8.06** (3.39)	-3.56 (2.42)	8.07* (4.84)
2000	-3.49 (3.96)	-12.71 (8.59)	0.40 (3.99)	30.55*** (3.19)	11.71*** (2.33)	31.68*** (4.55)
Sample size	32,683	6,184	26,499	14,699	3,055	11,644

* Aged 50-54 at the time of permanently layoff, conditional on earnings \geq \$10,000 in $t-1$.

⁺ Controls in the regression include earnings in $t-1$, dummies for age, province (when laid-off), and for all cohorts (from 1979 to 2004), and a constant term.

Table 5
Probability estimates of earnings losses by various categories, all displaced workers*

Dependent variable: (=1 if losing \$amount compared with t-1 earnings, =0 otherwise)

	Men				Women			
	\$1- \$9,999	\$10,000- \$19,999	\$20,000- \$37,499	\$37,500 or more	\$1- \$9,999	\$10,000- \$19,999	\$20,000- \$37,499	\$37,500 or more
<i>Short-term (t+1) outcome⁺</i>								
Cohorts (base=1988)								
1979	0.011 (0.015)	0.034*** (0.013)	0.039*** (0.013)	0.010 (0.012)	0.053** (0.024)	0.032 (0.021)	0.033* (0.017)	-0.011 (0.010)
1999	-0.027** (0.013)	0.010 (0.012)	0.019 (0.011)	0.039*** (0.010)	-0.007 (0.020)	-0.008 (0.017)	0.020 (0.014)	-0.003 (0.008)
2000	-0.009 (0.013)	-0.008 (0.011)	0.026** (0.012)	0.027*** (0.010)	0.019 (0.020)	-0.012 (0.017)	-0.004 (0.014)	-0.003 (0.008)
2001	-0.007 (0.013)	0.013 (0.011)	0.034*** (0.011)	0.044*** (0.010)	0.020 (0.019)	0.006 (0.017)	0.005 (0.014)	-0.012 (0.008)
2002	-0.011 (0.013)	0.008 (0.011)	0.044*** (0.012)	0.034*** (0.010)	0.040** (0.019)	-0.008 (0.017)	0.013 (0.014)	0.008 (0.008)
2003	-0.016 (0.013)	-0.008 (0.011)	0.045*** (0.012)	0.037*** (0.010)	0.014 (0.019)	-0.001 (0.017)	0.013 (0.013)	0.010 (0.008)
2004	-0.008 (0.013)	0.006 (0.011)	0.031*** (0.012)	0.011 (0.010)	0.017 (0.019)	-0.007 (0.016)	-0.002 (0.014)	-0.007 (0.008)
Sample size	49,661	49,661	49,661	49,661	30,166	30,166	30,166	30,166
<i>Mid-term (t+3) outcome⁺</i>								
Cohorts (base=1986)								
1997	-0.022 (0.014)	0.009 (0.012)	-0.013 (0.012)	0.021** (0.011)	-0.027 (0.020)	-0.001 (0.017)	-0.024* (0.014)	0.002 (0.008)
2000	-0.004 (0.013)	0.009 (0.011)	0.010 (0.012)	0.013 (0.010)	0.013 (0.020)	-0.012 (0.017)	-0.034** (0.014)	-0.012 (0.008)
2001	0.000 (0.013)	0.014 (0.011)	0.014 (0.011)	0.005 (0.010)	0.008 (0.020)	-0.001 (0.016)	-0.039*** (0.014)	-0.015** (0.007)
2002	0.020 (0.013)	0.001 (0.011)	0.005 (0.011)	-0.002 (0.010)	0.006 (0.020)	0.009 (0.017)	-0.034** (0.014)	-0.009 (0.007)
Sample size	44,588	44,588	44,588	44,588	26,593	26,593	26,593	26,593
<i>Long-term (t+5) outcome⁺</i>								
Cohorts (base=1984)								
1995	0.007 (0.013)	-0.004 (0.012)	-0.008 (0.012)	0.020* (0.010)	0.027 (0.020)	0.027 (0.018)	-0.012 (0.014)	-0.014* (0.008)
2000	0.028** (0.013)	0.004 (0.011)	-0.012 (0.012)	-0.002 (0.010)	0.013 (0.020)	-0.012 (0.017)	-0.053*** (0.014)	-0.006 (0.008)
Sample size	39,400	39,400	39,400	39,400	23,174	23,174	23,174	23,174

* Aged 50-54 at the time of permanently layoff.

⁺ Controls in the regression include earnings in t-1, dummies for age, province (when laid-off), and for all cohorts (from 1979 to 2004), and a constant term.

Table 6
Probability estimates of earnings losses by various categories, manufacturing workers*

Dependent variable: (=1 if losing \$amount compared with t-1 earnings, =0 otherwise)

	Men				Women			
	\$1- \$9,999	\$10,000- \$19,999	\$20,000- \$37,499	\$37,500 or more	\$1- \$9,999	\$10,000- \$19,999	\$20,000- \$37,499	\$37,500 or more
<i>Short-term (t+1) outcome⁺</i>								
Cohorts (base=1988)								
1979	0.062* (0.035)	0.050 (0.032)	0.016 (0.036)	0.066** (0.031)	0.062 (0.048)	0.012 (0.044)	0.096** (0.037)	-0.007 (0.021)
1999	0.032 (0.030)	0.042 (0.028)	-0.009 (0.031)	0.113*** (0.027)	-0.007 (0.044)	-0.013 (0.040)	0.025 (0.035)	0.020 (0.019)
2000	0.067** (0.030)	0.033 (0.027)	-0.013 (0.030)	0.111*** (0.026)	0.036 (0.044)	-0.038 (0.041)	-0.018 (0.036)	0.052*** (0.019)
2001	0.029 (0.028)	0.054** (0.026)	0.041 (0.028)	0.112*** (0.025)	0.059 (0.041)	0.018 (0.037)	0.009 (0.033)	-0.007 (0.018)
2002	0.008 (0.030)	0.083*** (0.027)	0.036 (0.030)	0.131*** (0.026)	0.041 (0.043)	0.027 (0.040)	0.007 (0.035)	0.034* (0.019)
2003	0.033 (0.029)	0.044* (0.026)	0.014 (0.029)	0.125*** (0.025)	-0.030 (0.042)	0.018 (0.038)	0.050 (0.033)	0.035* (0.018)
2004	-0.019 (0.029)	0.080*** (0.027)	0.043 (0.029)	0.111*** (0.026)	-0.085** (0.040)	0.069 (0.037)	0.051 (0.033)	0.025 (0.017)
Sample size	9,143	9,143	9,143	9,143	5,532	5,532	5,532	5,532
<i>Mid-term (t+3) outcome⁺</i>								
Cohorts (base=1986)								
1997	-0.025 (0.035)	0.011 (0.031)	0.009 (0.033)	0.034 (0.029)	0.019 (0.050)	-0.001 (0.044)	-0.063 (0.038)	0.029 (0.019)
2000	-0.014 (0.034)	0.015 (0.030)	0.014 (0.032)	0.047* (0.028)	0.090* (0.049)	-0.035 (0.043)	-0.072* (0.038)	0.022 (0.019)
2001	-0.038 (0.032)	0.015 (0.028)	0.049 (0.031)	0.032 (0.027)	0.089** (0.045)	0.040 (0.040)	-0.098*** (0.035)	-0.019 (0.018)
2002	0.007 (0.033)	0.030 (0.029)	0.011 (0.032)	0.040 (0.028)	0.060 (0.048)	0.007 (0.042)	-0.014 (0.037)	-0.001 (0.018)
Sample size	8,113	8,113	8,113	8,113	4,924	4,924	4,924	4,924
<i>Long-term (t+5) outcome⁺</i>								
Cohorts (base=1984)								
1995	0.007 (0.032)	0.021 (0.029)	-0.059* (0.032)	0.059** (0.028)	0.010 (0.048)	-0.012 (0.044)	0.016 (0.039)	-0.018 (0.019)
2000	0.025 (0.030)	0.015 (0.028)	-0.041 (0.030)	0.060** (0.028)	0.030 (0.047)	-0.067 (0.043)	-0.066* (0.038)	0.017 (0.019)
Sample size	7,082	7,082	7,082	7,082	4,358	4,358	4,358	4,358

* Aged 50-54 at the time of permanently layoff.

⁺ Controls in the regression include earnings in t-1, dummies for age, province (when laid-off), and for all cohorts (from 1979 to 2004), and a constant term.

Table 7
Probability estimates of earnings losses by various categories, non-manufacturing workers*

Dependent variable: (=1 if losing \$amount compared with t-1 earnings, =0 otherwise)

	Men				Women			
	\$1- \$9,999	\$10,000- \$19,999	\$20,000- \$37,499	\$37,500 or more	\$1- \$9,999	\$10,000- \$19,999	\$20,000- \$37,499	\$37,500 or more
<i>Short-term (t+1) outcome⁺</i>								
Cohorts (base=1988)								
1979	0.001 (0.016)	0.028** (0.014)	0.044*** (0.014)	0.001 (0.012)	0.052* (0.028)	0.035 (0.024)	0.011 (0.020)	-0.011 (0.012)
1999	-0.040*** (0.015)	0.002 (0.013)	0.024* (0.012)	0.025** (0.011)	-0.007 (0.022)	-0.006 (0.019)	0.022 (0.015)	-0.010 (0.009)
2000	-0.025* (0.015)	-0.017 (0.013)	0.034*** (0.013)	0.011 (0.011)	0.014 (0.022)	-0.005 (0.019)	0.000 (0.015)	-0.015* (0.009)
2001	-0.014 (0.014)	0.005 (0.012)	0.029** (0.012)	0.029*** (0.011)	0.011 (0.022)	0.003 (0.018)	0.005 (0.015)	-0.015* (0.009)
2002	-0.015 (0.014)	-0.008 (0.012)	0.045*** (0.012)	0.015 (0.011)	0.039* (0.022)	-0.013 (0.019)	0.017 (0.015)	0.001 (0.009)
2003	-0.027* (0.015)	-0.021* (0.012)	0.050*** (0.013)	0.018* (0.011)	0.021 (0.022)	-0.004 (0.019)	0.009 (0.015)	0.003 (0.009)
2004	-0.004 (0.015)	-0.011 (0.012)	0.023** (0.012)	-0.011 (0.011)	0.039* (0.022)	-0.022 (0.018)	-0.011 (0.015)	-0.016* (0.009)
Sample size	40,518	40,518	40,518	40,518	24,634	24,634	24,634	24,634
<i>Mid-term (t+3) outcome⁺</i>								
Cohorts (base=1986)								
1997	-0.022 (0.015)	0.009 (0.013)	-0.017 (0.013)	0.019* (0.011)	-0.039* (0.022)	-0.001 (0.019)	-0.014 (0.015)	-0.003 (0.008)
2000	-0.002 (0.014)	0.008 (0.013)	0.008 (0.013)	0.005 (0.011)	-0.004 (0.022)	-0.008 (0.019)	-0.024 (0.015)	-0.019** (0.008)
2001	0.008 (0.014)	0.016 (0.012)	0.003 (0.012)	-0.002 (0.011)	-0.011 (0.022)	-0.010 (0.019)	-0.025* (0.014)	-0.015* (0.008)
2002	0.021 (0.014)	-0.004 (0.012)	0.003 (0.012)	-0.011 (0.011)	-0.007 (0.022)	0.009 (0.019)	-0.033** (0.015)	-0.011 (0.008)
Sample size	36,475	36,475	36,475	36,475	21,669	21,669	21,669	21,669
<i>Long-term (t+5) outcome⁺</i>								
Cohorts (base=1984)								
1995	0.007 (0.015)	-0.007 (0.013)	0.001 (0.013)	0.012 (0.012)	0.032 (0.023)	0.036* (0.020)	-0.017 (0.015)	-0.013 (0.009)
2000	0.029** (0.014)	0.004 (0.012)	-0.008 (0.013)	-0.015 (0.011)	0.011 (0.022)	0.001 (0.019)	-0.051*** (0.015)	-0.010 (0.008)
Sample size	32,318	32,318	32,318	32,318	18,816	18,816	18,816	18,816

* Aged 50-54 at the time of permanently layoff.

⁺ Controls in the regression include earnings in t-1, dummies for age, province (when laid-off), and for all cohorts (from 1979 to 2004), and a constant term.

Table 8
Probability estimates of relative earnings losses by various categories, all workers*

Dependent variable: (=1 if lost c% of t-1 earnings, =0 otherwise)

	Men				Women			
	1%- 24.9%	25%- 49.9%	50%- 74.9%	75%- 100%	1%- 24.9%	25%- 49.9%	50%- 74.9%	75%- 100%
<i>Short-term (t+1) outcome⁺</i>								
Cohorts (base=1988)								
1979	0.016 (0.014)	0.017 (0.014)	0.038*** (0.013)	0.041** (0.019)	0.043* (0.024)	-0.022 (0.023)	0.027 (0.022)	0.059* (0.035)
1999	-0.018 (0.013)	0.003 (0.012)	0.013 (0.011)	0.072*** (0.017)	0.049*** (0.019)	-0.007 (0.018)	0.037** (0.018)	-0.043 (0.028)
2000	-0.014 (0.013)	0.022* (0.012)	-0.010 (0.011)	0.061*** (0.017)	0.042** (0.019)	0.010 (0.018)	0.034* (0.018)	-0.066** (0.028)
2001	-0.011 (0.012)	0.009 (0.012)	0.020* (0.011)	0.095*** (0.016)	0.049*** (0.019)	0.005 (0.018)	0.030* (0.017)	-0.040 (0.027)
2002	-0.012 (0.012)	0.027** (0.012)	0.007 (0.011)	0.077*** (0.016)	0.029 (0.019)	0.012 (0.018)	0.022 (0.017)	0.004 (0.027)
2003	-0.010 (0.012)	0.008 (0.012)	0.018* (0.011)	0.071*** (0.016)	0.024 (0.019)	0.0022 (0.018)	0.031* (0.017)	-0.001 (0.027)
2004	-0.020 (0.013)	0.014 (0.012)	0.019* (0.011)	0.049*** (0.016)	0.033* (0.018)	0.009 (0.017)	0.025 (0.017)	-0.047* (0.027)
Sample size	41,380	41,380	41,380	41,380	19,666	19,666	19,666	19,666
<i>Mid-term (t+3) outcome⁺</i>								
Cohorts (base=1986)								
1997	-0.015 (0.013)	-0.031*** (0.012)	-0.007 (0.011)	0.053*** (0.017)	0.009 (0.020)	-0.005 (0.018)	0.002 (0.017)	-0.060** (0.028)
2000	-0.018 (0.013)	0.004 (0.012)	0.004 (0.011)	0.038** (0.017)	0.047** (0.019)	0.010 (0.018)	0.015 (0.016)	-0.121*** (0.028)
2001	-0.004 (0.012)	0.008 (0.012)	-0.002 (0.011)	0.038** (0.016)	0.037* (0.019)	0.031* (0.018)	0.018 (0.016)	-0.123*** (0.028)
2002	0.007 (0.013)	0.001 (0.012)	-0.015 (0.011)	0.024 (0.017)	0.021 (0.019)	0.028 (0.018)	0.007 (0.016)	-0.089*** (0.028)
Sample size	37,090	37,090	37,090	37,090	17,107	17,107	17,107	17,107
<i>Long-term (t+5) outcome⁺</i>								
Cohorts (base=1984)								
1995	0.004 (0.012)	-0.014 (0.012)	-0.033*** (0.011)	0.061*** (0.018)	0.040** (0.019)	0.003 (0.017)	-0.009 (0.016)	-0.010 (0.030)
2000	0.015 (0.011)	0.004 (0.011)	-0.011 (0.010)	0.010 (0.017)	0.036** (0.018)	0.016 (0.016)	-0.017 (0.015)	-0.096*** (0.028)
Sample size	32,683	32,683	32,683	32,683	14,699	14,699	14,699	14,699

* Aged 50-54 at the time of permanently layoff, conditional on earnings >= \$10,000 in t-1.

⁺ Controls in the regression include earnings in t-1, dummies for age, province (when laid-off), and for all cohorts (from 1979 to 2004), and a constant term.

Table 9
Probability estimates of relative earnings losses by various categories, manufacturing workers*

Dependent variable: (=1 if lost c% of t-1 earnings, =0 otherwise)

	Men				Women			
	1%- 24.9%	25%- 49.9%	50%- 74.9%	75%- 100%	1%- 24.9%	25%- 49.9%	50%- 74.9%	75%- 100%
<i>Short-term (t+1) outcome⁺</i>								
Cohorts (base=1988)								
1979	0.034 (0.035)	0.013 (0.033)	0.038 (0.032)	0.106** (0.046)	0.004 (0.043)	0.008 (0.043)	0.102** (0.040)	0.091 (0.065)
1999	0.011 (0.030)	0.034 (0.028)	0.017 (0.027)	0.118*** (0.040)	0.025 (0.037)	0.032 (0.039)	0.024 (0.036)	0.030 (0.058)
2000	0.020 (0.029)	0.023 (0.028)	-0.011 (0.027)	0.146*** (0.039)	0.040 (0.039)	0.039 (0.040)	0.069* (0.037)	0.012 (0.059)
2001	-0.011 (0.027)	0.021 (0.026)	0.050** (0.025)	0.185*** (0.036)	0.060* (0.036)	0.030 (0.036)	0.054 (0.033)	0.008 (0.054)
2002	-0.043 (0.028)	0.075*** (0.027)	0.028 (0.026)	0.191*** (0.038)	-0.008 (0.037)	0.062 (0.038)	0.061* (0.035)	0.009 (0.057)
2003	0.024 (0.028)	0.016 (0.027)	0.061** (0.026)	0.135*** (0.037)	0.003 (0.036)	0.002 (0.037)	0.049 (0.034)	0.114** (0.055)
2004	-0.049* (0.028)	0.063** (0.027)	0.048* (0.026)	0.164*** (0.037)	-0.046 (0.035)	0.002 (0.036)	0.054* (0.033)	0.117** (0.053)
Sample size	8,044	8,044	8,044	8,044	3,980	3,980	3,980	3,980
<i>Mid-term (t+3) outcome⁺</i>								
Cohorts (base=1986)								
1997	-0.071** (0.034)	-0.027 (0.032)	0.005 (0.029)	0.114** (0.045)	0.057 (0.046)	0.010 (0.043)	0.015 (0.038)	-0.049 (0.065)
2000	-0.050 (0.033)	-0.004 (0.031)	-0.006 (0.030)	0.102** (0.043)	0.142*** (0.045)	-0.027 (0.043)	0.030 (0.038)	-0.082 (0.065)
2001	-0.038 (0.032)	-0.011 (0.029)	0.004 (0.026)	0.114*** (0.041)	0.097** (0.042)	0.093** (0.039)	0.013 (0.035)	-0.145** (0.060)
2002	-0.043 (0.032)	0.003 (0.030)	-0.024 (0.027)	0.131*** (0.042)	0.059 (0.043)	0.047 (0.041)	0.043 (0.036)	-0.081 (0.062)
Sample size	7,128	7,128	7,128	7,128	3,494	3,494	3,494	3,494
<i>Long-term (t+5) outcome⁺</i>								
Cohorts (base=1984)								
1995	0.020 (0.032)	-0.045 (0.029)	-0.049* (0.026)	0.100** (0.044)	0.068 (0.043)	-0.023 (0.039)	-0.017 (0.035)	0.006 (0.067)
2000	-0.009 (0.030)	-0.005 (0.028)	-0.018 (0.025)	0.071* (0.042)	0.063 (0.041)	-0.013 (0.038)	-0.043 (0.033)	-0.026 (0.064)
Sample size	6,184	6,184	6,184	6,184	3,055	3,055	3,055	3,055

* Aged 50-54 at the time of permanently layoff, conditional on earnings >= \$10,000 in t-1.

+ Controls in the regression include earnings in t-1, dummies for age, province (when laid-off), and for all cohorts (from 1979 to 2004), and a constant term.

Table 10
Probability estimates of relative earnings losses by various categories, non-manufacturing workers*

Dependent variable: (=1 if lost c% of t-1 earnings, =0 otherwise)

	Men				Women			
	1%- 24.9%	25%- 49.9%	50%- 74.9%	75%- 100%	1%- 24.9%	25%- 49.9%	50%- 74.9%	75%- 100%
<u>Short-term (t+1) outcome⁺</u>								
Cohorts (base=1988)								
1979	0.011 (0.016)	0.018 (0.015)	0.038*** (0.014)	0.028 (0.020)	0.060** (0.028)	-0.035 (0.026)	-0.004 (0.026)	0.043 (0.041)
1999	-0.025* (0.014)	-0.004 (0.013)	0.012 (0.013)	0.063*** (0.019)	0.056** (0.022)	-0.016 (0.021)	0.035* (0.020)	-0.060* (0.033)
2000	-0.022 (0.014)	0.022* (0.013)	-0.010 (0.012)	0.041** (0.018)	0.045** (0.022)	0.005 (0.021)	0.021 (0.021)	-0.081** (0.032)
2001	-0.010 (0.014)	0.007 (0.013)	0.011 (0.012)	0.071*** (0.018)	0.048** (0.022)	-0.002 (0.020)	0.018 (0.020)	-0.054* (0.032)
2002	-0.005 (0.014)	0.015 (0.013)	0.002 (0.012)	0.051*** (0.018)	0.039* (0.022)	0.001 (0.020)	0.008 (0.020)	0.002 (0.032)
2003	-0.019 (0.014)	0.007 (0.013)	0.006 (0.012)	0.056*** (0.018)	0.031 (0.022)	0.025 (0.020)	0.021 (0.020)	-0.027 (0.032)
2004	-0.012 (0.014)	0.001 (0.013)	0.011 (0.012)	0.020 (0.018)	0.054** (0.022)	0.011 (0.020)	0.014 (0.020)	-0.089*** (0.032)
Sample size	33,336	33,336	33,336	33,336	15,686	15,686	15,686	15,686
<u>Mid-term (t+3) outcome⁺</u>								
Cohorts (base=1986)								
1997	-0.006 (0.014)	-0.033** (0.013)	-0.010 (0.012)	0.042** (0.019)	-0.005 (0.022)	-0.006 (0.020)	-0.001 (0.019)	-0.061** (0.032)
2000	-0.013 (0.014)	0.004 (0.013)	0.006 (0.012)	0.026 (0.019)	0.026 (0.022)	0.015 (0.020)	0.012 (0.019)	-0.125*** (0.031)
2001	0.001 (0.014)	0.011 (0.013)	-0.004 (0.012)	0.022 (0.018)	0.020 (0.022)	0.014 (0.020)	0.020 (0.018)	-0.116*** (0.031)
2002	0.015 (0.014)	-0.002 (0.013)	-0.013 (0.012)	0.003 (0.018)	0.010 (0.022)	0.025 (0.020)	-0.001 (0.018)	-0.089*** (0.031)
Sample size	29,962	29,962	29,962	29,962	13,613	13,613	13,613	13,613
<u>Long-term (t+5) outcome⁺</u>								
Cohorts (base=1984)								
1995	-0.000 (0.014)	-0.008 (0.012)	-0.029** (0.012)	0.053*** (0.020)	0.034 (0.021)	0.012 (0.019)	-0.005 (0.018)	-0.016 (0.033)
2000	0.022* (0.013)	0.004 (0.012)	-0.010 (0.011)	-0.005 (0.019)	0.031 (0.020)	0.023 (0.018)	-0.010 (0.017)	-0.107*** (0.031)
Sample size	26,499	26,499	26,499	26,499	11,644	11,644	11,644	11,644

* Aged 50-54 at the time of permanently layoff, conditional on earnings >= \$10,000 in t-1.

⁺ Controls in the regression include earnings in t-1, dummies for age, province (when laid-off), and for all cohorts (from 1979 to 2004), and a constant term.

Appendix

Table A1: Sample observations of displaced workers aged 50 to 54¹

Cohort	Men	Women	Total
1979	1,382	601	1,983
1980	1,361	603	1,964
1981	1,562	722	2,284
1982	2,017	952	2,969
1983	1,700	756	2,456
1984	1,674	768	2,442
1985	1,532	736	2,268
1986	1,519	746	2,265
1987	1,367	767	2,134
1988	1,597	825	2,422
1989	1,451	873	2,324
1990	1,996	1,273	3,269
1991	2,006	1,247	3,253
1992	1,934	1,261	3,195
1993	1,883	1,285	3,168
1994	1,805	1,146	2,951
1995	1,912	1,173	3,085
1996	1,900	1,297	3,197
1997	2,124	1,534	3,658
1998	2,162	1,534	3,696
1999	2,198	1,481	3,679
2000	2,318	1,594	3,912
2001	2,641	1,768	4,409
2002	2,547	1,651	4,198
2003	2,558	1,729	4,287
2004	2,515	1,844	4,359
Total	49,661	30,166	79,827

1. Permanently laid off, conditional on positive earnings and no record of permanent layoff in $t-1$.
Source: Statistics Canada, Longitudinal Worker File.

Table A2**Percentage of displaced workers whose earnings losses (gains) exceeded -\$100,000 (\$100,000)**

<i>All workers</i>				
Cohort	Men		Women	
	< -\$100,000	> \$100,000	< -\$100,000	> \$100,000
<u>Short-term (t+1) outcome</u>				
1988	1.19	0.50	0.00	0.00
2004	2.31	0.56	0.43	0.11
<u>Mid-term (t+3) outcome</u>				
1986	1.00	0.66	0.00	0.00
2002	2.55	0.86	0.18	0.12
<u>Long-term (t+5) outcome</u>				
1984	1.19	0.48	0.26	0.13
2000	2.72	1.08	0.19	0.25
<hr/>				
<i>Manufacturing workers</i>				
Cohort	Men		Women	
	< -\$100,000	> \$100,000	< -\$100,000	> \$100,000
<u>Short-term (t+1) outcome</u>				
1988	1.79	0.00	0.00	0.00
2004	2.22	0.00	0.31	0.00
<u>Mid-term (t+3) outcome</u>				
1986	0.00	0.49	0.00	0.00
2002	2.40	0.87	0.41	0.41
<u>Long-term (t+5) outcome</u>				
1984	0.00	0.00	0.00	0.00
2000	3.04	0.47	0.46	0.00
<hr/>				
<i>Non-manufacturing workers</i>				
Cohort	Men		Women	
	< -\$100,000	> \$100,000	< -\$100,000	> \$100,000
<u>Short-term (t+1) outcome</u>				
1988	1.06	0.61	0.00	0.00
2004	2.33	0.69	0.46	0.13
<u>Mid-term (t+3) outcome</u>				
1986	1.14	0.68	0.00	0.00
2002	2.58	0.86	0.14	0.07
<u>Long-term (t+5) outcome</u>				
1984	1.40	0.56	0.32	0.16
2000	2.65	1.22	0.15	0.29

Table A3
Percentage of displaced workers whose relative earnings gains exceeded 200%

All workers

Cohort	Men			Women		
	<i>All</i>	<i>Manuf.</i>	<i>Non-manuf.</i>	<i>All</i>	<i>Manuf.</i>	<i>Non-manuf.</i>
<u>Short-term (t+1) outcome</u>						
1988	2.37	0.79	2.73	0.68	0.00	0.96
2004	2.25	0.88	2.62	0.83	0.38	0.94
<u>Mid-term (t+3) outcome</u>						
1986	4.14	2.87	4.35	1.69	3.26	1.25
2002	2.52	1.90	2.67	1.62	1.06	1.72
<u>Long-term (t+5) outcome</u>						
1984	5.31	7.50	4.93	1.39	1.01	1.49
2000	3.64	2.67	3.87	2.06	0.65	2.29

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