WHY ARE OLDER WORKERS AT GREATER RISK OF DISPLACEMENT?

By Alicia H. Munnell, Steven A. Sass, and Natalia A. Zhivan*

Introduction

The conventional wisdom says that older workers are less likely to be displaced than younger workers. While true in the past, the conventional wisdom is no longer true today; the advantage that older workers had has disappeared.[1] This loss of relative job security is troubling. Once displaced, older workers are less likely to be reemployed, have less time to adjust their retirement plans, and are more likely to retire prematurely. Given the contraction of the nation's retirement income system and rising longevity, these adverse effects make displacement increasingly injurious to older workers.

This *brief* analyzes changes in the displacement of older and prime-age workers since the mid-1990s and the effect of three factors – tenure, educational attainment, and employment in manufacturing – identified as having a significant effect on displacement risk. The results show that all three factors contributed to the rising dislocation risk older workers face and their rising risk vis-à-vis prime-age workers.

The *brief* proceeds as follows. The first section presents the three factors identified in the literature as affecting displacement. The second section reviews the data and methodology used to analyze the effects of these factors on the changing displacement risk of older and prime-age workers. The third section reports the findings, and the fourth section concludes.

Three Key Factors Affecting Displacement

The literature has identified tenure, educational attainment, and employment in manufacturing as worker characteristics having a significant effect on displacement risk. As indicated in Figures 1A and 1B on the next page, all three characteristics changed significantly among both older and prime-age workers over the last 25 years.

FIGURES 1A AND 1B. CHARACTERISTICS OF THE WORKFORCE BY AGE, 1984 AND 2006

Prime-Age Workers (Age 35-49)   *Older Workers (Age 50-64)*
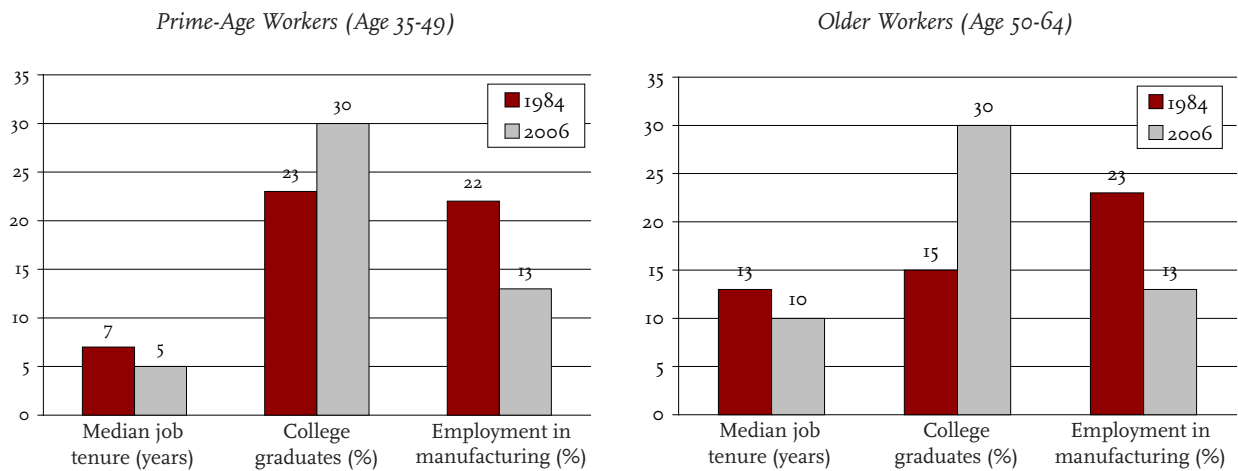
Note: Tenure in 1984 was calculated using the 1983 *Job Tenure and Occupational Mobility Supplement*, as the 1984 *Current Population Survey* has no tenure information.
Sources: Authors' calculations based on U.S. Bureau of Labor Statistics, *Current Population Survey* (CPS), 1984-2006; and U.S. Bureau of Labor Statistics, *Job Tenure and Occupational Mobility Supplement*, 1983-2006.

Tenure

One reason why older workers were thought to have lower displacement rates than younger workers is because they generally have longer job tenure and, as a result, more firm-specific human capital.[2] Employers were thought reluctant to lay off older workers because they would lose such human capital and be forced to train new workers.

In recent decades, however, the nation has seen a significant decline in long-term employment relationships, especially among older workers, and a slight narrowing of the tenure gap separating younger and older workers. The median tenure of workers age 50-64 has fallen from a high of 13 years in 1984 to 10 years in 2006 while median tenure for 35-49 year old workers has declined from 7 to 5 years.[3] Declining tenure could be expected to increase displacement and the declining tenure gap could help explain why older workers are no longer less vulnerable to displacement than prime-age workers.

Educational Attainment

Previous studies find college graduates less likely to be displaced.[4] Between 1984 and 2006, the educational attainment of older workers increased dramatically while that of prime-age workers rose at a much slower pace. In terms of educational attainment, older workers in 1984 were quite different from prime-age workers, but today they are much the same. The rising attainment of older workers could thus be expected to reduce the group's displacement rate both absolutely and relative to prime-age workers.

Employment in Manufacturing

Manufacturing has a displacement rate twice as high as the rest of the economy.[5] The sharp decline in the share of jobs in manufacturing, from 22 percent of employment in 1984 to 13 percent in 2006, might thus be expected to reduce displacement.[6]

Data and Methodology

To assess the effect of these factors on changes in the displacement rates of older and prime-age workers, this analysis takes advantage of the addition of job tenure information in the *Displaced Worker Survey* (DWS) since 1996.[7] Unfortunately, most of the changes in tenure, educational attainment, and employment in manufacturing since the first DWS,

conducted in 1984, occurred prior to the 1996 DWS. For example, the share of prime-age workers in manufacturing fell from 22 to 13 percent, with only 4 percentage points of this decline coming after 1996; and the share of the population aged 50 to 64 without a high school diploma fell from 33 to 13 percent, of which only 7 percentage points came in the period under review. Nevertheless, the lack of tenure information in the earlier surveys, along with changes in the survey design, limits our analysis to the surveys conducted since 1996.

Each survey since 1996 has used a three-year recall period. Thus the 1996 DWS covers the period 1993-1995 and the 1998 DWS covers the period 1995-1997. Using data from the surveys conducted in 1996 and 1998 and in 2004 and 2006, the study estimates linear probability models of displacement for older and prime-age workers in each of the two periods covered: 1993-1997 and 2001-2005. The results give the effect of tenure, educational attainment, employment in manufacturing, and several control variables, on the displacement risk of older and prime-age workers in each period.

These factors can affect displacement trends in two distinct ways. The first way involves changes in the strength of the relationship between these factors and displacement. For example, while manufacturing is associated with a higher risk of displacement, the strength of this relationship could change over time – today's manufacturing workers could be more or less vulnerable than their counterparts in the past. Mathematically, changes in the strength of these relationships are indicated by changes in the size of the regression coefficients from the earlier to the later period. The second way these factors can affect displacement trends involves changes in their size, or level. For example, as manufacturing is associated with a higher risk of displacement, the declining percentage of workers in manufacturing jobs reduces the risk of displacement.

If the coefficients in the first period (1993-1997) were much the same as the coefficients in the second (2001-2005), then changes in the levels of these variables (i.e., an increase or decrease in the share of employment in manufacturing) would be what changes displacement rates. If the levels were much the same, then changes in the coefficients would be what primarily effects displacement. If both the coefficients and levels change, then both play a role. The trick is to identify changes in the displacement rates of older and prime-age workers attributable to:

a) *Coefficient effects*: the effect of changes in the coefficients, given by the change in the coefficients multiplied by the ending level (i.e., the change in the effect of tenure on displacement multiplied by tenure levels in 2001-2005).

b) *Level effects*: the effect of changes in the levels of the factors, given by the change in the levels multiplied by the ending coefficient (i.e., the rise or fall in tenure multiplied by the effect of tenure on displacement in 2001-2005).

c) *Interaction effects*: changes in displacement rates attributable to the interaction of changes in the coefficients and the levels of these variables.[8]

Changes in Worker Characteristics and Their Effect on Displacement Risk

The results of the regressions are given in Appendix Table A1 and the statistically significant results for characteristics of interest are shown in Figures 2A and 2B. As one would expect, long-tenure workers were less likely to be displaced than short-tenure workers. Workers in manufacturing were particularly likely to be displaced. Both of these relationships, moreover, are statistically significant. In neither age group, however, did educational attainment have much of an effect on the risk of displacement. This finding contradicts the conventional wisdom and the presumption that rising educational attainment reduces the risk of displacement.[9]

The regression results also show that the incremental risk of displacement in manufacturing was consistently greater for older workers than for prime-age workers and that the incremental risk for both groups increased between 1993-1997 and 2001-2005. The results for tenure also indicate growing risk for older workers compared to prime-age workers. During the period, the protective effect of tenure became somewhat stronger for prime-age workers but showed little change for older workers with more than 5 years of tenure. And for older workers with less than one year of tenure, the likelihood of displacement increased.[10]

FIGURES 2A AND 2B. EFFECTS OF WORKER CHARACTERISTICS ON RISK OF JOB LOSS, 1993-1997 AND 2001-2005

Prime-Age Workers (Age 35-49)   *Older Workers (Age 50-64)*
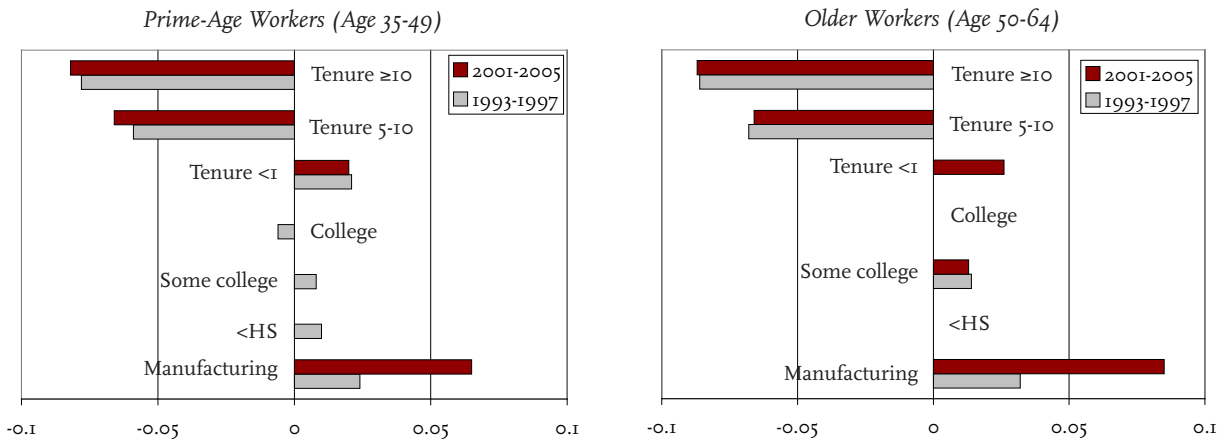

Note: No values are included for variables that were not significant.
Sources: Authors' calculations based on the 1996-2006 CPS; and the U.S. Bureau of Labor Statistics, *Displaced Worker Survey* (DWS), 1996-2006.

Finally, it is possible to sort out the significance of changes in the *levels* of tenure, educational attainment, and manufacturing and changes in the *effects (coefficients)* of these factors on the displacement rates of older and prime-age workers. The results of this analysis, which are shown in Figure 3 and in the Appendix, are discussed below.[11]

FIGURE 3. EFFECT OF CHANGES IN CHARACTERISTICS ON DISPLACEMENT BY AGE GROUP, 1993-1997 AND 2001-2005
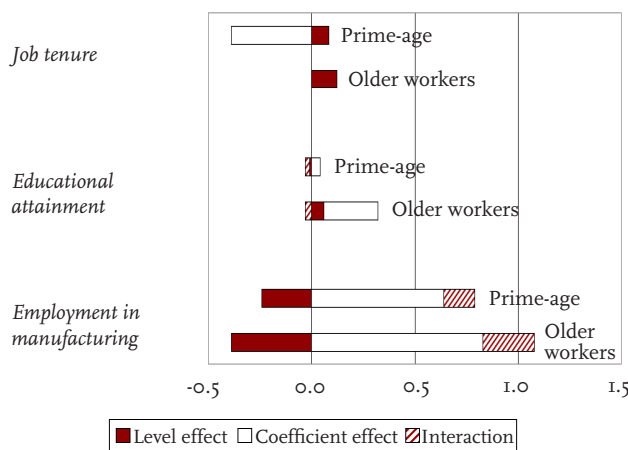
Sources: Authors' calculations based on the 1996-2006 CPS; and the 1996-2006 DWS.

Tenure

Tenure protects workers against displacement. In the period under review, both prime-age and older workers saw a decline in long-tenure relationships (10 years or more), which was somewhat offset by a decline in short-tenure relationships (less than one year). The "level effect" of these changes was a modest rise in displacement in both groups. Among prime-age workers, but not older workers, this impact was more than offset by a rise in tenure's effectiveness in reducing displacement – tenure's "coefficient." These coefficient effects are not statistically significant. The findings nevertheless suggest that, of the three factors under review, tenure changes had the greatest effect in raising the displacement rate of older workers vis-à-vis prime-age workers.

Educational Attainment

Educational attainment is generally thought to protect workers against displacement, and educational attainment increased among both age groups, especially among older workers. The regressions, however, found the effect of educational attainment on displacement risk quite modest and generally statistically insignificant. In 2001-2005, the results for prime-age workers show college graduates were no less likely to be displaced than high school graduates; for older

workers, the results for 2001-2005 actually show college graduates more likely to be displaced than either high school graduates or drop-outs. The surprising effect of the sharp rise in the educational attainment for older workers was thus to increase their risk of displacement, both absolutely and relative to prime-age workers.

Employment in Manufacturing

Since displacement rates are quite high in manufacturing, the decline in the share of employment in manufacturing among both prime-age and older workers, manufacturing's "level effect," reduced displacement. Over the period under review, however, manufacturing workers – especially older manufacturing workers – faced a rising risk of displacement. This coefficient effect more than offset the level effect. On a net basis, changes in manufacturing (including the interaction of the two effects) produced a 0.55 percentage point rise in displacement among prime-age workers and a 0.68 percentage point rise among older workers. Of the three factors under review, the employment in manufacturing had the greatest effect in raising the dislocation rate of older workers.

Conclusion

The displacement of older workers is a serious challenge to retirement income security, disrupting the accumulation of retirement savings and encouraging premature labor force exits. This study identified various factors contributing to the rising dislocation of older workers, both absolutely and vis-à-vis prime-age workers. These include declining tenure, a positive relationship between educational attainment and displacement – albeit small and not statistically significant – and a high and rising incidence of displacement in manufacturing.

These changes in tenure, educational attainment, and manufacturing employment can be seen as aspects of a common underlying factor – as aspects of the process of technical change in the current economy. Our findings indicate that this common underlying factor had little effect on the displacement of prime-age workers. But by shortening tenures and heightening displacement in manufacturing – and perhaps in other declining or tradable industries – it has adversely affected the employment security of older workers.

Endnotes

1 Munnell, Muldoon, and Sass (2009).

2 Becker (1975).

3 Average tenure has decreased sharply over time for men, while increasing slightly for women. On balance, tenure has declined (Farber, 2006).

4 Rodriguez and Zavodny (2003).

5 Kletzer (1998).

6 U.S. Bureau of Labor Statistics (1984, 2006).

7 The data reported here come from the 1996-2004 *Displaced Worker Surveys* (DWS), which were conducted as part of the January *Current Population Survey* (CPS) in 2002, 2004, and 2006 and the February CPS in 1996, 1998, and 2000. There have been changes in the design of the survey, such as a change in the recall period in 1992 and a change in wording in 1994. Following the now-standard approach in the literature, we define displacement as the loss of a job for one of the following three reasons: plant closing, insufficient work, or the position or shift was abolished.

8 For more detail on the regression and Blinder-Oaxaca decomposition methodologies, see Munnell et al. (2006) or Rodriguez and Zavodny (2003). As both periods analyzed include episodes of growth and of recession, the displacement experience in each does not reflect unique cyclic conditions. The overall three-year displacement rate was 8.5 percent for 1993-1997 and 8.6 percent for 2001-2005.

9 Regressions that did not control for employment in manufacturing and the public sector did show educational attainment reducing displacement risk. But the public sector disproportionately employs workers with college degrees and has a low displacement rate while manufacturing disproportionately employs workers with high school degrees and is a declining industry with a displacement rate twice as high as the rest of the economy. Controlling for employment in these industries, the regressions find educational attainment does not reduce displacement risk among either older or prime-age workers.

10 As indicated in Appendix Table 1, the regression analysis finds the incremental risk of displacement for older workers with less than one year of tenure to be 0.16 in 1993-1997 and 0.26 in 2001-2005; the result for 1993-1997, which is not statistically significant, is not shown in Figure 2b.

11 The factor *effects* in each period are given in Appendix Table A1 and the factor *levels* in Appendix Table A2. The results of the analysis identifying the significance of changes in characteristic "levels" and "coefficients" are given in Appendix Tables A3 and A4.

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APPENDIX

TABLE A1. EFFECT OF WORKER CHARACTERISTICS ON RISK OF JOB LOSS BY AGE GROUP, 1993-1997 AND 2001-2005

Variables	Prime-age workers (age 35-49)		Older workers (age 50-64)	
	1993-1997	2001-2005	1993-1997	2001-2005
Female	-0.010***	-0.009***	-0.010**	0.003
	(0.003)	(0.003)	(0.004)	(0.003)
Nonwhite	-0.002	0.014***	-0.002	0.005
	(0.004)	(0.004)	(0.006)	(0.005)
Tenure <1	0.021***	0.020***	0.016	0.026***
	(0.006)	(0.006)	(0.010)	(0.009)
Tenure 5-10	-0.059***	-0.066***	-0.068***	-0.066***
	(0.004)	(0.004)	(0.006)	(0.005)
Tenure ≥10	-0.078***	-0.082***	-0.086***	-0.087***
	(0.003)	(0.003)	(0.005)	(0.004)
ED<12	0.010*	0.003	0.003	0.006
	(0.005)	(0.005)	(0.007)	(0.007)
ED 13-15	0.008	0.005	0.014***	0.013***
	(0.004)	(0.004)	(0.005)	(0.004)
ED≥16	-0.006*	0.000	-0.001	0.007
	(0.004)	(0.003)	(0.005)	(0.004)
Manufacturing	0.024***	0.065***	0.032***	0.085***
	(0.004)	(0.004)	(0.005)	(0.005)
Public sector	-0.044***	-0.052***	-0.039***	-0.048***
	(0.004)	(0.004)	(0.005)	(0.004)
Constant	0.141***	0.140***	0.132***	0.115***
	(0.004)	(0.004)	(0.006)	(0.005)
N	35,791	40,221	16,668	26,157
R-squared	0.0294	0.0384	0.0311	0.0442

Note: * significant at 10%;** significant at 5%; *** significant at 1%. The dependent variable is one if a worker reports being displaced in the three years prior to the survey because of plant closure, position abolished, or slack work and zero otherwise. The sample excludes self-employed individuals. The omitted age category is 35–49. The omitted educational category is high school. Observations are weighted using the CPS final weights. The regressions included a dummy for each year to control for year-specific effects, such as macroeconomic conditions. Note that the total displacement rate was 8.5 percent for 1993-1997 and 8.6 percent for 2001-2005.
Sources: Authors' calculations based on the 1996-2006 CPS; and the 1996-2006 DWS.

TABLE A2. CHARACTERISTICS OF THE WORKFORCE BY AGE GROUP, 1993-1997 AND 2001-2005

Characteristics	Prime-age workers (age 35-49)		Older workers (age 50-64)	
	1993-1997	2001-2005	1993-1997	2001-2005
Displacement rate	0.081	0.083	0.073	0.080
Female	0.475	0.473	0.476	0.488
Non-white	0.149	0.163	0.127	0.133
Tenure<1	0.070	0.063	0.045	0.043
Tenure 5-10	0.237	0.256	0.190	0.204
Tenure≥10	0.367	0.341	0.538	0.513
ED<12	0.086	0.085	0.129	0.081
ED 13-15	0.292	0.279	0.241	0.278
ED ≥16	0.306	0.331	0.289	0.350
Manufacturing	0.193	0.156	0.200	0.154
Public sector	0.189	0.166	0.213	0.216

Note: A worker is considered to be displaced if he/she reports losing a job in the three years prior to the survey because of plant closure, position abolished, or slack work. The sample excludes self-employed individuals. The omitted educational category is high school. Observations are weighted using the CPS final weights.
Sources: Authors' calculations based on the 1996-2006 CPS; and the 1996-2006 DWS.

TABLE A3. EFFECT OF CHANGES IN CHARACTERISTICS ON DISPLACEMENT, 1993-1997 AND 2001-2005

Characteristic	Level effect	Coefficient effect	Interaction	Total
Prime-age workers (age 35-49)				
Job tenure	0.08***	-0.39	0.00	-0.30
	(0.03)	(0.28)	(0.01)	(0.28)
Educational attainment	-0.01	0.04	-0.02*	0.02
	(0.01)	(0.30)	(0.01)	(0.30)
Share of employment in manufacturing	-0.24 ***	0.64***	0.15***	0.55***
	(0.02)	(0.08)	(0.02)	(0.09)
Older workers (age 50-64)				
Job tenure	0.12 ***	-0.00	0.00	0.12
	(0.04)	(0.47)	(0.02)	(0.47)
Educational attainment	0.06	0.26	-0.03	0.29
	(0.04)	(0.40)	(0.06)	(0.40)
Share of employment in manufacturing	-0.39***	0.83 ***	0.25***	0.68***
	(0.04)	(0.11)	(0.04)	(0.12)
Difference (older worker – prime-age worker)				
Job tenure	0.04	0.39	0.00	0.42
Educational attainment	0.07	0.22	-0.01	0.27
Share of employment in manufacturing	-0.15	0.19	0.10	0.13

Note: * significant at 10%; ** significant at 5%; *** significant at 1%.
Sources: Authors' calculations based on the 1996-2006 CPS; and the 1996-2006 DWS.

Table A4. Effect of Changes in Detailed Characteristics on Displacement, 1993-1997 and 2001-2005

	Prime-age workers (age 35-49)	Older workers (age 50-64)
Displacement rate in 1996-1998	8.10	7.30
Displacement rate in 2004-2006	8.27	8.03
Difference	0.17	0.73***
	(0.19)	(0.26)
Endowment effects		
Tenure <1	-0.01**	-0.01
	(0.005)	(0.01)
Tenure 5-10	-0.12***	-0.09***
	(0.02)	(0.03)
Tenure >=10	0.22***	0.22***
	(0.03)	(0.04)
Less than high school	0.000	-0.03
	(0.001)	(0.03)
Some college	-0.006	0.05***
	(0.005)	(0.02)
College	0.00	0.04
	(0.01)	(0.03)
Manufacturing	-0.24***	-0.39***
	(0.02)	(0.04)
Total	-0.03	-0.21***
	(0.04)	(0.07)
Coefficient effects		
Tenure <1	-0.02	0.04
	(0.05)	(0.06)
Tenure 5-10	-0.21	0.03
	(0.13)	(0.16)
Tenure >=10	-0.16	-0.06
	(0.16)	(0.34)
Less than high school	-0.06	0.02
	(0.06)	(0.07)
Some college	-0.09	-0.04
	(0.14)	(0.19)
College	0.19	0.28
	(0.17)	(0.23)
Manufacturing	0.64***	0.83***
	(0.08)	(0.11)
Total	0.10	0.75***
	(0.20)	(0.26)

TABLE A4. CONTINUED...

	Prime age workers (age 35-49)	Older workers (age 50-64)
Interaction effects		
Tenure <1	-0.002	0.002
	(0.005)	(0.004)
Tenure 5-10	0.015	-0.002
	(0.01)	(0.01)
Tenure >=10	-0.01	-0.003
	(0.01)	(0.02)
Less than high school	-0.000	0.01
	(0.002)	(0.04)
Some college	-0.004	0.01
	(0.01)	(0.03)
College	-0.01	-0.05
	(0.01)	(0.04)
Manufacturing	0.15 ***	0.25 ***
	(0.02)	(0.04)
Total	0.10 ***	0.19 ***
	(0.03)	(0.07)

Note: * significant at 10%; ** significant at 5%; *** significant at 1%. Note that only key variables have been presented in this table.   A worker is considered to be displaced if he/she reports losing a job in the three years prior to the survey because of plant closure, position abolished, or slack work. The sample excludes self-employed individuals. The omitted educational category is high school. Observations are weighted using the CPS final weights.
Sources: Authors' calculations based on the 1996-2006 CPS; and the 1996-2006 DWS.

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