

DISPLACEMENT IN APPALACHIA AND THE NON-APPALACHIAN UNITED STATES, 1993-2003:

FINDINGS BASED ON FIVE DISPLACED WORKER
SURVEYS

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Executive Summary

In the 1990s Appalachia gained relative to the United States as a whole measured by per capita income and poverty (Pollard 2003, p. 18). Since the 2000 Census, however, the United States has experienced more difficult economic times, characterized by slow or negative job growth and a mushrooming trade deficit. One of the core reasons for the higher trade deficit has been rising imports from China, which compete with an increasingly broad cross-section of U.S. manufacturing (Shaiken 2004).

In Appalachia, and especially in rural and southern Appalachia with their high dependence on manufacturing, these new conditions pose daunting challenges for both laid-off workers and economic development officials.

This report looks at worker displacement in the Appalachian region during the past decade. It uses the Displaced Worker Survey (DWS) conducted every two years by the Census Bureau and Bureau of Labor Statistics (BLS) as a supplement to the Current Population Survey (CPS). It relies on the past five DWS surveys, conducted in 1996, 1998, 2000, 2002, and 2004. Each DWS asks workers about displacement experience in the previous three years. Therefore, the research in this report covers the experience of workers displaced during the periods 1993-1995, 1995-1997, 1997-1999, 1999-2001, and 2001-2003.

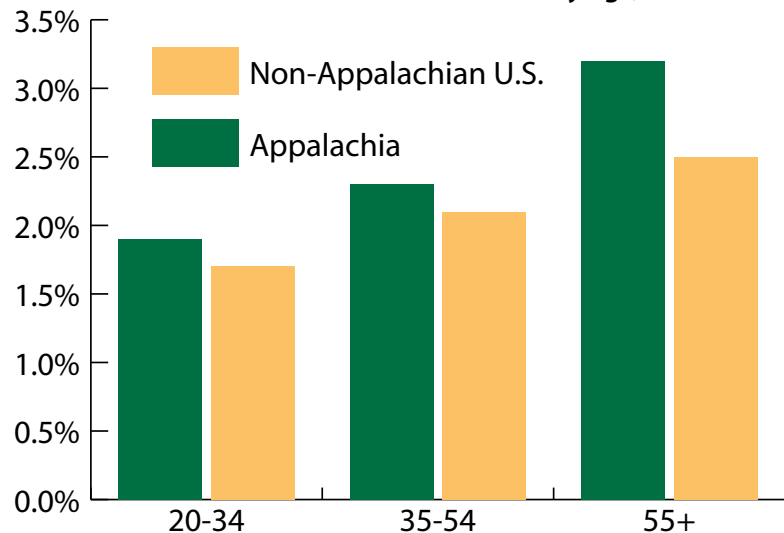
Although Appalachia per se is not identified in the CPS or the DWS, this report is based on a constructed sub-sample that approximates Appalachia using the metropolitan and state geographic identifiers that are available. All displacement statistics in this report pertain to “long-tenure” workers with at least three years of tenure in the job they lost.

Analysis of the constructed sub-sample reveals that Appalachian workers experienced a similar rate of displacement to workers in the rest of the United States. However, Appalachia and its workers proved less resilient in the face of displacement than other U.S. workers, with lower shares of Appalachian workers re-employed, in the labor force or enjoying wage gains compared to their previous job. Appalachian workers’ lack of resilience may stem from the higher share of older, less educated, and long-tenured workers displaced in the region as well as a higher share of jobs lost due to plant closings. Our specific findings include:

- The overall displacement rate of long-tenure workers (with at least three years of experience) in Appalachia jumped from 2.7 percent in 1995-1997 to 4.1 percent in 2001-2003, compared with 2.9 percent to 4.0 percent in the Non-Appalachian United States.
- The displacement rate in Appalachian manufacturing more than doubled from 4.2 percent in 1995-1997 to 9.6 percent in 2001-2003. Outside of Appalachia the rate for manufacturing doubled over the same period.
- Plant closings were a more common reason for displacement in Appalachia than in the rest of the United States from 1999-2003. Whereas 55 percent of displaced Appalachian workers lost jobs due to plant closings, the comparable percentage outside the region was 42-47 percent.
- Compared to displaced workers in the rest of the United States displaced workers in Appalachia were more likely to have been displaced from jobs that they held for a very long time. During the 2001-2003 period nearly twice as large a share of displaced workers in Appalachia had more than 20 years experience on their previous job as in the rest of the United States. Nearly one out of five displaced workers in Appalachia had more than 20 years experience on their previous job compared to just under one in 10 in the rest of the United States.

- During the period 1999-2003 as a whole the displacement rate for high school dropouts was at 4.1 percent, twice the displacement rate among college graduates in the region (2.1 percent). In the rest of the United States high school dropouts and college graduates had similar displacement rates (2.7 percent and 2.6 percent respectively).
- Appalachian workers who had been displaced during the previous three years were less likely to have been re-employed in 2004 than in 1998. In January 2004, 58 percent of Appalachian workers displaced during 2001-2003 had a job. In February 1998, 70 percent of Appalachian workers displaced during 1995-1997 had a job. The 58 percent re-employment rate of displaced Appalachian workers in January 2004 was lower than the Non-Appalachian U.S rate of 65 percent in the same month.
- Twenty-one percent of Appalachian workers displaced in the previous three years were not in the labor force at the time of the 2004 survey compared to 15 percent of Non-Appalachian U.S. workers.
- Of full-time workers in Appalachia who were displaced during 1999-2003 only 16-17 percent were working as full-time employees again and earning the same or more money (taking inflation into account) at the time of the next survey. Between 38 and 40 percent were unemployed or not in the labor force, 6 to 8 percent were working part-time, and 36 to 40 percent were in a full-time job earning less money (taking inflation into account).
- Comparisons with the rest of the rural United States (Figure 1) reveal a higher overall rate of displacement in rural¹ Appalachia during the 1993-2003 period as a whole (2.3 percent compared to 2.0 percent). Older workers (55 years and above) in rural Appalachia had an especially higher rate of displacement than their counterparts in rural areas outside of Appalachia (3.2 percent compared to 2.5 percent).
- Over the entire 1993-2003 period 22 percent of displaced full-time workers in Appalachia earned the same or more in a full-time job compared with 26 percent of workers outside Appalachia.

Figure 1. Displacement Rates in Rural Appalachia and the Rest of the Rural United States by Age, 1993-2003



Note: In 1993-2003, the difference in displacement rates between workers age 55 and older in rural Appalachia and the rural Non-Appalachian U.S. is significant at the 10 percent level. When pooling observations from each DWS between 1996 and 2004 the double counting of displaced workers in overlapping years is avoided by excluding all individuals displaced a year or less prior to the date of the survey for the the years 1996, 1998, 2000 and 2002.

Source: Keystone Research Center (KRC) analysis of Center for Economic and Policy Research (CEPR) extract from the Current Population Survey Displaced Workers Supplement (CPS DWS).

The DWS data reviewed here confirm the impression from anecdotal sources that economic restructuring over the past several years has been traumatic for parts of Appalachia, especially rural regions. With market pressures only likely to intensify, (in part because of the phase-out of the Multi-Fiber Agreement), the need to help parts of Appalachia dependent on low-wage manufacturing reposition themselves becomes that much more urgent.

Displacement in Appalachia

The primary source for quantitative information on worker displacement in the United States is the Displaced Worker Survey (DWS), a supplement to the Current Population Survey (CPS). The DWS has been conducted in either January or February of every even-numbered year since 1984. Although the DWS does not include a geographic identifier for Appalachia it does identify each state, each metropolitan area, and the non-metropolitan portion of each state.

Using the CPS geographic identifiers it is possible to identify a region that approximates Appalachia. (For additional detail on the methodology used to create the Appalachian sub-sample see the Technical Appendix.) The creation of an Appalachian CPS sample makes possible for the first time the analysis of displacement experience in Appalachia and the comparison of this experience with that in the rest of the United States. It also makes possible other analyses of Appalachia using the CPS.

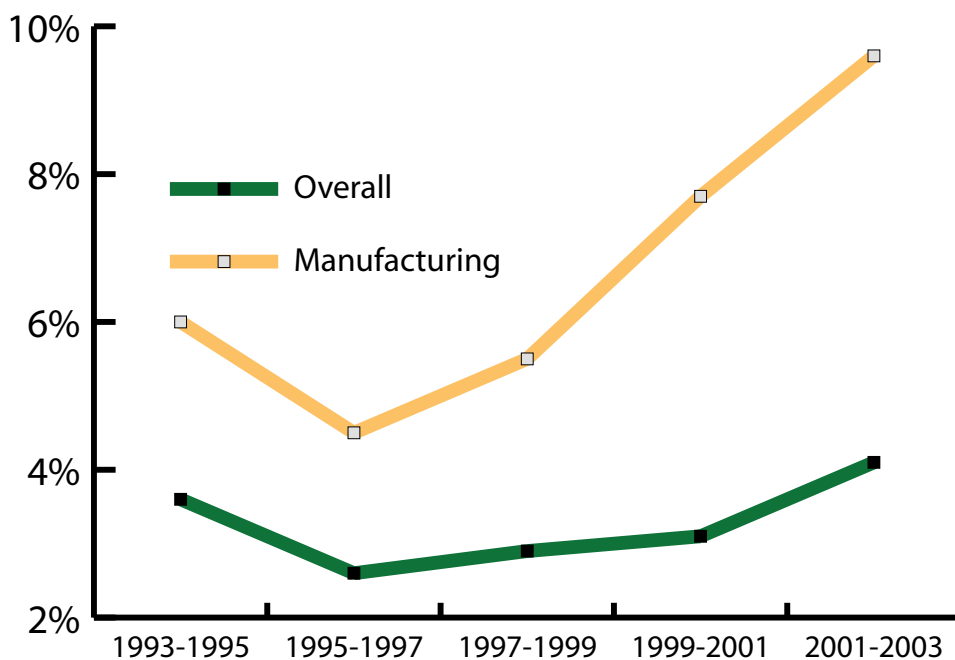
The CPS defines workers as displaced if they permanently lost jobs because their plant or company closed down or moved, their positions or shifts were abolished, or there was insufficient work. In addition, to qualify as displaced, workers must not expect to be recalled in the next six months and not be self-employed at the lost job. Following the Bureau of Labor Statistics (BLS) convention in analysis of displaced workers, the discussion below focuses on long-tenured workers—displaced workers who lost or left jobs they had held for 3 years or more. This report assumes that at least 3 years with the same employer denotes a substantial mutual commitment between employer and employee. Therefore, displaced workers as defined here are likely to be those who lost their jobs due to labor market conditions, not as a result of a “bad match” with their employer.

Since each DWS asks workers about displacement in the three years prior, this report uses three-year displacement rates which cover the full period about which workers are asked.²

Characteristics of the Displaced

Table 1 (page 4, see also Figure 2) shows displacement rates for Appalachia based on the Displaced Worker Surveys conducted in 1996 (covering displacements that occurred during 1993-1995), 1998 (covering displacements in 1995-1997), 2000 (displacements in 1997-1999), 2002 (displacements in 1999-2001), and 2004 (displacements in 2001-2003). It also shows displacement rates using combined data for

Figure 2. Three-year Displacement Rates in Appalachia, Overall and Within Manufacturing, 1993-2003



Note: The difference between the displacement rate in 1995-1997 (4.5 percent) and 2001-2003 (9.6 percent) is significant at the 10 percent level.

Source: KRC analysis of CEPR extract from the CPS DWS.

	1993-1995		1995-1997		1997-1999		1999-2001		2001-2003		1993-2003	
	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
All	359,076	3.6%	278,317	2.7%	317,038	3.0%	329,704	3.2%	420,413	4.1%	1,139,634	2.3%
Gender												
Female	138,589	3.0%	116,835	2.5%	153,531	3.1%	141,064	2.9%	179,157	3.8%	495,449	2.2%
Male	220,488	4.1%	161,482	2.9%	163,508	2.9%	188,640	3.5%	241,256	4.4%	644,185	2.5%
Age												
20-34	113,776	3.2%	61,486	1.8%	62,323	1.8%	73,094	2.3%	117,891	3.6%	261,478	1.7%
35-54	185,174	3.6%	163,063	3.1%	192,036	3.5%	185,355	3.4%	211,857	4.0%	639,529	2.5%
55+	60,126	4.4%	53,768	3.5%	62,680	4.1%	71,255	4.4%	90,665	5.3%	238,627	3.2%
Education												
Less than high school	34,918	3.2%	32,671	3.3%	41,880	4.1%	36,404	4.0%	49,106	5.9%	131,277	2.9%
High school	152,207	3.7%	119,743	2.9%	142,890	3.4%	140,420	3.4%	175,691	4.4%	465,050	2.4%
Some college	99,610	3.8%	83,165	2.9%	77,677	2.7%	102,437	3.7%	116,464	4.2%	324,199	2.5%
College plus	72,342	3.3%	42,739	1.9%	54,591	2.2%	50,443	2.2%	79,152	3.0%	219,107	1.9%
Race												
White	335,227	3.7%	251,895	2.8%	282,836	3.0%	277,452	3.1%	356,525	4.0%	1,012,008	2.4%
Non White	23,850	2.2%	26,422	2.3%	34,202	2.9%	52,252	4.4%	63,888	4.6%	127,627	2.3%
Industry												
Manufacturing & Mining	139,288	5.9%	94,218	4.2%	120,121	5.5%	178,456	8.6%	180,055	9.6%	388,140	3.9%
Services	213,200	2.9%	182,560	2.3%	195,044	2.4%	143,583	1.8%	239,653	2.9%	478,971	1.3%
Metro/Rural												
Metro	207,430	3.5%	176,224	2.9%	183,150	2.9%	194,653	3.2%	251,439	4.1%	680,711	2.4%
Rural	151,646	3.7%	102,093	2.5%	133,888	3.1%	135,052	3.3%	168,974	4.0%	458,923	2.3%

Note: Services includes transportation, communications, utilities and construction. When pooling observations from each DWS between 1996 and 2004 double counting is avoided by excluding individuals displaced a year or less after the date of the survey for the survey years 1996, 1998, 2000 and 2002. Before calculating displacement rates by industry in the pooled sample, data from 2004 (2001-2003) was excluded due to the switch in that year to NAICS. When excluding the data from 2004 workers in the 2002 DWS reporting displacement in the year prior to the date of the survey were added back to the pooled sample.

The difference between the displacement rate in 1995-1997 (2.6 percent) and 2001-2003 (4.1 percent) is significant at the 10 percent level. The difference between the displacement rate in manufacturing in 1995-1997 (4.5 percent) and 2001-2003 (9.6 percent) is significant at the 10 percent level. The difference in displacement rates between workers age 20-34 and workers 55 and older is significant at the 10 percent level in 1999-2001, 2001-2003 and in 1993-2003. The difference in displacement rates between workers employed in manufacturing and mining and those employed in the service sector is significant in each year at the 10 percent level. The difference in Appalachia between the share of displaced workers who were non-white in 1993-1995 and in 2001-2003 is significant at the 10 percent level.

Source: Keystone Research Center (KRC) analysis of Center for Economic and Policy Research (CEPR) extract from Current Population Survey Displaced Workers Survey (CPS DWS).

Table 2. Three-Year Displacement Rates, by Worker Characteristics, Non-Appalachian U.S.

	1993-1995		1995-1997		1997-1999		1999-2001		2001-2003		1993-2003	
	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
All	3,802,336	3.5%	3,288,965	2.9%	2,948,926	2.5%	3,627,560	3.1%	4,908,494	4.0%	12,797,394	2.3%
Gender												
Female	1,667,405	3.3%	1,555,336	2.9%	1,354,250	2.5%	1,637,891	3.0%	2,139,872	3.7%	5,723,096	2.2%
Male	2,134,931	3.6%	1,733,629	2.8%	1,594,676	2.5%	1,989,669	3.2%	2,768,622	4.2%	7,074,298	2.4%
Age												
20-34	1,085,803	2.7%	821,896	2.0%	625,739	1.6%	817,905	2.1%	1,097,640	2.7%	2,949,127	1.6%
35-54	2,153,841	3.9%	1,889,005	3.2%	1,713,784	2.8%	2,163,556	3.5%	2,808,863	4.5%	7,417,143	2.6%
55+	562,692	4.0%	578,064	3.8%	609,403	3.7%	646,099	3.7%	1,001,991	4.9%	2,431,123	3.0%
Education												
Less than high school	362,782	3.7%	337,365	3.3%	288,939	2.9%	288,232	2.9%	372,225	3.7%	1,061,288	2.3%
High school	1,199,551	3.4%	1,108,501	3.0%	965,858	2.6%	1,256,251	3.4%	1,652,557	4.3%	4,294,457	2.5%
Some college	1,300,787	4.0%	1,007,753	3.0%	933,263	2.7%	1,147,811	3.3%	1,438,848	4.0%	4,034,580	2.5%
College plus	939,216	3.0%	835,347	2.5%	760,866	2.1%	935,266	2.6%	1,444,864	3.7%	3,407,070	2.0%
Race												
White	2,924,812	3.5%	2,473,675	2.9%	2,152,650	2.5%	2,743,060	3.2%	3,370,597	3.9%	9,295,827	2.3%
Non White	877,524	3.4%	815,290	2.7%	796,277	2.5%	884,500	2.8%	1,537,897	4.2%	3,501,568	2.4%
Industry												
Manufacturing & Mining	1,154,556	6.1%	912,573	4.8%	949,049	5.1%	1,175,208	6.9%	1,548,752	9.8%	3,101,930	3.7%
Services	2,568,305	2.9%	2,304,573	2.5%	1,909,055	2.0%	2,386,765	2.4%	3,283,881	3.1%	6,360,942	1.4%
Metro/Rural												
Metro	3,157,543	3.5%	2,859,723	3.0%	2,437,031	2.5%	3,101,853	3.2%	4,272,775	4.1%	10,937,473	2.4%
Rural	643,021	3.4%	425,036	2.3%	502,684	2.6%	518,048	2.7%	630,933	3.2%	1,839,796	2.0%

Note: Services includes transportation, communications, utilities, and construction. When pooling observations from each DWS between 1996 and 2004 double counting is avoided by excluding individuals displaced a year or less after the date of the survey for the survey years 1996, 1998, 2000 and 2002. Before calculating displacement rates by industry in the pooled sample, data from 2004 (2001-2003) was excluded due to the switch in that year to NAICS. When excluding the data from 2004 workers in the 2002 DWS reporting displacement in the year prior to the date of the survey were added back to the pooled sample.

Source: KRC analysis of CEPR extract from CPS DWS.

Table 3. Demographic Characteristics of Displaced Workers, Appalachia												
	1993-1995		1995-1997		1997-1999		1999-2001		2001-2003		1993-2003	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
All	359,077	100.0%	278,317	100.0%	317,039	100.0%	329,704	100.0%	420,413	100.0%	1,139,634	100.0%
Gender												
Female	138,589	38.6%	116,835	42.0%	153,531	48.4%	141,064	42.8%	179,157	42.6%	495,449	43.5%
Male	220,488	61.4%	161,482	58.0%	163,508	51.6%	188,640	57.2%	241,256	57.4%	644,185	56.5%
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20-34	113,776	31.7%	61,486	22.1%	62,323	19.7%	73,094	22.2%	117,891	28.0%	261,478	22.9%
35-54	185,174	51.6%	163,063	58.6%	192,036	60.6%	185,355	56.2%	211,857	50.4%	639,529	56.1%
55+	60,126	16.7%	53,768	19.3%	62,680	19.8%	71,255	21.6%	90,665	21.6%	238,627	20.9%
Education												
Less than high school	34,918	9.7%	32,671	11.7%	41,880	13.2%	36,404	11.0%	49,106	11.7%	131,277	11.5%
High school	152,207	42.4%	119,743	43.0%	142,890	45.1%	140,420	42.6%	175,691	41.8%	465,050	40.8%
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College plus	72,342	20.1%	42,739	15.4%	54,591	17.2%	50,443	15.3%	79,152	18.8%	219,107	19.2%
Race												
White	335,227	93.4%	251,895	90.5%	282,836	89.2%	277,452	84.2%	356,525	84.8%	1,012,008	88.8%
Non White	23,850	6.6%	26,422	9.5%	34,202	10.8%	52,252	15.8%	63,888	15.2%	127,627	11.2%
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Manufacturing & Mining	139,288	38.8%	94,218	33.9%	120,121	38.1%	178,456	54.3%	180,055	42.9%	514,590	38.3%
Services	213,200	59.4%	182,560	65.6%	195,044	61.9%	143,583	43.7%	239,653	57.1%	810,100	60.3%
Metro/Rural												
Metro	207,430	57.8%	176,224	63.3%	183,150	57.8%	194,653	59.0%	251,439	59.8%	680,711	59.7%
Rural	151,646	42.2%	102,093	36.7%	133,888	42.2%	135,052	41.0%	168,974	40.2%	458,923	40.3%

Note: Services includes transportation, communications, utilities, and construction. When pooling observations from each DWS between 1996 and 2004 double counting is avoided by excluding individuals displaced a year or less after the date of the survey for the survey years 1996, 1998, 2000 and 2002. Before calculating displacement rates by industry in the pooled sample, data from 2004 (2001-2003) was excluded due to the switch in that year to NAICS. When excluding the data from 2004 workers in the 2002 DWS reporting displacement in the year prior to the date of the survey were added back to the pooled sample.

Source: KRC analysis of CEPR extract from CPS DWS.

Table 4. Demographic Characteristics of Displaced Workers, Non-Appalachian U.S.

	1993-1995		1995-1997		1997-1999		1999-2001		2001-2003		1993-2003	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
All	3,802,336	100.0%	3,288,965	100.0%	2,948,926	100.0%	3,627,560	100.0%	4,908,494	100.0%	12,797,394	100.0%
Gender												
Female	1,667,405	43.9%	1,555,336	47.3%	1,354,250	45.9%	1,637,891	45.2%	2,139,872	43.6%	5,723,096	44.7%
Male	2,134,931	56.1%	1,733,629	52.7%	1,594,676	54.1%	1,989,669	54.8%	2,768,622	56.4%	7,074,298	55.3%
Age												
20-34	1,085,803	28.6%	821,896	25.0%	625,739	21.2%	817,905	22.5%	1,097,640	22.4%	2,949,127	23.0%
35-54	2,153,841	56.6%	1,889,005	57.4%	1,713,784	58.1%	2,163,556	59.6%	2,808,863	57.2%	7,417,143	58.0%
55+	562,692	14.8%	578,064	17.6%	609,403	20.7%	646,099	17.8%	1,001,991	20.4%	2,431,123	19.0%
Education												
Less than high school	362,782	9.5%	337,365	10.3%	288,939	9.8%	288,232	7.9%	372,225	7.6%	1,061,288	8.3%
High school	1,199,551	31.5%	1,108,501	33.7%	965,858	32.8%	1,256,251	34.6%	1,652,557	33.7%	4,294,457	33.6%
Some college	1,300,787	34.2%	1,007,753	30.6%	933,263	31.6%	1,147,811	31.6%	1,438,848	29.3%	4,034,580	31.5%
College plus	939,216	24.7%	835,347	25.4%	760,866	25.8%	935,266	25.8%	1,444,864	29.4%	3,407,070	26.6%
Race												
White	2,924,812	76.9%	2,473,675	75.2%	2,152,650	73.0%	2,743,060	75.6%	3,370,597	68.7%	9,295,827	72.6%
Non White	877,524	23.1%	815,290	24.8%	796,277	27.0%	884,500	24.4%	1,537,897	31.3%	3,501,568	27.4%
Industry												
Manufacturing & Mining	1,154,556	30.6%	912,573	28.0%	949,049	32.6%	1,175,208	32.6%	1,548,752	31.8%	3,101,930	32.3%
Services	2,568,305	68.0%	2,304,573	70.7%	1,909,055	65.6%	2,386,765	66.3%	3,283,881	67.4%	6,360,942	66.3%
Metro/Rural												
Metro	3,159,315	83.1%	2,863,929	87.1%	2,446,242	83.0%	3,109,512	85.7%	4,277,562	87.1%	10,957,598	85.6%
Rural	643,021	16.9%	425,036	12.9%	502,684	17.0%	518,048	14.3%	630,933	12.9%	1,839,796	14.4%

Note: Services includes transportation, communications, utilities, and construction. When pooling observations from each DWS between 1996 and 2004 double counting is avoided by excluding individuals displaced a year or less after the date of the survey for the survey years 1996, 1998, 2000 and 2002. Before calculating displacement rates by industry in the pooled sample, data from 2004 (2001-2003) was excluded due to the switch in that year to NAICS. When excluding the data from 2004 workers in the 2002 DWS reporting displacement in the year prior to the date of the survey were added back to the pooled sample. at we added back to our pooled sample workers in the 2002 DWS reporting displacement in the year prior to the date of the survey.

Source: KRC analysis of CEPR extract from CPS DWS.

all surveys conducted between 1996 and 2004 (covering all displacements from 1993-2003). Table 2 (page 5) contains displacement rates for the Non-Appalachian United States. Table 3 (page 6) displays the share of displacement in Appalachia accounted for by different demographic groups. Table 4 (page 7) does the same for the rest of the United States.

Changes over time. Earlier DWS research showed that displacement is more common during recessions than during economic expansions (Farber 2003) and that the post-recession displacement rate was generally higher during the 1990s than during the 1980s (Kletzer 1998). Displacement rates in Appalachia and the rest of the United States continued to fluctuate as expected with the change in the overall health of the U.S. economy. In Appalachia, three-year displacement rates dropped below 3 percent in the 1995-1999 period. They climbed to 4 percent in the most recent three-year period (2001-2003). In the most recent three-year period, the displacement rate in Appalachia was more than a full percentage point higher than in 1995-1997.

Age, sex, race. Table 1 indicates that between 1999 and 2003 displacement rates in Appalachia were consistently higher for older workers (55 and older) than for younger workers (aged 20-34). This finding contrasts with earlier DWS research on the nation as a whole, which showed that workers aged 20-29 consistently had the highest displacement rates of any age group (Farber 2003).

Over the entire period 1993-2003 the displacement rates for men in Appalachia were slightly higher than for women. The displacement rate was 2.5 percent for men and 2.2 percent for women. This difference is consistent with the displacement rates for men, 2.4 percent, and women, 2.2 percent, in the Non-Appalachian U.S.

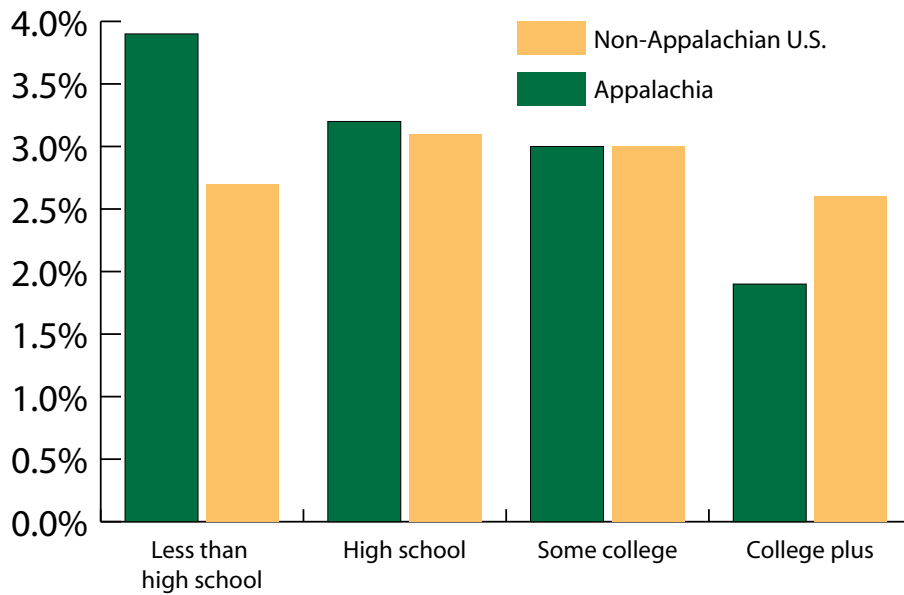
In both Appalachia and the rest of the United States whites and non-whites had similar displacement rates throughout the period examined. In Appalachia non-whites had lower displacement rates from 1993-1997 but higher rates from 1999-2003. These racial differences in Appalachia, however, were not significant.

Educational attainment. Comparing workers with different levels of educational attainment within Appalachia shows that less educated workers were worse off in terms of displacement than their more educated counterparts (Figure 3, page 4).

- Over the entire period, 1993-2003 the displacement rate in Appalachia for workers with less than a high school diploma was 2.9 percent compared to 1.9 percent for workers with at least a college degree. (Earlier national DWS studies of the 1980s and 1990s also found that displacement rates fell as educational attainment increased. See Kletzer (1998) and Farber (2003).)
- Comparisons of Appalachia with the rest of the United States show that Appalachia's displacement rate was higher than that of the rest of the nation for workers with low levels of formal education. During the period 1999-2003 as a whole the displacement rate for workers without a high school diploma was 3.9 percent in Appalachia compared to 2.7 percent for the same group outside of Appalachia.

Industry. In both Appalachia and the rest of the United States displacement rates of workers in manufacturing and mining (combined) far exceed those of workers in a group of other industries (here called "services") that includes transportation, communications, utilities, and construction³ (Figure 4, page 4). The gap between manufacturing and mining and services is consistent with that reported in earlier analyses of the DWS (Helwig 2001, p. 15. Schmitt 2004, p. 56). This gap, however, is much larger in the two most recent surveys than previously. Nearly one in 10 manufacturing and mining workers was displaced during the period 2001-2003,

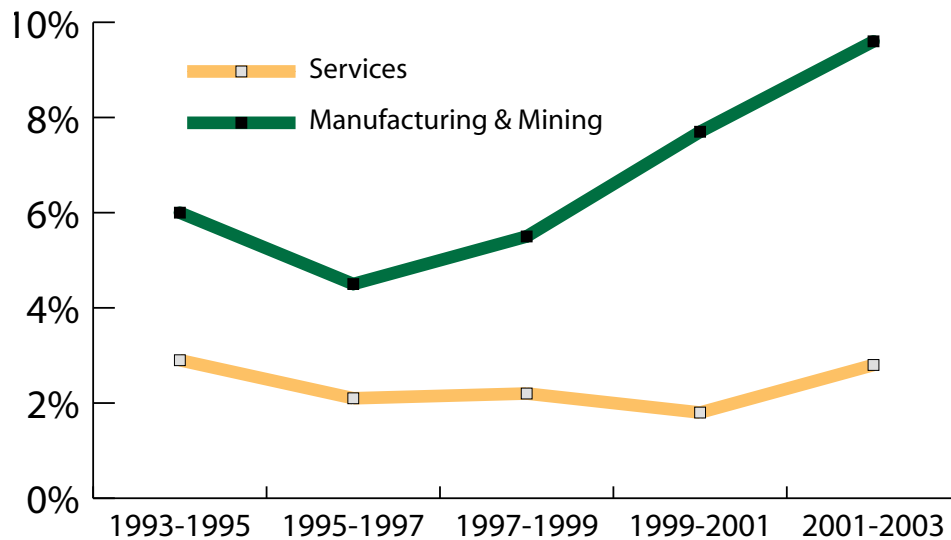
Figure 3. Displacement Rates by Educational Attainment Within and Outside of Appalachia, 1999-2003



Note: The difference in displacement rates between workers with less than a high school diploma in Appalachia and the Non-Appalachian U.S. is significant to the 10 percent level. When pooling observations from the 2002 and 2004 DWS the double counting of displaced workers in overlapping years is avoided by excluding all individuals displaced a year or less prior to the date of the survey in 2002.

Source: KRC analysis of CEPR extract from the CPS DWS.

Figure 4. Three-year Displacement Rates by Industry Appalachia, 1993-2003



Note: The difference in displacement rates between workers employed in manufacturing and mining and those employed in the service sector is significant in each year at the 10 percent level.

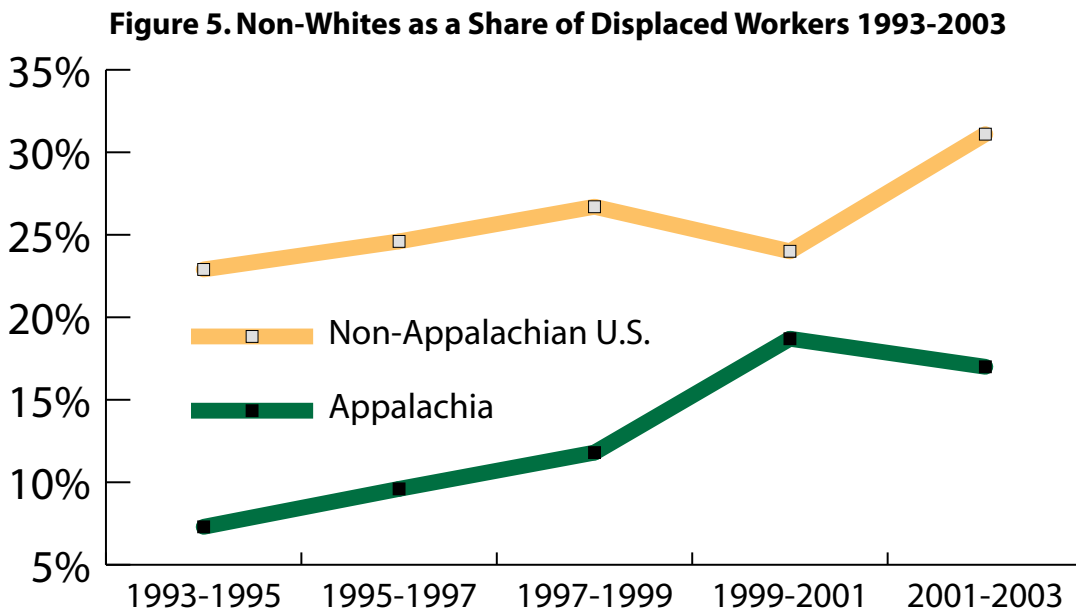
Source: KRC analysis of CEPR extract from the CPS DWS.

compared with about 3 percent of service workers.

These findings contrast with those of analyses of the DWS that covered the period from 1984 through the mid-1990s. Over the course of that earlier time period displacement became less concentrated in manufacturing (although it was still higher in manufacturing than in other industries) and the displacement rate in manufacturing was lower in the mid-1990s than in the 1980s (Kletzer 1998). This report finds that the 2001 recession and the slow recovery that followed it reversed the earlier trend.

The displacement rate in Appalachian manufacturing is similar to the rate for manufacturing outside of the region.

Demographic characteristics of displaced workers. Table 3 shows the share of displaced workers in each demographic category over time in Appalachia. Many of these shares are relatively stable. One exception is the growth in the share of displaced workers who were non-white⁴ (from 6.6 percent in 1993-1995 to 15.2 percent in 2001-2003, Figure 5). This sharp increase mirrored but was more rapid than the trend outside the region (23.1 percent in 1993-1995 to 31.3 percent in 2001-2003). The increase also reflected in part the more rapid increase in the minority population in Appalachia between 1990 and 2000 (50 percent increase in Appalachia



Note: The difference in Appalachia between the share of displaced workers who were non-white in 1993-1995 and in 2001-2003 is significant at the 10 percent level.

Source: KRC analysis of CEPR extract from the CPS DWS.

compared with 43 percent increase in the entire U.S.), including a tripling in the number of Hispanics in Appalachia (Pollard 2003, p. 13). It may also have reflected the concentration of minorities, including Hispanics, in some industries with high displacement rates.

Table 5. Other Characteristics of Displaced Workers, Appalachia												
	1993-1995		1995-1997		1997-1999		1999-2001		2001-2003		1993-2003	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Tenure on lost job												
3-10	240,942	67.1%	171,598	61.7%	215,960	68.1%	208,913	63.4%	272,664	64.9%	734,555	64.5%
11-20	70,599	19.7%	52,784	19.0%	68,604	21.6%	66,407	20.1%	70,311	16.7%	213,862	18.8%
21+	47,535	13.2%	53,935	19.4%	32,474	10.2%	54,384	16.5%	77,439	18.4%	191,217	16.8%
Why displaced												
Plant closing	142,855	39.8%	126,100	45.3%	159,990	50.5%	179,890	54.6%	230,706	54.9%	595,809	52.3%
Insufficient work	98,132	27.3%	62,667	22.5%	55,969	17.7%	78,729	23.9%	90,947	21.6%	233,852	20.5%
Position abolished	118,089	32.9%	89,550	32.2%	101,079	31.9%	71,085	21.6%	98,759	23.5%	309,973	27.2%
Weeks without work after lost job												
0-6 weeks	143,772	51.8%	114,593	55.4%	134,612	57.8%	141,904	61.6%	122,956	47.0%	409,178	48.9%
7-13 weeks	42,658	15.4%	32,809	15.9%	46,761	20.1%	19,678	8.5%	41,779	16.0%	123,266	14.7%
14-26 weeks	45,124	16.3%	18,288	8.8%	20,851	8.9%	28,748	12.5%	34,402	13.1%	108,432	13.0%
27-39 weeks	13,928	5.0%	16,021	7.7%	8,573	3.7%	17,196	7.5%	17,611	6.7%	53,189	6.4%
40-52 weeks	21,752	7.8%	10,798	5.2%	17,290	7.4%	10,583	4.6%	27,063	10.3%	84,617	10.1%
53+ weeks	10,284	3.7%	14,261	6.9%	4,979	2.1%	12,236	5.3%	17,832	6.8%	58,479	7.0%
Received advanced notice												
No	222,333	61.9%	164,714	60.0%	204,993	66.5%	187,954	58.1%	237,450	56.8%	685,792	60.7%
Yes	136,743	38.1%	109,640	40.0%	103,464	33.5%	135,397	41.9%	180,945	43.2%	443,927	39.3%
How much notice												
<1 month	31,188	23.2%	19,754	18.5%	20,375	20.3%	29,716	22.7%	42,683	24.3%	83,810	19.3%
1-2 months	51,368	38.2%	30,952	29.0%	28,443	28.3%	40,166	30.7%	62,251	35.4%	153,485	35.4%
2- months	52,034	38.7%	56,190	52.6%	51,674	51.4%	60,971	46.6%	71,015	40.4%	196,121	45.3%
Received unemployment benefits												
No	163,023	45.4%	129,335	46.8%	152,194	49.3%	137,834	42.4%	161,730	39.0%	470,206	41.7%
Yes	196,053	54.6%	146,959	53.2%	156,659	50.7%	187,354	57.6%	253,210	61.0%	657,817	58.3%
Exhausted unemployment benefits												
No	107,795	55.6%	77,361	53.4%	84,856	55.5%	107,016	57.1%	132,008	52.7%	330,080	50.4%
Yes	86,243	44.4%	67,606	46.6%	68,156	44.5%	80,338	42.9%	118,481	47.3%	324,225	49.6%
Moved after job loss												
No	307,916	85.8%	248,392	89.7%	300,130	94.7%	291,208	88.7%	392,069	93.3%	1,010,070	88.7%
Yes	51,160	14.2%	28,481	10.3%	16,908	5.3%	37,225	11.3%	28,344	6.7%	129,000	11.3%
Moved, economic reason												
No	28,593	55.9%	7,137	25.1%	3,484	20.6%	15,745	42.3%	15,781	55.7%	62,592	48.5%
Yes	22,567	44.1%	21,345	74.9%	13,424	79.4%	21,480	57.7%	12,563	44.3%	66,408	51.5%
Have worked since lost job												
No	69,255	19.3%	64,850	23.4%	72,298	22.8%	93,384	28.4%	152,049	36.2%	271,067	23.8%
Yes	289,821	80.7%	212,588	76.6%	244,740	77.2%	235,050	71.6%	268,364	63.8%	868,568	76.2%
Number of Jobs Since Displacement												
0	69,255	19.5%	64,850	24.1%	72,298	23.1%	93,384	28.8%	152,049	36.6%	271,067	24.0%
1	214,031	60.2%	162,615	60.4%	167,988	53.7%	178,510	55.0%	197,752	47.7%	606,300	53.7%
2	37,709	10.6%	20,104	7.5%	52,572	16.8%	38,766	12.0%	42,782	10.3%	159,277	14.1%
3+	34,516	9.7%	21,531	8.0%	20,046	6.4%	13,729	4.2%	22,341	5.4%	91,467	8.1%

continued

Table 5. Other Characteristics of Displaced Workers, Appalachia (cont'd)

	1993-1995		1995-1997		1997-1999		1999-2001		2001-2003		1993-2003	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Labor Force Status all displaced workers												
Employed	254,146	70.8%	194,975	70.1%	221,404	69.8%	209,066	63.4%	244,396	58.1%	775,151	68.0%
Unemployed	39,461	11.0%	36,553	13.1%	48,166	15.2%	60,306	18.3%	86,675	20.6%	144,370	12.7%
Not In Labor Force	65,469	18.2%	46,789	16.8%	47,468	15.0%	60,332	18.3%	89,342	21.3%	220,113	19.3%

Note: When pooling observations from each DWS between 1996 and 2004 double counting is avoided by excluding individuals displaced a year or less after the date of the survey for the survey years 1996, 1998, 2000 and 2002. The difference in Appalachia between the share of displaced workers who moved after job loss is significant at the 10 percent level in 1997-99, 2001-03, and when pooling observations between 1993-03. The difference in Appalachia between the share of workers in 2001-2003 who have not worked since displacement and the same share in 1993-1995, 1995-1997, 1997-1999 is significant at the 10 percent level. In 2001-2003, the difference in the share of all displaced workers employed at the time of the survey in Appalachia when compared to the same share in 1993-1995, 1995-1997 and 1997-1999 is significant at the 10 percent level.

Source: KRC analysis of CEPR extract from CPS DWS.

Table 6. Other Characteristics of Displacement, Non-Appalachian U.S.

	1993-1995		1995-1997		1997-1999		1999-2001		2001-2003		1993-2003	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Tenure on lost job												
3-10	2,743,237	72.1%	2,324,671	70.7%	2,025,693	68.7%	2,603,948	71.8%	3,540,752	72.1%	9,062,654	70.8%
11-20	687,473	18.1%	676,069	20.6%	637,508	21.6%	715,511	19.7%	887,077	18.1%	2,557,143	20.0%
21+	371,626	9.8%	288,226	8.8%	285,726	9.7%	308,102	8.5%	480,665	9.8%	1,177,597	9.2%
Reason displaced												
Plant closing	1,680,645	44.2%	1,557,939	47.4%	1,449,308	49.1%	1,690,760	46.6%	2,065,796	42.1%	5,960,794	46.6%
Insufficient work	911,235	24.0%	693,760	21.1%	650,286	22.1%	927,683	25.6%	1,416,805	28.9%	3,054,623	23.9%
Position abolished	1,210,457	31.8%	1,037,267	31.5%	849,332	28.8%	1,009,116	27.8%	1,425,892	29.0%	3,781,976	29.6%
Weeks without work since displaced												
0-6 weeks	1,538,167	52.9%	1,417,100	54.2%	1,347,157	60.9%	1,447,293	58.6%	1,519,642	46.0%	4,790,215	48.8%
7-13 weeks	496,258	17.1%	374,184	14.3%	336,197	15.2%	403,857	16.4%	504,393	15.3%	1,507,471	15.4%
14-26 weeks	428,266	14.7%	390,930	15.0%	267,502	12.1%	356,581	14.4%	540,349	16.4%	1,565,950	16.0%
27-39 weeks	139,087	4.8%	144,167	5.5%	81,001	3.7%	122,780	5.0%	240,740	7.3%	598,201	6.1%
40-52 weeks	183,005	6.3%	168,889	6.5%	126,303	5.7%	86,860	3.5%	278,316	8.4%	787,980	8.0%
53+ weeks	120,886	4.2%	118,688	4.5%	54,734	2.5%	51,415	2.1%	221,212	6.7%	565,926	5.8%
Received advanced notice												
No	2,112,250	56.3%	1,773,315	54.7%	1,591,016	54.4%	2,026,906	56.7%	2,726,374	56.6%	6,914,347	54.9%
Yes	1,636,763	43.7%	1,470,140	45.3%	1,333,803	45.6%	1,547,503	43.3%	2,088,177	43.4%	5,689,012	45.1%
How much notice												
<1 month	345,927	21.7%	316,683	22.1%	302,726	23.4%	371,650	24.6%	543,082	26.6%	1,294,666	23.3%
1-2 months	473,009	29.7%	373,987	26.1%	372,543	28.8%	493,621	32.7%	675,999	33.1%	1,658,674	29.9%
2- months	772,069	48.5%	739,919	51.7%	619,686	47.9%	644,338	42.7%	820,131	40.2%	2,591,509	46.7%
Received unemployment benefits												
No	1,839,130	48.8%	1,704,733	52.2%	1,605,860	55.2%	1,823,888	51.0%	1,899,589	39.3%	5,880,516	46.6%
Yes	1,926,798	51.2%	1,558,090	47.8%	1,300,715	44.8%	1,751,225	49.0%	2,930,883	60.7%	6,750,480	53.4%
Exhausted unemployment benefits												
No	1,048,334	55.5%	792,619	51.8%	735,106	57.0%	1,077,641	62.3%	1,600,930	55.1%	3,398,226	51.0%
Yes	840,447	44.5%	736,158	48.2%	554,753	43.0%	651,368	37.7%	1,302,536	44.9%	3,258,907	49.0%
Moved after job loss												
No	3,236,493	85.4%	2,871,196	87.5%	2,549,739	86.8%	3,247,401	89.8%	4,407,266	90.0%	11,003,959	86.2%
Yes	552,711	14.6%	409,801	12.5%	389,164	13.2%	369,148	10.2%	489,265	10.0%	1,762,720	13.8%
Moved, economic reason												
No	267,311	48.4%	170,614	41.6%	184,554	47.4%	134,230	36.6%	210,538	43.0%	818,435	46.4%
Yes	285,400	51.6%	239,187	58.4%	204,610	52.6%	232,556	63.4%	278,728	57.0%	944,286	53.6%
Have worked since lost job												
No	755,098	19.9%	592,766	18.0%	631,770	21.4%	1,062,421	29.3%	1,409,992	28.7%	2,496,513	19.5%
Yes	3,038,186	80.1%	2,694,877	82.0%	2,317,156	78.6%	2,564,003	70.7%	3,498,502	71.3%	10,293,801	80.5%
Number of Jobs Since Lost Job												
0	755,098	20.4%	592,766	18.5%	631,770	22.1%	1,062,421	30.2%	1,409,992	29.7%	2,496,513	20.1%
1	2,107,437	57.1%	1,884,727	58.9%	1,644,619	57.5%	1,901,450	54.0%	2,559,889	53.9%	7,094,019	57.0%
2	547,927	14.8%	478,210	14.9%	412,252	14.4%	397,464	11.3%	512,160	10.8%	1,851,537	14.9%
3+	281,985	7.6%	245,631	7.7%	173,350	6.1%	161,580	4.6%	271,000	5.7%	1,005,364	8.1%

continued

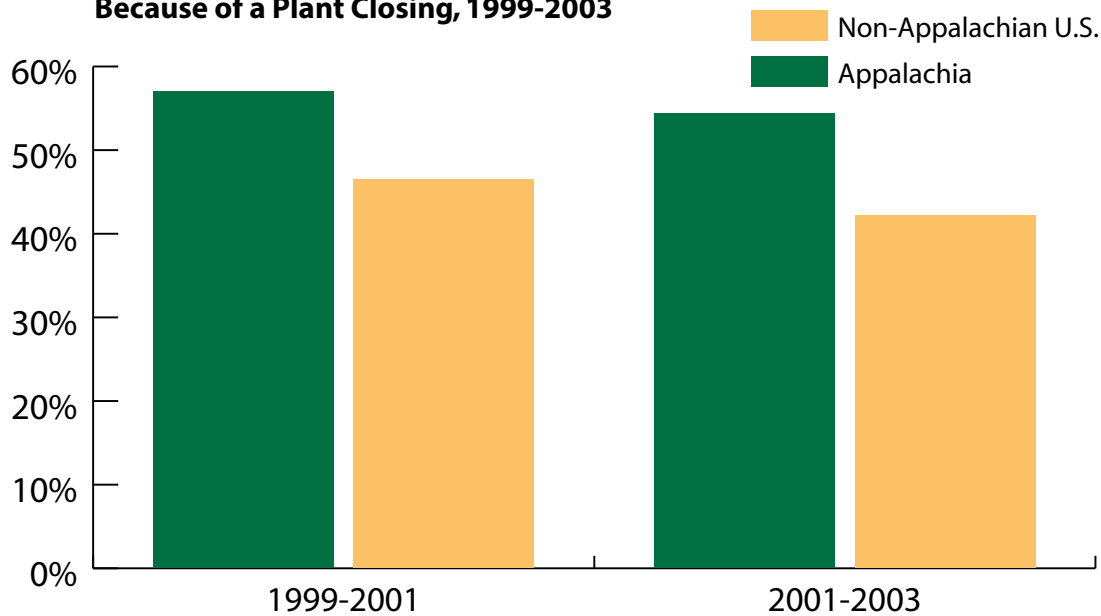
Table 6. Other Characteristics of Displacement, Non-Appalachian U.S. (cont'd)

	1993-1995		1995-1997		1997-1999		1999-2001		2001-2003		1993-2003	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Labor Force Status												
Employed	2,809,044	73.9%	2,515,104	76.5%	2,184,636	74.1%	2,304,208	63.5%	3,209,844	65.4%	9,426,995	73.7%
Unemployed	480,493	12.6%	320,947	9.8%	292,132	9.9%	780,123	21.5%	987,851	20.1%	1,540,009	12.0%
Not In Labor Force	512,799	13.5%	452,914	13.8%	472,158	16.0%	543,229	15.0%	710,799	14.5%	1,830,390	14.3%

Note: When pooling observations from each DWS between 1996 and 2004 double counting is avoided by excluding individuals displaced a year or less after the date of the survey for the survey years 1996, 1998, 2000 and 2002.

Source: KRC analysis of CEPR extract from CPS DWS.

Figure 6. Share of Workers Who Lost Their Previous Job Because of a Plant Closing, 1999-2003



Note: In 2001-2003 and 1999-2001, the difference between the share of workers displaced due to a plant closing in Appalachia and the non-Appalachian U.S. is significant at the 10 percent level.

Source: KRC analysis of CEPR extract from the CPS DWS.

The Displacement Experience

Table 5 (page 11) profiles Appalachian displaced workers based on their tenure on the lost job, why they were displaced, and various characteristics of the displacement experience. Table 6 (page 13) does the same for the rest of the United States.

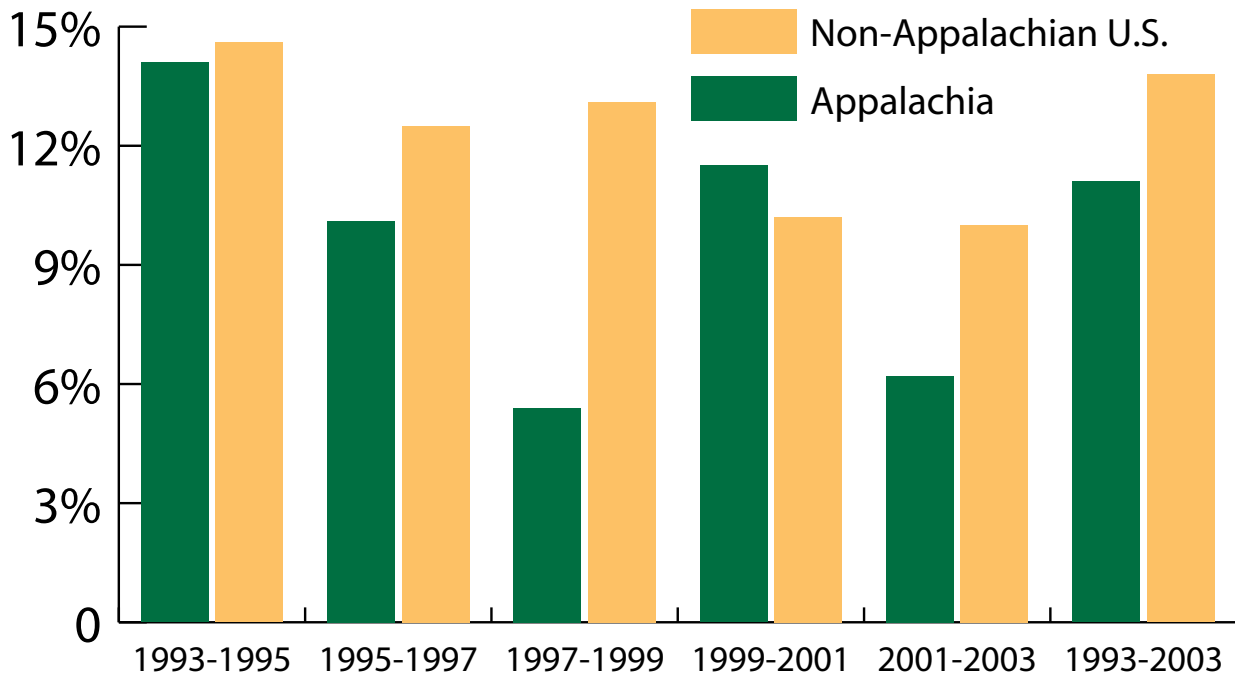
Tenure on lost job. Table 5 shows that over the entire 1993-2003 period nearly two-thirds of displaced workers in Appalachia had 3-10 years on the job, about one in five had 11-20 years, and one in six had 21 years or more. Compared to displaced workers in the rest of the U.S. a much higher percentage of Appalachian displaced workers had high tenure on their pre-displacement jobs. In 2001-2003 nearly one in six Appalachian displaced workers had more than 20 years experience compared to almost one in 10 in the Non-Appalachian United States.

Reason for job loss. In recent years (1999-2003), between five and six out of every 10 displaced workers in Appalachia lost their job because of a plant closing (Table 5, Figure 6). This is 8-12 percentage points higher than in the rest of the United States (Table 6).

Advance notice. During the entire period 1993-2003, the share of displaced Appalachian workers who received advance notice of a layoff was 39 percent. About 45 percent of displaced workers outside the region received advance notice in the same period.

Moving to another area. Following a job loss, some workers might move to another area to look for work or take another job. Only 6.7 percent of workers living in Appalachia in January 2004 and displaced during 2001-2003 had moved for one of these reasons. This figure ranged from 5 to 14 percent in previous periods since 1993 (Figure 7). In 1997-1999 and in 2001-2003 Appalachian workers were less likely to have moved after a job loss than U.S. workers. Over the entire period workers in Appalachia were less likely to have moved after job loss than those living outside of Appalachia. Prior DWS research has indicated that moving increases a worker's chance of being re-employed (Helwig 2001, p. 20).

Figure 7. Share of Displaced Workers Who Moved After Job Loss Within and Outside of Appalachia



Note: The difference in Appalachia between the share of displaced workers who moved after job loss is significant at the 10 percent level in 1997-1999, 2001-2003, and when pooling observations between 1993-2003. When pooling observations from each DWS between 1996 and 2004 the double counting of displaced workers in overlapping years is avoided by excluding all individuals displaced a year or less prior to the date of the survey for the the years 1996, 1998, 2000 and 2002.

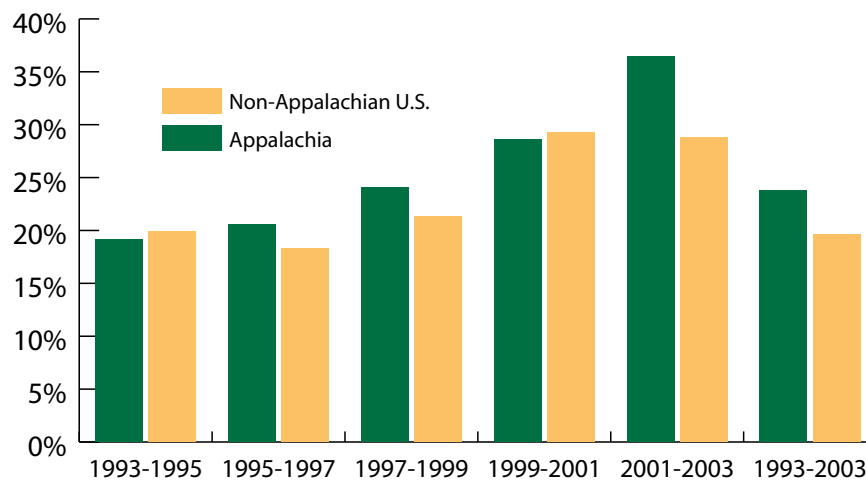
Source: KRC analysis of CEPR extract from the CPS DWS.

Receipt of unemployment insurance. During the 1993-2003 period as a whole 58 percent of Appalachian displaced workers received unemployment benefits when displaced, compared with 53 percent of workers outside the region.

On a consistent basis 43-47 percent of Appalachian displaced workers exhausted their unemployment benefits. In the rest of the United States a similar share of displaced workers exhausted their unemployment benefits in every three-year period between 1993 and 2003.

Re-employment since lost job. The percentage of displaced workers who had not worked since they lost their job rose sharply in Appalachia between 1993-1997 and 2001-2003 (Table 5, Figure 8). During 1993-1997

Figure 8. Share of Displaced Workers Who Had Not Worked Since Being Displaced Appalachia and the Non-Appalachian U.S., 1993-2003



Note: The difference in the share that have not worked in 2001-2003 and after pooling data (1993-2003) between Appalachia and the non-Appalachian U.S. is significant at the 10 percent level. When pooling observations from each DWS between 1996 and 2004 the double counting of displaced workers in overlapping years is avoided by excluding all individuals displaced a year or less prior to the date of the survey for the years 1996, 1998, 2000 and 2002.

Source: KRC analysis of CEPR extract from the CPS DWS.

about one in five displaced Appalachian workers had not worked between the time they lost their jobs and the time of the DWS. During 2001-2003 this percentage was 36 percent. This increase is consistent with earlier DWS research that showed that displaced workers' chances of re-employment were lower in recessions than in economic upturns in the 1980s and 1990s (Kletzer 1998) and, specifically, that re-employment rates fell during the 2001 recession (Farber 2003).

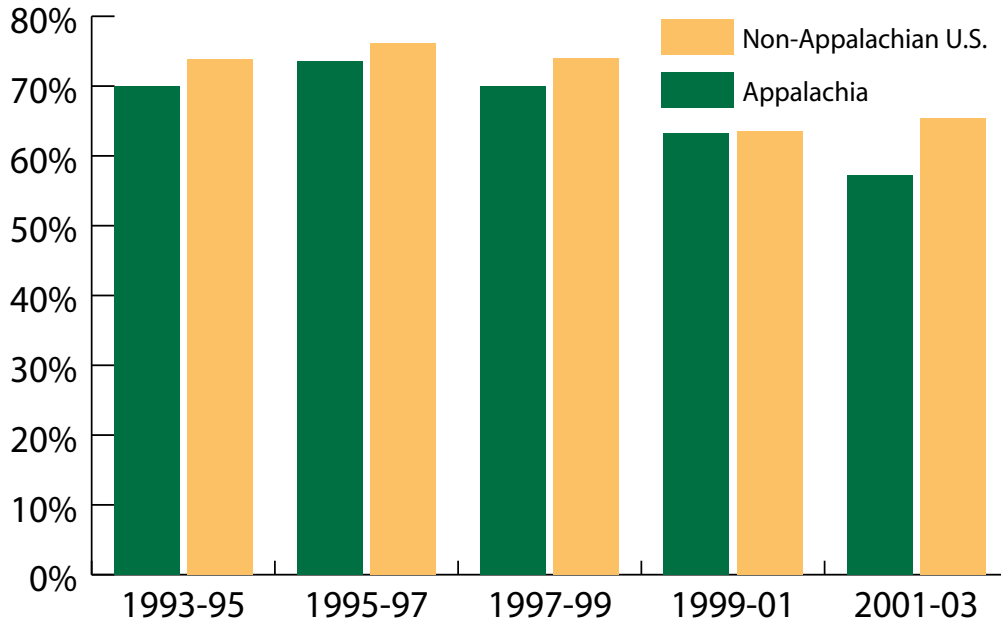
During the period 1993-2003 as a whole the share of displaced Appalachian workers who had not worked since they lost their job was 24 percent. This was slightly higher than the corresponding share for their Non-Appalachian counterparts (20 percent). In both Appalachia and the rest of the United States the share of displaced Appalachian workers who had not worked since losing their jobs rose substantially in the 1999-2001 period, to 28 percent from roughly 20 percent in both 1993-1995 and 1995-1997. In the 2001-2003 period, however, the share of displaced Appalachian workers who had not worked at the time of the survey jumped again, to nearly 36 percent, while the Non-Appalachian U.S. share remained at 29 percent.

Weeks without work. Displaced workers who found new jobs were asked how long they went without work. The share of workers who found work within six weeks of displacement was 47 percent in 2001-2003, down from its peak of 62 percent in 1999-2001. The share of re-employed workers who took 40 or more weeks to find work was 17 percent in 2001-2003, compared with 13.8 percent of workers outside the region.⁵

Current Labor Market Status

Employment Status. The percentage of Appalachian displaced workers employed at the time of the 2004 survey fell to 58 percent from about 70 percent in the period 1993-99 (Table 5, Figure 9). The share of displaced workers not in the labor force at the time of the survey was 15 percent in 1999 and 21 percent in 2003.

Figure 9. Share of All Displaced Workers Employed at the Time of the Survey Within and Outside of Appalachia 1993-2003



Note: In 2001-2003, the difference in the share of all displaced workers employed at the time of the survey in Appalachia when compared to the same share in 1993-1995, 1995-1997 and 1997-1999 is significant at the 10 percent level.

Source: KRC analysis of CEPR extract from the CPS DWS.

The labor force status of Appalachian displaced workers deteriorated substantially between 2001 and 2003 compared to that of Non-Appalachian displaced workers (Table 6). The share of Appalachian displaced workers employed at the time of the 2004 survey was seven percentage points lower than the share of Non-Appalachian displaced workers employed at the time of the same survey. In 2001-2003, the share of Appalachian displaced workers out of the labor force at the time of the survey was seven percentage points greater than the corresponding share of Non-Appalachian displaced workers.

Employment status of workers displaced from full-time jobs. Table 7 shows the employment status, as of each survey date, of Appalachian and Non-Appalachian workers who were displaced from full-time jobs. Over the entire 1993-2003 period 74 percent of displaced Non-Appalachian workers displaced from full-time jobs were re-employed, compared with 69 percent of their counterparts in Appalachia.

The Appalachian experience differed most from that of the rest of the U.S. when the national economy was weakest, in 1993-1995 and 2001-2003. During these periods Appalachia had about 4.5-5.6 percentage points fewer workers re-employed full-time than the rest of the United States.

Earnings. Table 7 also shows the inflation-adjusted weekly earnings of workers displaced from full-time jobs who were re-employed full-time at the time of each DWS. Over the entire 1993-2003 period 22 percent of displaced full-time workers in Appalachia earned the same or more in their new full time job (Figure 10). This compares with about 26 percent for workers outside of Appalachia. In both Appalachia and the rest of the U.S. this percentage was lower in the most recent survey than in the 2000 survey. This is consistent with Farber's (2005) nationwide finding that percentage earnings losses are greater in recessions than in economic expansions. In both Appalachia and the rest of the nation in January 2004 nearly two in five displaced full-time workers were re-employed full-time and earning less than they did before they were displaced. More than half of this group suffered a wage drop of at least 20 percent.

Table 7. Economic Situation of Displaced Full-Time Workers as of Survey Date										
							Change in inflation adjusted weekly earnings: new full-time job compared to lost full-time job			
	Not in labor force	Unemployed	Self-employed	Part-time	Full-time	Employed	-20% or more	Below but within 20%	Equal, above but within 20%	+20% or more
Appalachia										
1993-1995	17.1%	12.6%	9.8%	8.3%	61.9%	70.2%	20.0%	20.1%	10.8%	11.0%
1995-1997	14.8%	14.6%	1.5%	7.4%	63.3%	70.6%	21.8%	13.0%	15.7%	12.7%
1997-1999	12.8%	16.5%	2.4%	6.9%	63.8%	70.7%	15.0%	18.3%	21.7%	8.7%
1999-2001	18.6%	19.0%	8.0%	6.5%	55.9%	62.4%	23.4%	15.8%	10.2%	6.5%
2001-2003	17.7%	22.8%	1.9%	8.1%	51.5%	59.6%	21.4%	14.4%	7.6%	8.1%
1993-2003	17.3%	13.9%	4.3%	8.7%	60.1%	68.8%	22.7%	15.9%	12.5%	9.0%
Non-Appalachian U.S.										
1993-1995	12.8%	12.4%	6.6%	8.3%	66.4%	74.7%	22.7%	18.8%	14.1%	10.8%
1995-1997	12.1%	10.2%	4.5%	9.4%	68.3%	77.7%	18.1%	18.1%	16.0%	16.1%
1997-1999	14.2%	10.5%	4.2%	6.4%	69.0%	75.3%	19.4%	20.4%	16.7%	12.5%
1999-2001	13.8%	22.8%	3.2%	7.3%	56.1%	63.3%	17.5%	17.5%	12.7%	8.4%
2001-2003	13.5%	21.0%	5.4%	7.8%	57.7%	65.5%	20.8%	17.3%	10.9%	8.7%
1993-2003	13.4%	12.5%	5.3%	8.5%	65.7%	74.1%	21.5%	18.0%	14.2%	11.9%

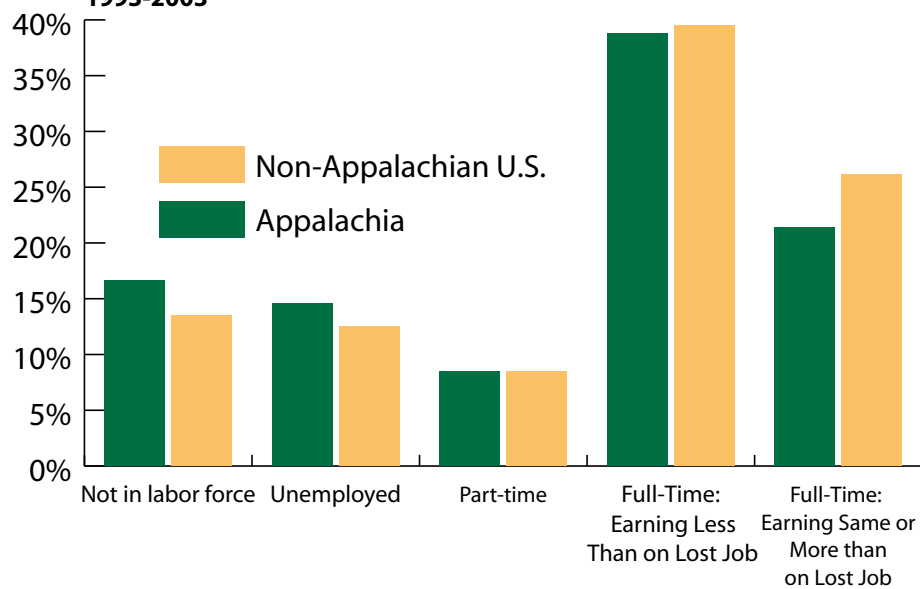
Note: When pooling observations from each DWS between 1993 and 2004 double counting is avoided by excluding individuals displaced a year or less prior the date of the survey for the survey years 1996, 1998, 2000 and 2002. Self-employed workers are also included in the full- and part-time employee figures. For this reason the sum of the share of workers not in the labor force, unemployed, and employed is 100%.

Source: KRC analysis of CEPR extract from CPS DWS.

Table 8. Displacement Rates, by Worker Characteristics, Rural and Metropolitan Appalachia and Non-Appalachian U.S., 1993-2003

	Non-Appalachian U.S.		Appalachia	
	Metro Rate	Rural Rate	Metro Rate	Rural Rate
All	2.4%	2.0%	2.3%	2.3%
Gender				
Female	2.3%	1.9%	2.3%	2.0%
Male	2.5%	2.2%	2.2%	2.6%
Age				
20-34	1.6%	1.7%	1.5%	1.9%
35-54	2.7%	2.1%	2.7%	2.3%
55+	3.1%	2.5%	3.2%	3.2%
Education				
Less than high school	2.3%	2.2%	2.8%	3.0%
High school	2.5%	2.3%	2.3%	2.4%
Some college	2.6%	2.1%	2.5%	2.4%
College plus	2.1%	1.4%	2.1%	1.6%
Race				
White	2.4%	2.1%	2.4%	2.3%
Non White	2.4%	1.9%	1.8%	3.0%
Industry				
Manufacturing & Mining	4.9%	3.6%	4.8%	3.9%
Services	1.5%	1.1%	1.4%	1.1%
<p>Note: The difference in displacement rates when comparing rural (metro) Appalachia to the rural (metro) non-Appalachian U.S. are significant at the 10 percent level. The difference in the displacement rate of workers age 55 and older in rural Appalachia and the rural non-Appalachian U.S. is significant at the 10 percent level.</p> <p>Source: KRC analysis of CEPR extract from the CPS DWS.</p>				

Figure 10. Labor Force Status and Earnings Relative to Earnings on Lost Job for Displaced Full-time Workers Within and Outside of Appalachia, 1993-2003



Note: The difference in the share of full-time displaced workers re-employed full-time and earning more than on their lost job between Appalachia and the non-Appalachian United States is significant at the 10 percent level. When pooling observations from each DWS between 1996 and 2004 the double counting of displaced workers in overlapping years is avoided by excluding all individuals displaced a year or less prior to the date of the survey for the years 1996, 1998, 2000 and 2002.

Source: KRC analysis of CEPR extract from the CPS DWS.

Rural and Metropolitan Areas Compared

One issue of special concern in Appalachia is the vulnerability of the region's distressed counties, most of which are rural. Another concern is the experience of rural areas that are highly dependent on manufacturing. As Pollard (2003, p. 27) notes, manufacturing is more important to the economy in rural Appalachia than in metropolitan Appalachia. Manufacturing employed 23 percent of rural Appalachian workers but only 19.2 percent of metropolitan Appalachian workers, according to the 2000 U.S. Census. In southern Appalachia's non metropolitan areas manufacturing employed 28 percent of workers.

Table 8 (page 20) shows displacement rates for rural and metropolitan areas in Appalachia and the rest of the United States, both overall and for selected population groups.⁶ For the period 1993-2003 as a whole:

- the displacement rate in rural Appalachia (2.3 percent) was higher than that in the rural Non-Appalachian United States (2.0 percent).
- the displacement rate in metropolitan Appalachia (2.3 percent) was similar to that of metropolitan Non-Appalachia (2.4 percent).
- workers 55 and over in rural Appalachia fared far worse than their counterparts in other rural areas with a displacement rate of 3.2 percent (compared to 2.5 percent for rural Non-Appalachia).

Previous DWS research on rural-metropolitan differences in displacement rates nationwide showed that rural areas had higher displacement rates than metropolitan areas during the early and mid-1980s, that rural and metropolitan displacement rates were similar during the 1993-95, and the rural displacement rate fell below

the metropolitan rate in 1995-97 (Hamrick 2001). For the period 1993-2003 as a whole this report finds that displacement rates in rural Non-Appalachian areas remained below those in Non-Appalachian metropolitan areas.

Appalachian Displacement by State

Displacement rates by state. Table 9 (page 23) presents displacement rates for the Appalachian portion of 10 of the 13 Appalachian states for the entire 1993-2003 period.⁷ Among these 10 states:

- displacement rates were highest in Pennsylvania (2.9%), New York (2.8%), and West Virginia (2.7%).
- displacement rates were lowest in Tennessee (2.0%) and Georgia (2.0%).

The Experience of Displacement by State. For the period 1993-2003 as a whole table 10 shows the employment status as of the survey dates of displaced workers in the Appalachian portion of each of the 10 states for which reliable estimates were possible. Table 10 (page 24) reveals sharp differences in the experience of displacement.

- The share of displaced full-time workers not in the labor force at the time of the survey was over 20 percent in New York and 19 percent in Pennsylvania, compared with less than 10 percent in West Virginia.
- The share of displaced full-time workers who were re-employed full-time at the time of the DWS and earning the same or more in their new job (after adjusting for inflation) was 26-27 percent in Tennessee, Mississippi and Georgia and as low as 8 percent in North Carolina.
- The share of displaced full-time workers who were re-employed full-time at the time of the DWS but who accepted wages at least 20 percent below their previous job (after adjusting for inflation) was 40-53 percent in North Carolina, Kentucky and Alabama, but only 34 percent in Tennessee and Pennsylvania.

Table 9. Displacement in Appalachia by State (Appalachian portion only), 1993-2003				
	Displacement		Percent worked since lost job	
	Count	Rate	Count	%
Non-Appalachian U.S.	12,797,394	2.3%	10,293,801	80.5%
Appalachia	1,139,634	2.3%	868,568	76.2%
Alabama	163,912	2.2%	128,607	78.5%
Georgia	89,207	2.0%	74,673	83.7%
Kentucky	42,424	2.3%	37,140	87.5%
Maryland*				
Mississippi	44,203	2.3%	30,990	70.1%
New York	72,633	2.8%	55,242	76.1%
North Carolina	78,246	2.3%	60,790	77.7%
Ohio	56,545	2.1%	40,060	70.8%
Pennsylvania	324,174	2.9%	241,662	74.5%
South Carolina*				
Tennessee	104,164	2.0%	69,883	67.1%
Virginia*				
West Virginia	94,722	2.7%	80,402	84.9%

*Results were omitted due to small sample size.

Note: All statistics by state are for the Appalachian portion of the state.

Source: KRC analysis of CEPR extract from the CPS DWS.

Table 10. Economic Situation of Displaced, Full-Time Workers, as of Survey Date (Percent of All Displaced Full-Time, Workers in Same Category) by State (Appalachian portion only) 1993-2003.

	Not in labor force	Unemployed	Self-employed	Part-time	Full-time	Employed	Change in inflation-adjusted weekly earnings: new full-time job compared to lost full-time job			
							-20% or more	Below but within 20%	Equal, above but within 20%	+20% or more
Non-Appalachian U.S.	13.4%	12.5%	5.3%	8.5%	65.7%	74.1%	21.5%	18.0%	14.2%	11.9%
Appalachia	17.3%	13.9%	4.3%	8.7%	60.1%	68.8%	22.7%	15.9%	12.5%	9.0%
Alabama	16.7%	16.3%	6.6%	6.9%	60.1%	67.0%	21.3%	18.3%	11.5%	9.0%
Georgia	13.0%	14.4%	3.0%	8.5%	64.1%	72.6%	19.8%	18.4%	13.6%	12.4%
Kentucky	9.8%	20.9%	4.9%	4.0%	65.3%	69.3%	32.5%	13.4%	10.9%	8.5%
Maryland*										
Mississippi	15.7%	19.1%	11.1%	8.0%	57.2%	65.2%	19.2%	11.7%	10.4%	15.9%
New York	22.3%	16.1%	3.0%	6.8%	54.7%	61.5%	14.5%	20.0%	10.5%	9.8%
North Carolina	16.2%	16.6%	7.4%	5.8%	61.4%	67.2%	33.8%	19.3%	6.2%	2.1%
Ohio	12.7%	21.3%	3.3%	6.2%	59.8%	66.0%	13.4%	22.7%	12.9%	10.8%
Pennsylvania	18.8%	17.1%	3.6%	7.8%	56.3%	64.1%	19.8%	14.0%	17.0%	5.5%
South Carolina*										
Tennessee	18.1%	14.1%	5.5%	7.3%	60.6%	67.8%	12.4%	21.3%	18.0%	8.8%
Virginia*										
West Virginia	10.0%	19.7%	2.8%	7.4%	62.9%	70.3%	26.6%	12.3%	10.5%	13.5%

*Results were omitted due to small sample size.

Notes: Inflation-adjusted weekly wages were calculated using the CPI-U-RS. All statistics by state are for the Appalachian portion of the state. When pooling observations from each DWS between 1993 and 2004 counting is avoided by excluding individuals displaced a year or less after the date of the survey for the survey years 1996, 1998, 2000 and 2002. The differences in the share of full-time workers re-employed is significant at the 10 percent level between any state out of Kentucky, Georgia, West Virginia and any state out of Ohio, Tennessee, and Pennsylvania except for the West-Virginia-Pennsylvania pair. The difference in the share earning the same or more is significant at the 10 percent level between North Carolina and each of West Virginia, Georgia and Tennessee. Differences in the share of displaced full-time workers re-employed full-time but earning 20 percent or less that on the job they lost are significant at the 10 percent level between any state out of Tennessee, North Carolina, and West Virginia and either Tennessee or Pennsylvania.

Source: KRC analysis of CEPR extract from CPS DWS.

Technical Appendix

The major data source for this report is the Displaced Worker Survey (DWS), a supplement to the Census Bureau's monthly Current Population Survey (CPS). The DWS is conducted in January or February of even-numbered years and, since 1994, has covered displacements that occurred within the three years immediately prior to the survey month. It considers worker displacements to be involuntary job losses due to employers' operating decisions (e.g., plant closings, employers going out of business, and layoffs from which the worker was not recalled).

The DWS has some limitations. Although, as part of the CPS, it is representative of the workforce as of the survey date, it is not necessarily representative of all worker displacements that occurred during the period about which displacement questions were asked. As a retrospective household survey it is subject to recall bias by respondents. It does not count any quits or firings as displacements, although some might legitimately be considered displacements. It includes information about only one pre-displacement job during the period in question (viz., the longest job held during that period) and does not make it possible to know whether a worker was displaced more than once during that period. Its geographic detail is limited, making it necessary to use indirect methods to infer displacement information for Appalachia. (See below.) Nevertheless, the DWS is the most comprehensive available source of quantitative information about displaced workers. It is based on a large, nationally representative sample of households. Because microdata are available, it offers flexibility and variety in the kinds of displacement analyses that can be conducted.

Geographic Coverage

Because of DWS sample size considerations it is possible to report displacement data only for Appalachia as a whole; for demographic, occupational, and industry groups within Appalachia as a whole; for metropolitan and nonmetropolitan portions of Appalachia as a whole; and for the Appalachian portions of each of the 13 states that cover the Appalachian region.

The major challenge in using the DWS is to identify observations from Appalachia. The DWS contains information about each respondent's state of residence and whether the respondent lives in a metropolitan or nonmetropolitan area. A limited number of metropolitan areas and metropolitan counties are also identified. The Current Population Survey (CPS) Displaced Worker Survey (DWS) includes state and metropolitan area geographic identifiers that make it possible to identify regions that account for about half the labor force of Appalachia. The identified region includes the state of West Virginia, 27 metropolitan areas outside West Virginia, and the only county within the Newburgh metropolitan area that is in Pennsylvania (Table A1). Any

Table A1. Metropolitan Areas identified within the CPS that fall entirely within Appalachia

Altoona PA	Huntington WV
Anderson SC	Huntsville AL
Anniston AL	Jamestown NY
Asheville NC	Johnson City TN
Binghamton NY	Johnstown PA
Birmingham AL	Knoxville TN
Charleston WV	Newburgh NY (Pike County PA only)
Chattanooga TN	Parkersburg WV
Cumberland MD	Pittsburgh PA
Decatur AL	Scranton PA
Elmira NY	Sharon PA
Erie PA	State College PA
Florence AL	Steubenville OH
Gadsden AL	Tuscaloosa AL
Greenville SC	Wheeling WV
Hagerstown MD	Williamsport PA

Source: Keystone Research Center based on CPS documentation and Appalachian Regional Commission's designation of places in Appalachia.

observation that is in the Newburgh area and in Pennsylvania must be in Appalachia.

To analyze displacement in the rest of Appalachia it is necessary to consider CPS observations that cannot with certainty be included in or excluded from Appalachia. There are two types of such observations: those from metropolitan areas that are partly in and partly outside Appalachia and those from non-metropolitan portions of Appalachian states other than West Virginia.

The *2000 Census 5 Percent Public Use Microdata Sample*⁸ (IPUMS) was used to assign a nonmetropolitan or unidentified metropolitan observation in an Appalachian state a probability of being in the Appalachian region.

The IPUMS data were used to estimate a logit equation of the form

$$\ln [P/(1-P)] = Xb + e$$

where P is a variable that indicates whether or not a person lives in a 2000 Census public use microdata area (PUMA) that is entirely or partly in Appalachia, X is a vector of socioeconomic characteristics that are common to the Census and CPS (age, race, sex interacted with marital status, and educational attainment), b is a vector of coefficients, and e is an error term.⁹ Such a model was estimated separately for each PUMA or combination of PUMAs that covers either (a) a metropolitan area that includes both Appalachian and non-Appalachian counties or (b) the nonmetropolitan portion of each Appalachian state.¹⁰ The estimated coefficients were then applied to the estimated coefficients to the CPS data for each DWS survey month to produce a predicted Appalachian probability for each CPS observation (whether displaced worker or not) for which Appalachian residence is uncertain based on the CPS alone.

This method assumes that persons who have been displaced from jobs in the recent past have the same probability of living in CPS-unidentifiable parts of Appalachia as do people with the same socioeconomic characteristics who have not been displaced. However, this assumption is built into the DWS itself; the DWS is not a representative sample of displaced workers but rather, from among a representative sample of persons in households, the set of those workers who have been displaced in the recent past.

Using this method two observations were then created from each CPS observation in a nonmetropolitan or unidentified metropolitan area of an Appalachian state. One, coded as an Appalachian observation, has a weight equal to WP and one, coded as a non-Appalachian observation, has a weight equal to W(1-P), where W is the appropriate CPS sample weight for the observation and P is the observation's predicted probability of being in Appalachia. The Appalachian observations were used to estimate displacement statistics for Appalachia, its demographic groups, and its geographic areas as outlined above. This method is in the spirit of one used by Farber (1996, 2003) for another purpose in analyzing the DWS.

Sample Size

Sample sizes are sufficient to permit estimates for Appalachia as a whole for each DWS year. For demographic and industry groups within Appalachia as a whole, for metropolitan and nonmetropolitan portions of Appalachia as a whole, and for the Appalachian portions of each of the 13 states that cover the Appalachian region it is necessary to combine DWSs for the years 1996-2004.

The biennial DWSs from 1994¹¹ to the present have asked about displacements within the three years prior

to the survey. Therefore, the combined 1996-2004 DWSs include data on job losses that occurred from 1993 through January 2004. To eliminate data overlap in combining multiple DWSs the observations that reported displacements for the most recent year were dropped, on the assumption that many of those reported displacements will turn out to be temporary layoffs rather than true displacements. This is the procedure that BLS researchers use when combining multiple DWSs.

Displacement Statistics Estimated

Displaced workers are defined as those having lost a job in the three years prior to the date of the survey due who are not expecting to be recalled within six months of being laid off. A displaced worker must not have been fired for cause but must have been laid off because of a plant closing, insufficient demand or the elimination of their position or shift. Following Farber (2003) displacement rates were calculated as the ratio of all workers reporting displacement to the sum of displaced workers not employed and total employment as of the date of the survey.

Other Methods

In addition to the probabilistic approach of assigning observations in the DWS to the Appalachian region a simpler alternative method was used. This method was once again based on the identification of Appalachia (using PUMAs) in the IPUMS microdata. In this method an observation's Appalachian weight was equal to the product of that observation's CPS weight and estimate of the share of the total labor force that was in Appalachia as of the 2000 census. Since some PUMAs themselves fall partly inside and partly outside of Appalachia, population estimates by county (from the 2000 Census) were used to adjust for this overlap and to generate estimates of the labor force within the PUMA that fell inside the Appalachian region. Table A2 (page 28) shows these labor force weights for each region that was partly inside and partly outside of Appalachia. The table also shows the mean of the weights generated using the logit method described earlier.

Table A3 (page 29) reports race, gender, age, education, and marital status for the U.S. based on the 2000 DWS, for Appalachia defined using labor force weights in the 2000 DWS, for Appalachia defined using logistic weights in the 2000 DWS, and finally for Appalachia based on the 2000 Census (IPUMS). Using logistic weights appears to improve slightly the match between Appalachia defined in the IPUMS and Appalachia in the DWS. Table A4 shows that these two methods produce comparable estimates of displacement in Appalachia.

In determining whether differences – between regions or within a region over time -- were statistically significant this study followed modifications of the procedures recommended by the Bureau of Labor Statistics for determining statistically significant differences between national estimates (e.g, national estimates of a variable for two demographic groups at one point in time or for a variable at two points in time for one group).¹² Modifying the BLS procedures was essential because BLS does not specify procedures for sub-national regions or for variables (such as the displacement rate) reported only on the CPS-DWS survey. Based on our modified BLS procedures, all differences highlighted as significant in this report pass a 90 percent statistical significance test (i.e., there is only a 10 percent chance that these differences would be observed by random chance). Since we had to modify BLS procedures, our estimates of statistical significance are at best approximations.

Table A2. Weights for Regions Partly in and Partly Outside of Appalachia

FIPS/MSA	Description	Simple Weight	Mean of Logistic Weight
1	Rural Alabama	0.69	0.76
13	Rural Georgia	0.22	0.25
21	Rural Kentucky	0.38	0.41
24	Rural Maryland		
28	Rural Mississippi	0.38	0.54
36	Rural New York	0.35	0.40
37	Rural North Carolina	0.28	0.32
39	Rural Ohio	0.35	0.42
42	Rural Pennsylvania	0.85	0.85
45	Rural South Carolina		
47	Rural Tennessee	0.53	0.63
51	Rural Virginia	0.32	0.39
160	Albany-Schenectady-Troy, NY		
240	Allentown-Bethlehem-Easton, PA/NJ	0.09	0.17
500	Athens, GA	0.17	
520	Atlanta, GA	0.28	0.30
1320	Canton, OH	0.07	0.30
1640	Cincinnati, OH/KY/IN	0.15	0.16
3120	Greensboro-Winston Salem-High Point, NC	0.33	0.33
3240	Harrisburg-Lebanon-Carlisle, PA	0.07	0.20
3290	Hickory-Morgantown, NC	0.58	0.58
4280	Lexington-Fayette, KY		
5240	Montgomery, AL	0.19	0.39
6800	Roanoke, VA	0.13	0.45
9320	Youngstown-Warren, OH-PA	0.19	0.20

The Appalachian portion of Rural-Maryland, Rural-South Carolina, Albany-NY, and Lexington-KY could not be identified using the IPUMS and thus observations from these areas were excluded from our Appalachian sample.

Table A3. Comparison of the Demographic Characteristics of the DWS Samples Defined with Logistic and Labor Force Weights

	2000			
	Entire US DWS Sample	Appalachia		
		Logit DWS	Simple DWS	IPUMS
Race				
White	74.1%	88.8%	86.4%	88.3%
Black	11.4%	9.4%	11.4%	8.1%
Hispanic	10.2%	1.1%	1.3%	1.8%
Other	4.4%	0.7%	0.9%	1.8%
Gender				
Male	47.8%	47.9%	47.7%	54.0%
Female	52.2%	52.1%	52.3%	46.0%
Age				
20-34	28.9%	27.2%	27.2%	34.0%
35-54	42.0%	41.1%	40.9%	51.4%
55+	29.0%	31.7%	31.9%	14.7%
Educational Attainment				
Less than High School	14.3%	17.7%	17.7%	13.6%
High School	33.6%	40.0%	39.7%	35.5%
Some College	27.4%	23.9%	23.8%	29.6%
College	16.8%	12.4%	12.6%	13.8%
Post-Graduate Degree	8.0%	6.0%	6.2%	7.6%
Marital Status				
Not Married	39.6%	36.0%	37.5%	35.4%
Married	60.4%	64.0%	62.5%	64.6%

Notes

1. Throughout this report the term “rural” refers to nonmetropolitan areas.
2. When multiple surveys are pooled to improve the reliability of the estimates, double-counting is avoided by eliminating respondents who were displaced during the most recent year in which two consecutive surveys overlapped. This is a standard practice at the Bureau of Labor Statistics. For example, when the 1998 survey (covering displacements that occurred during 1995-1997) is combined with the 2000 survey (covering displacements that occurred during 1997-1999) the respondents to the 2000 survey who were displaced in 1997 are eliminated.
3. Manufacturing and mining are combined following the convention of the Center for Economic and Policy Research, which provided the DWS data used for this report.
4. As of January 2003 the CPS allowed respondents to describe their racial background using multiple racial categories. In this analysis respondents who described themselves with any mix of racial categories other than white were classified as non-white. Respondents who described their ethnicity as Hispanic were also classified as non-white.
5. The difference in the share of workers within Appalachia that went 40 or more weeks before finding work is only significant when comparing the share in to the share in 199-2001. The difference between 2001-2003 and all other years is not significant.
6. In calculating displacement rates for manufacturing and mining and services observations from the 2004 DWS were excluded because of the switch in that year to the North American Industry Classification System (NAICS).
7. Sample sizes for Maryland, Virginia and South Carolina were too small to permit reliable estimation of displacement rates.
8. Steven Ruggles, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. Integrated Public Use Micro Data Series: Version 3.0 Machine-readable database. Minneapolis: Population Center, 2004.
9. Models that included occupation and industry as explanatory variables in addition to the socioeconomic variables were estimated. However, the predictive success of models that included occupation and industry was virtually identical to that of models that included only socioeconomic variables. For this reason, and because creating a crosswalk to deal with the change in industry and occupation categories that occurred in the CPS during the period under study would introduce an additional source of error of unknown magnitude, the results in this report are based on models that include only socioeconomic variables.
10. The PUMAs are areas with a population greater than 100,000 and usually follow county boundaries. Some PUMAs themselves fall partly inside and partly outside Appalachia. All PUMAs only partly inside Appalachia were treated as if they were entirely within Appalachia. A complete list of the PUMA entirely within and partly in Appalachia is available upon request.
11. It was not possible to include observations from the DWS in 1994 due to the absence of comparable geographic identifiers prior to 1996.

12. In the BLS formula for calculating standard errors, we used the “a” and “b” parameters specified in the top line of Table 1-D (for the total civilian labor force, employed, and not in the labor force). When comparing results within and across individual DWS surveys, we inflated standard errors by the “f” factor for year-to-year changes of monthly estimates – since we are using findings from a DWS supplement that is conducted every two years in a single month. When comparing results from pooled DWS surveys we used an “f” factor of 1. See: United States Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*. February 2005.

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