

# **Socio-Economic Review of Appalachia**

## **The Appalachian Labor Force**

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**Abstract:** This paper shows that parts of Appalachia have high unemployment rates and low labor force participation rates relative to the rest of the region as well as the rest of the U.S. Particular emphasis is given to the unmet needs of Appalachians in terms of education, jobs, and social infrastructure as possible explanations of the low labor force participation rates. In contrast to the 1964 President's Appalachian Regional Commission Report, it highlights the diversity across Appalachia's regions and the heterogeneity of Appalachians in terms of spatial and demographic characteristics. Central Appalachia, particularly the nonmetropolitan portion, is shown to have the most severe unemployment and nonparticipation rates, while Southern and Northern Appalachia compare favorably to the rest of the U.S. on several levels.

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## I. INTRODUCTION

The 1964 President's Appalachian Regional Commission (PARC) described Appalachia as a "region apart -- geographically and statistically."<sup>1</sup> In documenting the "realities of deprivation" in Appalachia, the Commission emphasized the connection between job opportunities and living standards:

*The major objective of this regional development process is clear: Appalachia must attain an employment base which can sustain its people at a level of dignity and prosperity comparable to the relatively affluent nation of which it is a part (PARC 1964, p. 25).*

The Commission recommended a strategy of investment in human and social capital accompanied by economic resource development, recognizing that creating jobs for which individuals aren't trained was as futile as training people for jobs that did not exist in the region.

*The programs of access and physical resource development proposed in the foregoing are validated only by the enlargement of hope and genuine opportunity they offer to this region's most valuable resource--its people (PARC 1964, p. 48).*

Revisiting the 1964 Report, Isserman (1995) highlights some important aspects about the changes in Appalachia's labor force and employment base.<sup>2</sup> First, Appalachia is creating new jobs and growing faster than many other parts of the country. From 1969 to 1992, job growth in metropolitan and nonmetropolitan Appalachia was 41 percent, matching nonmetropolitan America, but lagging behind metropolitan America at 58 percent. Second, there were striking differentials in job growth within Appalachia's regions; slow growth in Northern Appalachia was balanced by faster growth in Central and Southern Appalachia. Finally, parts of Appalachia still lag the rest of the nation in terms of employment base, unemployment and educational attainment.

The need for investment in human capital was a central theme of the Commission's strategy:

*The unmet needs of the people in Appalachia are primary--food, clothing, medical care, housing, basic education, skills, jobs, hope, dignity--and they are interrelated (PARC 1964, p. 48)*

This report analyzes whether Appalachia still has unmet needs in terms of jobs and education. It builds on Isserman (1995) and the 1964 PARC Report by presenting a portrait of the human

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<sup>1</sup> PARC. (1964) "Appalachia: A Report by the President's Appalachian Regional Commission," Washington, DC: U.S. Department of Commerce.

<sup>2</sup> Isserman, Andrew. (1996) "Appalachia Then and Now: An Update of 'The Realities of Deprivation' Reported to the President in 1964," Report to the Appalachian Regional Commission, Morgantown, WV: Regional Research Institute, West Virginia University.

capital base in Appalachia using 1990 Census data.<sup>3</sup> The emphasis is on the supply side of the labor market. Two broad questions are addressed:

Are Appalachians employed to the same extent as the rest of America?  
If not, what factors contribute to their unemployment or nonparticipation?

To address these questions, this report analyzes employment levels in Appalachia by subregion, metropolitan type, race and sex.<sup>4</sup> It also investigates the spatial and demographic composition of the Appalachian labor force. In particular, it highlights the geographic areas and the particular groups of individuals who are underrepresented in the Appalachia labor force. Finally, it investigates factors that contribute to employment status - education, spatial access, and the presence of children. As the original PARC report suggests, these factors are interrelated and cannot be treated in isolation.

### **Summary of Conclusions**

Appalachia encompasses many dynamic and heterogeneous labor market areas. In some parts of Appalachia individuals are more fully integrated in the labor force than in other parts. Controlling for age and disability, nonparticipation rates are particularly high in nonmetropolitan portions of Central and Northern Appalachia, but nearly match the rest of the U.S. in Southern Appalachia. Southern Appalachia no longer fits the image of a “world apart” while Central Appalachia continues to lag the rest of Appalachia as well as the rest of the nation in many respects.

There are signs of improvement in Appalachia. Southern Appalachia leads the nation in terms of low unemployment and high employment-to-population ratio; Northern Appalachia leads in terms of educational attainment. In addition, the youth education gap in Appalachia is smaller than the adult education gap. If this trend continues, the Appalachian education gap will disappear as younger generations reach working age and older workers retire.

Even though parts of Appalachia appear to be catching up with the rest of the nation, Central Appalachia continues to lag the rest of Appalachia, as well as the rest of the nation on several levels. It has an education gap, high unemployment, and low labor force participation rates for men and especially for women. Youth educational attainment in Central Appalachia continues to lag the rest of the nation. Even youth high school graduates who are not enrolled in school have lower employment rates in Central Appalachia compared with the rest of the nation. In addition, the presence of children or a disability appear to be more limiting factors in terms of labor force participation for individuals in Central Appalachia compared with the rest of the nation.

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<sup>3</sup> Unless otherwise noted, all data presented in this study are from the 1990 Census.

<sup>4</sup> Appendix A describes the various geographic definitions within Appalachia as well as the types of metropolitan areas.

There is a definite potential to employ more of Appalachia's "most valuable resource," its human capital (PARC 1964, p. 48). The underutilization of human capital is more pronounced for females, blacks, high school dropouts and residents of smaller nonmetropolitan counties. Each demographic group (black and white men and women), however, does better in Southern Appalachia in terms employment, unemployment, and nonparticipation rates. Black and white women in Appalachia have the highest incidence of nonparticipation and the highest unemployment rates in the nonmetropolitan part of Central Appalachia. While Appalachia's black population is primarily southern, the employment rates are lowest in Central and Northern Appalachia. Women in Central Appalachian coal counties have higher nonparticipation rates than those in noncoal counties as well as in the rest of Appalachia. In addition, nonparticipation rates increase as counties get smaller and more isolated.

Spatial access to employment opportunities may be a particular problem for Central Appalachians as well as those in smaller more isolated counties. The demonstrated willingness of Appalachians to commute long distances suggests that jobs do not need to be brought to small isolated communities to be viable employment opportunities. However, this strategy is less viable for working mothers who need flexible work and child care options. To be effective, policies aimed at integrating women into the labor force must include viable child care options.

Low participation and high unemployment rates provide a glimpse of socio-economic conditions in Appalachia. For instance, high levels of unemployment and nonparticipation are associated with poverty areas. In addition, the traditional emphasis on mining and agricultural employment is consistent with low female participation rates, high incidence of disability, and spatial isolation from urban centers, particularly in Central Appalachia. The persistence of high unemployment in parts of Appalachia suggests that new and growing industries are not being attracted to fully employ its human capital base. A continued emphasis in mining and heavy manufacturing jobs will not ameliorate the employment conditions of the demographic groups that are less integrated in the labor force such as women and disabled individuals. For these groups, the key is a diverse employment base that is more amenable to flexible work schedules and accessible work environments.

Central Appalachia stands out with the lowest rates of nonparticipation, though in absolute number there are more nonparticipants in Northern Appalachia which has a larger population base. This begs the question of whether policies should focus on the unmet needs in areas with greatest number of people in need, or on areas with the greatest concentration of people in need. The following analysis does not answer this question, but it clearly shows that Central Appalachia lags in several areas, and that a greater proportion of its residents are not in the mainstream of the American work force.

## II. ARE APPALACHIANS EMPLOYED TO THE SAME EXTENT AS THE REST OF AMERICA?

The PARC Report noted the lack of an adequate employment base as an underlying feature of the deprivations in Appalachia. The extent to which working aged Appalachians are employed in the official labor market can be measured using the ratio of employment to population 16 or older (in 100's of persons). In 1990, Appalachia had a job gap relative to the rest of America of about 4 jobs per 100 in nonmetropolitan areas and about 5 jobs in metropolitan areas (see Table II.1).<sup>5</sup> However, this gap was not prevalent in all Appalachian subregions. Southern Appalachia had a slighter higher jobs to employment ratio in nonmetropolitan areas and slightly lower ratio in metropolitan areas. On the other hand, Central Appalachia had a much more severe gap, lagging almost 12 jobs per 100 persons over 16 in nonmetropolitan areas and about 9 jobs in metropolitan areas. Meanwhile, the job gap in Northern Appalachia, though between Central and Southern Appalachia, was more severe in metropolitan areas (about 8 jobs per hundred population).

	Rest of US	Appal	Central	Northern	Southern
Employment/population:					
Total	61.70	55.75	46.32	53.65	60.28
Nonmetro	56.69	52.72	45.05	51.95	57.61
Metro	62.82	57.89	53.68	54.63	61.84
Civilian Unemployment Rate:					
Total	6.27	6.82	10.22	7.34	5.67
Nonmetro	6.82	7.87	10.73	8.28	6.20
Metro	6.15	6.14	7.66	6.81	5.38
Percent Nonparticipants:					
Males	25.14	30.12	37.30	31.72	26.66
Nonmetro	30.16	32.65	38.39	33.01	29.23
Metro	24.01	28.31	30.99	30.96	25.16
Females	42.65	49.23	58.51	51.42	44.62
Nonmetro	47.69	52.03	59.71	52.87	47.06
Metro	41.53	47.27	51.63	50.60	43.21

Table II.1: Percent of Individuals 16 or Older by Employment Status, 1990

The employment to population ratio used above assumes that individuals 16 or older want jobs to the same extent across the regions of comparison. In addition, it combines the availability of jobs (demand for labor), as well as the desire and ability of individuals to accept jobs (supply of labor). To substantiate the lack of demand for labor in Appalachia, it is important to investigate the extent to which individuals are looking for jobs and cannot find them. The low civilian unemployment rate in Appalachia, the unemployed as a percent of the civilian employed plus

<sup>5</sup> Isserman (1995) used employment to total population ratio for 1969 to 1992 and finds similar job gaps. The ratio should be the same unless the comparison groups are very different with respect to the percent of the population over 16.

unemployed, confirms that jobs are missing in Appalachia to a greater extent than in the rest of the United States. However, as with the employment to population ratio, a job gap is not pervasive in all of Appalachia's subregions. Southern Appalachia has lower unemployment rates in metropolitan and nonmetropolitan areas, while Northern and Central Appalachia have higher rates. Again, the situation is more serious in Central Appalachia, particularly in nonmetropolitan areas.

Nonparticipants are different from the unemployed because they are not actively seeking employment. Nonparticipants include discouraged workers, individuals who could not find employment and gave up looking, as well as those who choose to engage in alternatives such as homework, care activities, and odd jobs.<sup>6</sup> These are individuals who might otherwise participate if there were better opportunities available. Appalachia has higher nonparticipation rates than the rest of the nation. Except for nonmetropolitan Southern Appalachia (which also had lower unemployment rates), all metropolitan and nonmetropolitan parts of the Appalachian subregions have higher nonparticipation rates than similar portions of the United States for males and females. Again, the nonmetropolitan areas of Central Appalachia stand out with 39 percent and 60 percent nonparticipation rates for men and women, respectively.

Part of the Appalachian employment gap may be related to differences in demographic composition of the population. For instance due to retirement decisions individuals who are 65 or older are less likely to be in the labor force relative to younger individuals. As shown in Table II.2, a slightly smaller proportion of the working age population is over 64 in nonmetropolitan Appalachia compared with the rest of the United States. The opposite is true in the metropolitan areas of Central and Northern Appalachia. Thus, the age distribution may account for part of the high nonparticipation rates in metropolitan areas, but not in nonmetropolitan areas.

	Rest of US	Appal	Central	Northern	Southern
Total	17.88	19.17	18.00	20.96	17.40
Nonmetro	21.54	19.44	18.00	20.44	19.05
Metro	17.06	18.99	18.01	21.26	16.44

Table II.2: Persons 65 or more as a Percent of Population 16 or Older, 1990

Disabled individuals are also less likely to be in the labor force compared with able individuals. Given the concentration of mining and lumber industries in the region, the incidence rates of disability could also account for part of Appalachia's employment gap. Appalachia has a higher incidence of disability, particularly in Central Appalachia (see Table II.3). The differential is greater for men than women and for nonmetropolitan areas compared with metropolitan areas.

Identifying the causes of higher disability rates in Appalachia is beyond the scope of this paper. It may be related to the industrial structure of the work force, to harsh living conditions, or to differential enforcement of qualification requirements for disability benefits. Comparing incidence rates by industry would help to get at this issue. In any case, the higher incidence of disability explains part of the lower labor force participation rates in Appalachia.

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<sup>6</sup> The nonparticipation rate is just the residual of those in the population less the employed and the unemployed.

	Rest of US	Appal	Central	Northern	Southern
Males	7.42	9.39	13.78	8.76	9.09
Nonmetro	8.81	10.70	14.25	9.28	10.40
Metro	7.13	8.48	11.08	8.46	8.36
Females	8.53	11.18	18.16	10.55	10.29
Nonmetro	10.70	13.21	19.11	11.58	11.88
Metro	8.06	9.74	12.56	9.94	9.38

Table II.3: Percent of Persons 16 to 64 Who are Disabled, 1990

It is possible to determine if the higher nonparticipation rates in Appalachia are accounted for solely by age and disability factors. Looking only at healthy individuals between 16 and 64, the nonparticipation rates are significantly lower in Appalachia and the rest of the U.S. (see Table II.4). Even though the rates for Appalachians are substantially lower than shown in Table II.1, there is still a sizable labor force participation gap in Central Appalachia and to a lesser extent in Northern Appalachia. However, the gap in Southern Appalachia nearly disappears.

	Rest of US	Appal	Central	Northern	Southern
Males	11.69	13.18	16.94	14.05	11.46
Nonmetro	12.95	14.41	17.60	15.10	12.08
Metro	11.43	12.34	13.33	13.44	11.12
Females	28.57	33.29	43.59	35.18	29.02
Nonmetro	31.30	35.93	44.90	37.32	29.81
Metro	28.01	31.49	36.37	33.96	28.95

Table II.4: Nonparticipation Rates for Able Persons 16 to 64, 1990

Labor force participation rates of able men and women between 16 and 64 fall as counties get smaller and more isolated in Appalachia, as well as in the rest of the nation. In the smallest type of counties in Appalachia, 16 percent of able men and 37 percent of able women are not in the labor force compared with 12.9 percent for men and 32.7 percent for women in the rest of the nation. Appalachian nonparticipation rates diverge more from the rest of the nation in the smallest counties.

Even after controlling for the incidence of disability, age distribution, and metropolitan type, Appalachia's higher rates of nonparticipation persist when compared with the nation as a whole. Low participation and high unemployment rates may be indicative of one or all of the following conditions: an insufficient number of jobs to employ all potential seekers, a lack of jobs that pay a high enough wage to induce individuals to enter the labor force, and the existence of barriers that inhibit the ability of an individual to accept a job (spatial access, skills, child care issues, etc.). These conditions are interrelated. For instance, without a high school degree, it is difficult for an individual to obtain a good-paying job, especially given the decline in manufacturing and mining entry level jobs across the country.

### III. DEMOGRAPHIC COMPOSITION OF APPALACHIA'S LABOR FORCE

The needs of Appalachia's people can be linked to demographic and geographic characteristics. Identifying the spatial distribution of these potential workers may be helpful in understanding the factors associated with low labor force participation rates. It is also likely that different demographic groups will have different labor market experiences in different parts of Appalachia. For instance, blacks in Southern Appalachia face different conditions than those in Northern and Central Appalachia. A closer look at space and demographic characteristics will help to identify groups and places that are underrepresented among the ranks of the employed in Appalachia.

#### Where Are the Missing Workers in Appalachia?

Nondisabled Individuals between 16 and 64 who are either unemployed or not in the labor force can be thought of as untapped human resources. These are individuals who, under normal circumstances, would be expected to be in the labor force: they have the physical capacity to work and are in the primary working ages. Appalachia has 1,074,328 males and 2,293,177 females between 16 and 64 who are not employed.

Figure III.1 shows the distribution of non-disabled females 16-64 who are unemployed or not in the labor force in quartiles. About half of Appalachia's pool of able non-employed women are in Northern Appalachia. For instance, Allegheny, Erie, and Luzerne Counties in Pennsylvania have large pools of potential workers. Some relatively small counties such as Monongalia County, West Virginia also have large pools of potential workers due to the presence of a university. (There are many universities in Erie and Allegheny County, too). As one would expect more populous metropolitan counties generally have larger pools of potential workers than smaller nonmetropolitan counties.

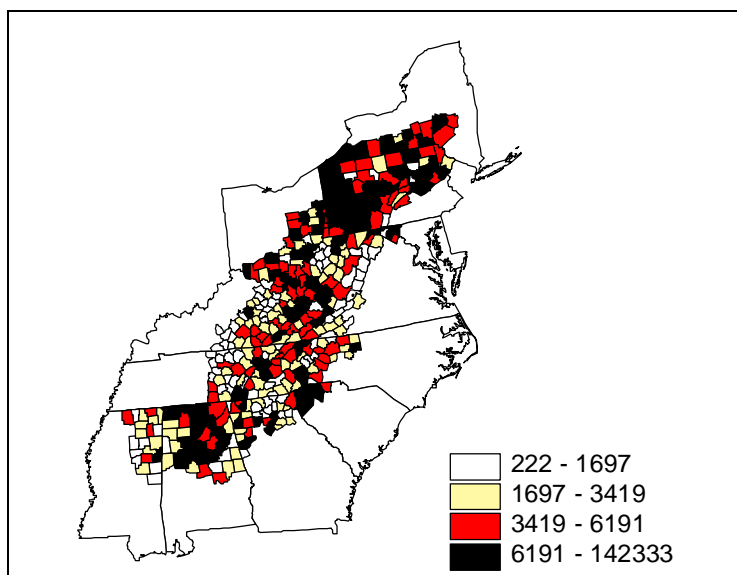


Figure III.1: Number of Non-Disabled Females 16-64 Unemployed or Not in Labor Force (Legend is in quartiles)

Though the absolute numbers of potential workers identifies the magnitude of untapped resources, the concentration of untapped human resources is an important indicator of living standards and poverty. Individual living in places with a large concentration of unemployed and nonparticipating individuals will face bleaker employment prospects compared with individuals living in places with a large number but small concentration of potential workers. The concentration of potential workers affects other residents in a place as well; the employment base influences the tax base, school funding, infrastructure development, demand for consumer goods, and the availability of entry level jobs for high school graduates and teenagers.

As shown in Figure III.2, non-employed females as a percent of all possible workers between 16 and 64 are concentrated in a large contiguous belt of counties in Central Appalachia and in West Virginia. The belt has holes around Kanawha County (Charleston), West Virginia, Wood County (Parkersburg), West Virginia, and Washington County (Marietta), Ohio. There appears to be a spatial pattern: the concentration seems to gradually fall with distance from the belt.

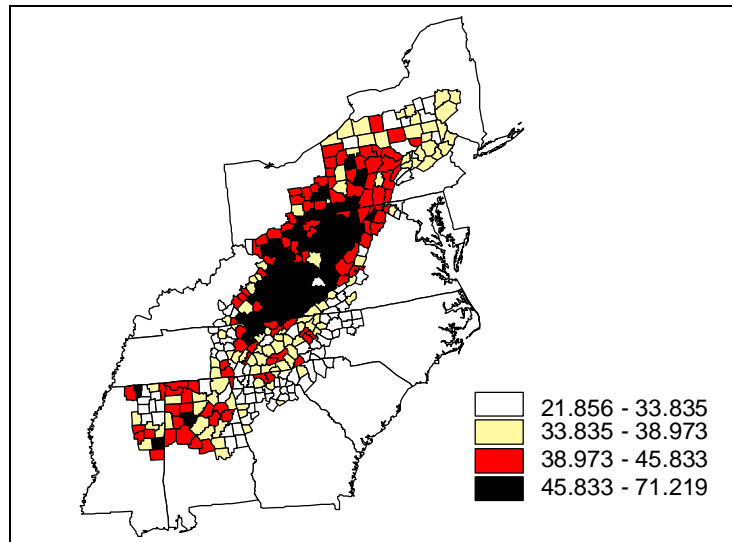


Figure III.2: Percent of Non-Disabled Females 16-64  
Unemployed or Not in Labor Force  
(Legend is in quartiles)

For men, there is a very similar pattern of concentration of non-employed workers. However, there are more scattered spots with relatively high concentrations of potential workers including a few counties in Mississippi and New York.

### **Who Are Missing in the Appalachian Labor Force?**

Not only does labor force participation vary by region, but also by demographic group. Analyzing employment status in a more detailed manner provides a better understanding of the needs of particular groups within Appalachia. Some groups have noticeably high nonparticipation and unemployment rates. For example, a disproportionate share of the unemployed are black compared with the black share of the employed. Black individuals constitute 6 percent of the

employed and 12 percent of the unemployed individuals in Appalachia. Women are also less likely to be in the labor force: able women between 16 and 64 make up over 30 percent of those not in the labor force.

## **Race and Sex**

A further look at the labor force status of each sex-race group tells more of the story. As in the rest of the nation, Appalachian women have higher rates of nonparticipation than men and almost the same unemployment rates. Nonparticipation rates are 50 percent for white women, 44 percent for black women, 39 percent for black males, and 30 percent for white males in Appalachia. The male-female differential is much less pronounced for blacks than for whites in Appalachia.

Civilian unemployment rates are twice as high for black men (12.9 percent) than for white men (6.5 percent) in Appalachia. In comparison, unemployment rates in the rest of the nation are lower for white men (5.2 percent) and higher for black men (13.7 percent). Hence, Appalachia has less of a racial disparity in male civilian unemployment rates relative to the rest of the nation, though black men are still considerably worse off than white men in this regard.

The extent to which individuals are employed varies by race and sex across Appalachia's subregions (see Table III.1). Appalachian women have the highest incidence of nonparticipation (over 60 percent) and the highest unemployment rates (9.8 percent for whites and 16.2 percent for blacks) in the nonmetropolitan part of Central Appalachia. White Appalachian men also fared worse in Central Appalachia with 38.1 percent not in the labor force, and a civilian unemployment rate of 11.1. For black men, the highest nonparticipation rates were in Northern Appalachia with 60.1 percent in nonmetropolitan and 46 percent in metropolitan counties. Each demographic group (black and white men and women) did better in Southern Appalachia in terms of employment, unemployment, and nonparticipation rates.

Metropolitan size also affects labor force participation and civilian unemployment rates. In the rest of the nation, the nonparticipation rates and unemployment rates increase as counties get smaller and more isolated. This is also the case for white men and women in Appalachia, but not for blacks. Appalachian civilian unemployment rates are highest for black males (17.5 percent) in the largest metropolitan areas, and for black women (17.2 percent) in the smallest nonmetropolitan counties. There does not appear to be a linear relationship between participation rates and metropolitan size for blacks in Appalachia.

	Not in Labor Force				Civilian Unemployment Rate			
	Male		Female		Male		Female	
	White	Black	White	Black	White	Black	White	Black
<b>Total</b>								
Rest of US	24.28	33.18	43.01	40.32	5.22	13.73	4.93	12.14
Appalachia	29.52	38.88	49.66	43.70	6.56	12.86	6.21	12.38
Central	36.99	52.39	58.51	59.20	10.54	18.54	9.48	14.40
Northern	31.10	48.73	51.43	50.98	7.64	19.50	6.31	14.82
Southern	25.66	35.09	45.16	41.10	4.47	10.97	5.46	11.78
<b>Metro</b>								
Rest of US	23.15	31.65	41.87	39.20	5.06	13.83	4.73	11.82
Appalachia	27.53	37.43	47.71	42.81	5.73	12.93	5.41	11.91
Central	30.67	43.97	51.86	43.77	7.36	15.69	7.73	8.98
Northern	30.29	45.99	50.58	50.84	7.01	19.72	5.66	14.93
Southern	23.91	34.16	43.74	40.15	4.17	10.83	5.01	11.12
<b>Nonmetro</b>								
Rest of US	28.90	42.62	47.66	47.61	5.92	12.99	5.86	14.58
Appalachia	32.19	42.60	52.33	46.16	7.77	12.67	7.40	13.77
Central	38.06	54.59	59.66	62.83	11.15	19.46	9.85	16.34
Northern	32.44	60.10	52.89	51.94	8.71	18.27	7.47	14.06
Southern	28.54	37.37	47.48	43.51	5.00	11.33	6.24	13.54

Table III.1: Employment Status of Individuals 16 or Older by Race and Sex, 1990

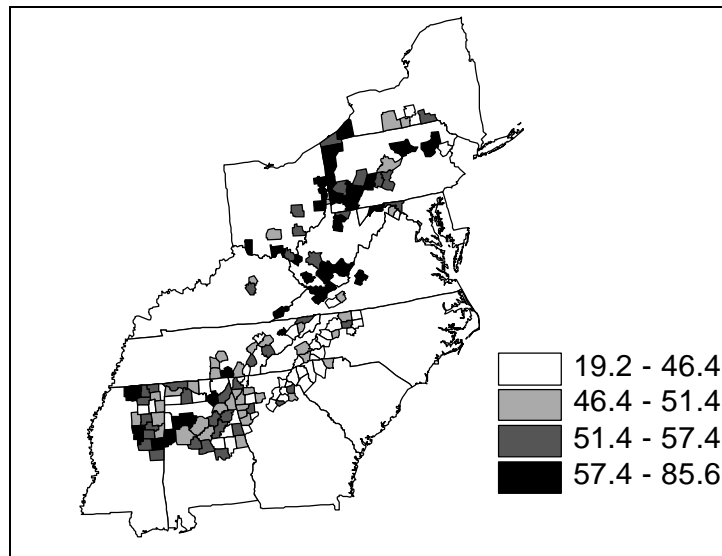


Figure III.3: Percent of Civilian Black Females Not Employed or Not in Labor Force For Counties with at least 1000 Blacks (Legend is in quartiles)

Figure III.3 shows the proportion of black female civilians who are not employed in counties with at least 1000 black persons. Counties that have no shading have a black population of less than 1,000. Only a small proportion of Appalachia’s blacks live in Central (2.3 percent)

and Northern Appalachia (18.9 percent). However, the black population living in these subregions have low employment rates compared with the black population in Southern Appalachia. Most of the counties with the highest rates of nonparticipation and unemployment (the darker shades) are in Northern and Central Appalachia. In Southern Appalachia, counties in Southern Mississippi and Alabama also have relatively high rates of non-employed persons. The map for black males is very similar. Thus, while the Appalachian Black population is primarily southern, the employment prospects for those in the Central and Northern Appalachia are less encouraging.

### Female Labor Force Participation in Coal Counties

Central Appalachia also stands out by having the lowest ratio of females to males in the civilian labor force, particularly in the nonmetropolitan areas. The civilian labor force in the nonmetropolitan part of Central Appalachia is 41.9 percent female compared with 43.5 percent in Northern Appalachia, and about 45 percent in Southern Appalachia and the rest of the U.S. (see Table III.2). Why are women underrepresented in the civilian labor force in this area? It may be that job opportunities for women are lacking. This area has a concentration of the coal industry jobs which are traditionally occupied by males. Not only is the concentration of the coal industry employment associated with a lack of jobs for women, but also with a lack of jobs in other industries.

	Coal Counties			Non-Coal Counties		
	Central	Northern	Southern	Central	Northern	Southern
% Female						
Total	<b>40.69</b>	44.27	45.91	44.70	44.52	45.68
Nonmetro	<b>40.24</b>	42.82	43.15	44.38	44.27	45.57
Metro	<b>42.76</b>	44.86	46.74	46.61	44.77	45.76
Female Unemployment						
Rate	<b>10.71</b>	6.74	6.76	7.93	6.29	6.25
Nonmetro	<b>11.32</b>	8.26	8.07	8.07	6.79	6.90
Metro	<b>8.10</b>	6.14	6.39	7.17	5.81	5.86
Male Unemployment						
Rate	<b>11.94</b>	8.26	5.97	8.43	7.24	5.00
Nonmetro	<b>12.82</b>	9.53	6.42	8.63	7.93	5.45
Metro	<b>7.75</b>	7.72	5.82	7.19	6.58	4.72

Table III.2: Civilian Labor Force by Type of County, 1990

The nonmetropolitan coal counties in Central Appalachia have only 40.2 females for every 100 workers in the civilian labor force versus 44.4 in the noncoal counties. The high female and male unemployment rates (11.3 percent and 12.8 percent, respectively) in the nonmetropolitan coal counties of Central Appalachia highlight the dependence of these counties on coal employment. The loss of jobs in the coal industry may have drawn women into the labor force. As husbands lost their jobs in the mines, and perhaps found lower paying service sector jobs, wives tried to find employment to help support their families. The net effect of men losing their jobs and women entering the labor force increases the unemployment rate in an area. Research by

Widner (1990) suggests that employment opportunities for Appalachian women are more limited than for women living in core industrial regions due to the lack of service industry jobs in Appalachia.<sup>7</sup> Recent work by Oberhauser (1993) suggests that industrial restructuring in Appalachia has increased the importance of homework (i.e. the production of goods or services in the household for monetary or barter exchange) as an economic strategy for women.<sup>8</sup> Though the significance of homework and other informal work is difficult to document, it may in part explain low labor force participation rates in areas facing industrial restructuring.

### Disabled Individuals

Disabled individuals are another demographic group in Appalachia who may have particular difficulty in joining mainstream America in terms of employment. Not only is the incidence rate of disability important, but so is the extent to which the disability limits work capacity. All Appalachian subregions have a higher percent of disabled persons who cannot work relative to the rest of the nation, and Central Appalachia has much higher rates than the other regions. Not only does Appalachia have a greater incidence of disability, it has a greater proportion of disabilities that inhibit work compared with the rest of the nation. This is particularly true for men compared with women and for nonmetropolitan areas compared with metropolitan areas (see Table III.3).

	Rest of US	Appal	Central	Northern	Southern
Males	45.90	57.21	70.63	54.14	55.31
Nonmetro	49.68	61.35	71.76	55.97	58.30
Metro	44.84	53.25	60.58	52.89	53.15
Females	55.11	64.90	76.55	61.67	64.34
Nonmetro	58.48	68.52	77.58	63.30	67.08
Metro	54.24	61.74	69.02	60.64	62.43

Table III.3: Percent of Disabled Persons 16-64 Who Cannot Work, 1990

Employment rates are lower in Appalachia even for the disabled who are able to work. As shown in Table III.4, the employment rates for the disabled men who can work are higher in Southern Appalachia and lower in Central and Northern Appalachia compared with the rest of the nation. For females, all Appalachian Subregions have lower employment rates.

<sup>7</sup>Widner, Ralph R. (1990) "Appalachian Development after 25 years: An Assessment," *Economic Development Quarterly*, Vol. 4, pp. 291-312.

<sup>8</sup>Oberhauser, Ann M. (1993) "Industrial Restructuring and Women's Homework in Appalachia: Lessons from West Virginia," *Southeastern Geographer*, Vol. 33(1):23-43.

	Rest of US	Appal	Central	Northern	Southern
Males	75.48	73.61	68.06	71.28	77.74
Nonmetro	74.97	72.27	67.31	70.17	77.55
Metro	75.61	74.68	72.84	72.00	77.86
Females	70.63	63.98	54.63	62.58	67.62
Nonmetro	67.57	61.38	53.85	60.46	66.09
Metro	71.35	65.84	58.70	63.82	68.55

Table III.4: Employment Rates For Disabled 16-64 Who Are Able to Work, 1990

The extent to which the disabilities prohibit work increases as areas become less dense and more isolated, as well. Meeting the needs of disabled individuals in Appalachia may be more difficult than in more metropolitan areas. Services and special training are expensive especially when costs cannot be spread out over a large concentration of individuals. Again, spatial isolation and the nonmetropolitan nature of Appalachia exacerbates the difficulty of trying to draw disabled individuals into the labor force.

### High-Risk Youth

Another demographic group of particular concern are individuals between the age of 16 and 19. Although almost 78 percent of Appalachia's youth have a high school degree, nongraduates are a particular concern. Without a high school degree, these individuals run a high risk of unemployment and of dropping out of the labor force entirely. In Appalachia as well as the rest of the nation, about 37 percent of the high-risk youths are employed, 18 percent are unemployed, and 45 percent are not in the labor force. Unless youths learn marketable job skills or earn high school equivalency degrees, the consequences of lacking a high school degree will shadow them for their entire lives.

High-risk, nonworking youths are not evenly distributed across Appalachia. Only 16 percent of the 92,224 high-risk youth who are not employed (i.e. potential workers) are in Central Appalachia while 47 percent are in Southern Appalachia and the remaining 36 percent in Northern Appalachia. High school dropouts in Central and Northern Appalachia have poor employment rates compared with similar youths in the rest of the nation (see Table III.5). Almost 77 percent of the high school dropouts in the nonmetropolitan part of Central Appalachia are not employed. The percent in nonmetropolitan Northern Appalachia is lower (66 percent), but is still 4 percent above that of the rest of the U.S. This suggests that high school dropouts are more likely to be employed in Southern Appalachia than in the rest of the U.S.

	Rest of US	Appal	Central	Northern	Southern
Unemployed					
Total	17.11	17.88	19.84	18.40	17.02
Nonmetro	17.89	18.51	20.31	18.86	17.28
Metro	16.93	17.26	15.77	18.06	16.82
Not in labor force					
Total	42.48	44.97	56.29	48.57	39.67
Nonmetro	44.55	45.95	56.64	47.44	39.08
Metro	42.00	44.02	53.31	49.42	40.12

Table III.5: Employment Status of High-Risk Youths (high school dropouts), 1990

As shown in Figure III.4 the county-level proportion of high-risk youths who are not employed is striking. Similar to adult potential workers, there seems to be a belt of contiguous counties that have relatively higher proportions of youths who are high risk and not employed in the official labor market.

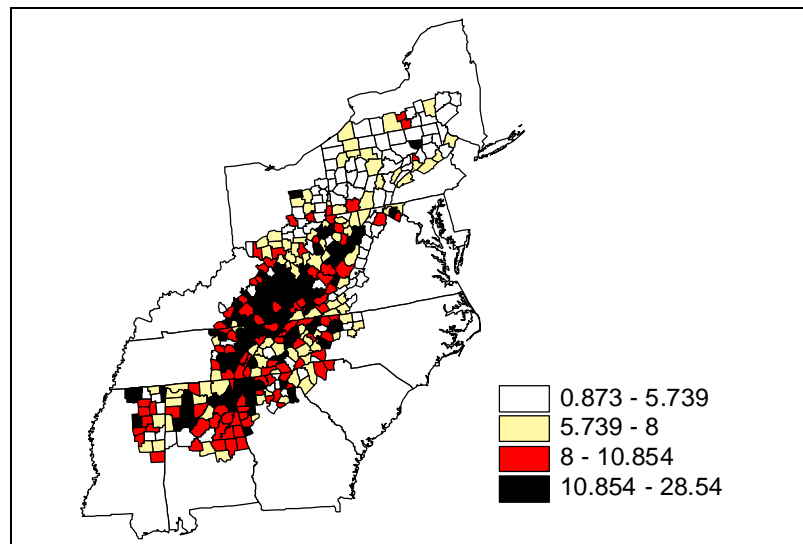


Figure III.4: Percent of Youth 16-19 Without High School Degree & Not Enrolled Who are Unemployed or Not in Labor Force  
(Legend is in quartiles)

What these youths are doing with their time and energy is not apparent. Perhaps they are working in the informal labor market, doing under-the-table work or odd jobs.<sup>9</sup> They may not be working at all. Why don't they find jobs in the formal labor market or move to areas that have employment opportunities? Youths may not be able to find jobs because there is a lack of employment opportunities for individuals with a high school degree or less. This may be exacerbated in Central Appalachia by the overall lack of employment and high rates of

<sup>9</sup>It is not clear how non-employed, non-graduates sustain themselves economically. Perhaps this is evidence of the underground economy. However, there has been little research on this topic.

unemployment for all demographic groups. Strong ties to family could explain why youths don't move to labor market areas with more employment opportunities. A strong attachment to home and family is often cited as an Appalachian trait, though it could merely reflect rational economic behavior.<sup>10</sup>

Even with a high school degree, non-enrolled youths in Central Appalachia have lower employment rates compared with the rest of Appalachia and the nation. In nonmetropolitan areas only 55 percent of the youth who are high school graduates are employed compared with 66 percent in Northern and 71 percent in Southern Appalachia. The employment rate of these youths in Southern Appalachia leads that of the rest of the U.S. by three percentage points. The high unemployment rates and low labor force participation rates suggest that there are limited entry-level job opportunities for high school graduates in Central and Northern Appalachia. These results are consistent with a general lack of jobs, and a lack of adequate skills (quality of education) for available jobs.

### Summary

The demographic trends described above suggest that females, blacks, high school dropouts and residents of smaller nonmetropolitan counties particularly in Central Appalachia are not employed to the same extent as similar individuals in the rest of the U.S. In addition, it is clear that the Appalachian population is heterogeneous in terms of its labor force participation and unemployment rates. Not only does the heterogeneity relate to demographic characteristics, but also to geographic location. The heterogeneity across subregions even for similar demographic groups implies that labor force participation may be influenced by region specific factors. Factors that influence labor supply decisions are numerous, including, wages, household income, job availability, family responsibilities, and nonmarket work opportunities. The following sections look at some of these factors in more detail.

## IV. SKILLS OF APPALACHIAN LABOR FORCE

Workers' skills and education levels are influenced by the industry composition in the area. Areas that have a high concentration of employment in blue collar occupations are less likely to stress the value of higher education. Stallman et al. (1993) show that a higher percent of low-skilled service occupations is associated with a higher dropout rate.<sup>11</sup> In addition, human capital theory suggests that job opportunities influence an individual's decision to invest in education. Broomhall and Johnson (1992) show that perceived local job opportunities influence the value that students place on education.<sup>12</sup> Likewise, individuals with higher levels of education are more likely to live in (or move to) larger metropolitan areas that have more white collar employment

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<sup>10</sup>Pudup, Mary Beth. (1989) *The Regional Question in Appalachia*. Working paper, Regional Research Institute, West Virginia University.

<sup>11</sup>Stallman, J. I., T. Johnson, A. Mwachofi, and J. Flora. (1993) "Labor Market Incentives to Stay in School." *Journal of Agricultural and Applied Economics*, 34:82-89.

<sup>12</sup>Broomhall, D. and T. Johnson. (1992) "Community and Family Influences on Educational Performance in Appalachian Communities." SRDC No. 161. Mississippi State: Southern Rural Development Center.

opportunities. Therefore, it is difficult to separate an area's educational attainment rates from its industry composition.

### Occupation Distribution in Appalachia

Appalachia's labor force is more blue collar than the labor force in the rest of the nation (see Table IV.1). Appalachia has disproportionately more machine operators, assemblers and inspectors, an occupation group which comprises 10.7 percent of its total labor force versus 6.5 percent in the rest of the nation, particularly in Southern Appalachia. Appalachia also has more precision production, craft and repair workers than in the rest of the nation.

		Exec/ Admin	Prof Specly	Admin Support	Other Serv	Farm/F or Fish	Craft/ Repair	Mach Op Inspec	Trans Matrls	Helpers/ Laborers
Metro										
Rest of US		13.32	14.84	17.15	10.76	1.60	10.75	5.90	3.68	3.64
		10.81	13.35	15.40	11.01	1.54	12.52	8.74	4.59	4.56
Appalachia										
Central		9.14	13.04	13.84	11.47	2.69	13.78	8.92	5.12	5.44
Northern		10.40	13.77	15.83	12.40	1.49	11.99	7.37	4.78	4.77
Southern		11.31	12.94	15.04	9.58	1.54	12.99	10.11	4.38	4.31
Nonmetro										
Rest of US		8.60	11.31	12.99	12.51	6.73	13.06	9.54	5.47	4.92
		7.79	10.63	12.27	10.95	3.50	14.92	13.63	6.41	5.78
Appalachia										
Central		7.14	10.21	11.39	10.56	3.89	16.85	11.18	8.63	5.63
Northern		8.16	12.01	13.05	12.80	3.66	13.86	9.94	6.24	6.02
Southern		7.67	9.40	11.84	9.21	3.18	15.21	18.42	5.68	5.60
Rest of US										
by	1	14.41	15.55	17.91	10.16	1.11	10.10	5.38	3.41	3.42
County	2	12.73	14.54	16.77	11.48	1.86	10.77	5.80	3.72	3.68
Type	3	10.98	13.23	15.49	11.57	2.69	12.56	7.46	4.39	4.18
	4	8.96	11.59	13.53	12.02	4.75	13.53	10.52	5.09	4.89
	5	9.16	12.10	13.19	12.94	5.28	12.62	8.60	5.25	4.79
	6	7.63	9.65	12.40	12.05	8.93	13.72	10.56	6.16	5.39
	7	7.52	10.46	11.94	13.02	11.84	12.44	8.58	6.17	4.91
Appalachia										
by	1	13.21	14.78	17.60	11.13	0.92	10.85	4.79	3.81	3.84
County	2	11.95	15.20	16.12	10.55	1.08	10.84	7.77	3.91	3.97
Type	3	9.33	11.97	14.18	11.15	2.00	13.92	10.78	5.21	5.12
	4	8.22	11.07	12.73	11.16	3.31	14.53	13.08	5.90	5.76
	5	8.06	11.16	12.47	11.22	2.63	14.98	12.06	6.77	5.46
	6	6.44	8.47	11.02	10.26	4.80	16.13	17.02	7.04	6.45
	7	6.25	9.13	10.74	9.83	5.63	15.46	17.44	7.26	6.15

Table IV.1: Percent Distribution for Selected Occupations (Employed Persons 16 or Older)

The relative importance of the machine operator, assembler and inspector occupation categories as a source of employment increases as a county gets smaller and more isolated from metropolitan areas. In Appalachia, the percent of persons working in this group of occupations increases from 4.8 percent in core and fringe metropolitan counties (type 1, see page 35) to 17.4 percent in the smallest nonmetropolitan counties (type 7). This increase is more dramatic in Appalachia than in the rest of the nation. A similar trend occurs for the precision production, craft and repair occupations as well as for handlers, equipment cleaners, helpers and laborers.

Interestingly, there is a slight increase in concentration in other services (not including private household and protective) as counties get smaller and more remote in the non-Appalachian part of the nation, but not in Appalachia. This is an important point. It suggests that Appalachia either does not provide its own services or perhaps that more services are provided in the informal market (not in the official labor market) relative to remote counties in the rest of the nation. The remaining occupations appear to have similar concentrations in Appalachia compared with the rest of the nation.

Even in Southern Appalachia which does not have an employment gap, the nature of Appalachia's workforce is more blue collar than in the rest of the nation. As discussed above, the blue collar emphasis may affect the value placed on educational attainment, and the ability of college graduates to find employment in Appalachia after graduation. Thus, the occupation structure in the area suggests the need for more white collar and professional employment opportunities for Appalachian workers of today and in the future.

### **Appalachian Educational Attainment**

The 1964 PARC Report showed that education was an unmet need of Appalachians, as demonstrated by the Appalachian education gap. In 1990, the Appalachian education gap persists. However, it is important to consider the population distribution when discussing statistics on educational attainment. For the adult population, the education gap in Appalachia persists. About 68.4 percent of Appalachians 25 years or older have at least a high school degree compared with 75.8 percent in the rest of the nation. Of the persons 25 years or older, 14.4 percent have less than a 9th grade education in Appalachia versus 10.0 percent in the rest of the United States. The education gap widens when comparing higher education attainment rates: 14.3 percent of persons aged 25 or more have a bachelor's degree or higher in Appalachia compared with 20.9 percent in the rest of the nation. When the focus shifts from adults over the age of 25 to youth between 16 and 19 years old, the education gap between Appalachia and the rest of the nation almost disappears. For Appalachia the percentage of youth enrolled in high school is 77.1 percent, one percentage point below the average in the rest of the nation. The Appalachian dropout rate (11.6 percent) is higher than the rest of the nation.

### **Adult Educational Attainment in Appalachia**

Looking at interregional differences in adult educational attainment across the nation two common themes become apparent: (1) nonmetropolitan counties have lower levels of educational attainment than metropolitan counties in a given region; and (2) smaller nonmetropolitan counties

have lower high school completion rates. While Appalachia also has higher high school attainment rates in metropolitan areas (72.6 percent) than in nonmetropolitan areas (62.3 percent), the metropolitan-nonmetropolitan education gap is wider than in the rest of the nation (see Table IV.2).

Smaller nonmetropolitan Appalachian counties have lower high school and college completion rates than larger metropolitan counties. In nonmetropolitan counties with less than 20,000 population (type 7), 52.9 percent of persons 25 or older have at least a high school degree versus 78.6 percent in metropolitan core and contiguous counties (type 1). While the largest metropolitan counties (type 1) in Appalachia have a one percent higher high school attainment rates than their counterparts in the rest of the nation, high school educational attainment rates diverge from levels in the rest of the U.S. as counties get smaller and more isolated resulting in a wider gap between the largest metropolitan and smallest nonmetropolitan counties in Appalachia: there is a 25.7 percent gap in Appalachia versus a 9.3 percent gap in the rest of the U.S.

	Less Than HS Grad	HS Grad	Some College	College Degree
Total				
Rest of US	24.13	29.52	25.45	20.90
Appalachia	31.63	35.04	19.08	14.26
Central	46.69	30.41	14.07	8.83
Northern	26.71	40.56	18.33	14.40
Southern	33.89	29.74	21.06	15.31
Metro				
Rest of US	22.85	28.33	26.18	22.64
Appalachia	27.43	34.83	20.98	16.76
Central	34.81	31.87	19.38	13.94
Northern	24.99	39.71	19.47	15.83
Southern	29.87	29.32	22.82	17.99
Nonmetro				
Rest of US	29.82	34.79	22.21	13.19
Appalachia	37.66	35.34	16.34	10.66
Central	48.73	30.16	13.17	7.95
Northern	29.76	42.08	16.30	11.86
Southern	40.78	30.46	18.04	10.72

Table IV.2: Percent of Persons 25 or Older by Educational Attainment, 1990

While Northern Appalachia leads the rest of Appalachia in terms of educational attainment for persons 25 or older, it lags the rest of the nation in its metropolitan portion which is balanced out by its nonmetropolitan portion. The nonmetropolitan portion of Central Appalachia has the lowest levels of education attainment in Appalachia with only 51 percent high school attainment rates and less than 8 percent college attainment rates for persons 25 and over. The nonmetropolitan part of Southern Appalachia, though still poor, does better than Central Appalachia. Even the metropolitan part of Southern Appalachia which has the highest percent of persons with a bachelor's degree or more still lags the rest of the nation.

The figure below shows the geographical patterns of educational attainment in Appalachia. High school educational attainment rates in Appalachian counties range from a low of 42.5

percent (Buchanan County, Virginia) to a high of 87.2 percent (Tompkins County, New York). Consistent with the analysis to this point, counties ranked the highest are concentrated in Northern Appalachia in New York (Tompkins, Tioga and Broome Counties) and in Pennsylvania (Centre, Pike, Allegheny and Butler Counties), although the South has three counties in the top ten, Gwinnett County, Georgia and Madison and Shelby Counties, Alabama. The seven Appalachian counties with the lowest high school attainment rates are in Kentucky. The other three counties ranked among the lowest 10 - McDowell County, West Virginia, Hancock County, Tennessee, and Buchanan County, Virginia - are also in Central Appalachia.

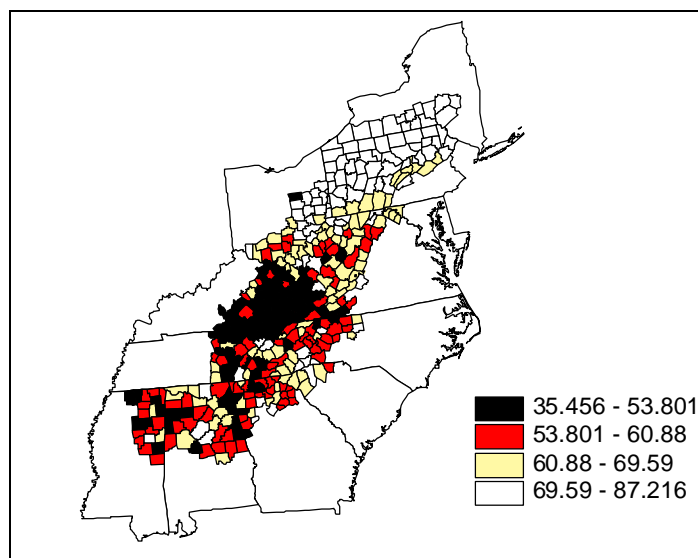


Figure IV.1: Percent of Population 25 and Over With High School Degree or More (Legend is in quartiles)

Counties around MSAs have higher high school attainment rates (see for instance Charleston, West Virginia, and the suburbs of Cincinnati, Ohio, Atlanta, Georgia, and Roanoke, Virginia). Nonmetropolitan counties with colleges or universities -- for example Monongalia County, West Virginia (West Virginia University), Hamilton County, Tennessee (University of Tennessee-Chattanooga), and Starkville, Mississippi (Mississippi State) -- all stand out relative to neighboring counties. Again, the industry structure and availability of jobs influence the extent to which high school educated individuals move in/out of a place as well as the value of higher education.

When states are ranked by percent of individuals 25 or older with a high school degree or more, all Appalachian states are in the bottom half (see Table IV.3). Maryland ranks the highest at 26th while, West Virginia, Mississippi and Kentucky are 49th through 51st. Differences between the Appalachian and non-Appalachian parts of states are apparent. In particular, the Appalachian portions of Kentucky and Virginia have significantly lower high school attainment levels compared with the remaining parts of the states. In contrast, the Appalachian part of New York has slightly higher high school attainment levels than the non-Appalachian part.

	State Rank	Total	Non-Appal Portion	Appalachian Portion
Maryland	26	82.30	82.91	70.58
Virginia	30	80.26	82.46	58.09
Ohio	31	79.82	81.10	71.19
Pennsylvania	34	78.34	78.61	78.06
New York	39	77.36	77.26	78.96
Georgia	41	75.87	77.09	71.91
North Carolina	42	74.91	76.03	70.65
South Carolina	43	72.49	73.23	70.40
Tennessee	46	70.68	73.73	66.97
Alabama	47	70.09	70.39	69.56
West Virginia	49	67.83	67.83	67.83
Mississippi	50	67.40	68.83	61.77
Kentucky	51	66.35	72.03	51.97

Table IV.3: Appalachian State Rankings by High School Attainment, 1990

### Is the Appalachian Education Gap Shrinking?

One way to investigate whether Appalachia's education gap is shrinking is to look at youth educational attainment. A smaller Appalachian educational gap for the 16 to 19 age group than for the 25 and over group would suggest a shrinking education gap. However, if migration is selective so that high school graduates are more likely to leave Appalachia for jobs, then the youth gap may remain intact even though a higher proportion of youths graduate high school now compared with a few decades ago.

In the aggregate, Appalachia compares favorably with the rest of the nation in terms of youth educational attainment. Of the 1,276,131 persons between 16 and 19 in Appalachia, about 77.1 percent are enrolled in high school or college, and 11.5 percent are high school dropouts - they are not enrolled in school and are not high school graduates.

Appalachia's overall youth educational attainment is almost identical to that of the rest of the nation. However, differences within Appalachia's subregions are evident. Northern Appalachia leads the rest of Appalachia with the lowest high school dropout rates (see Table IV.4). Not only does Northern Appalachia lead the rest of Appalachia, but its dropout rate is also significantly lower than the average for the rest of the nation. The nonmetropolitan portions of Central and Southern Appalachia have the highest dropout rates, at about 16 percent. Unlike the case in Northern Appalachia (and the rest of the nation), the metropolitan counties in Central and Southern Appalachia fair better than the nonmetropolitan portions.

Smaller more isolated counties in Appalachia have higher youth dropout rates. Nonmetropolitan counties with less than 20,000 population that are adjacent to metropolitan counties (type 6) have the highest dropout rates (15.7 percent) and the highest percent of graduates who are not enrolled in school (15.1 percent) compared with about 12 percent in the rest of the nation for both variables. The overrepresentation of nonenrolled high school graduates

in small Appalachian counties shows that youths in these places are less likely to continue their education or move away for employment after high school (either by choice or lack of opportunity) compared with youths in similar sized places in the rest of the nation.

	Total	% Enrolled	% HS Grad (not enrolled)	% Dropout
Total				
Rest of US	12,874,809	78.22	10.52	11.26
Appalachia	1,266,151	77.16	11.25	11.59
Central	131,149	71.81	12.66	15.53
Northern	598,362	80.26	11.48	8.25
Southern	536,640	75.00	10.65	14.35
Metro				
Rest of US	10,346,217	78.20	10.41	11.39
Appalachia	710,374	78.63	10.92	10.45
Central	19,025	77.32	11.64	11.03
Northern	358,351	80.66	11.49	7.85
Southern	332,998	76.52	10.26	13.21
Nonmetro				
Rest of US	2,528,592	78.32	10.97	10.71
Appalachia	555,777	75.27	11.68	13.05
Central	112,124	70.87	12.84	16.30
Northern	240,011	79.67	11.47	8.86
Southern	203,642	72.52	11.29	16.19

Table IV.4: Educational Attainment for Civilians 16-19, 1990

Which particular counties are leading and lagging the rest of Appalachia with respect to youth dropout rates? In Holmes County, Ohio more than half of the 2,152 youth are high school dropouts, while over one third of the youth in Menifee and Magoffin Counties, Kentucky and Gilmer County, Georgia are high school dropouts (see Table IV.5).

Counties with Highest Dropout Rates				Counties with Lowest Dropout Rates			
State	County	Persons 16-19	% Dropouts	State	County	Persons 16-19	% Dropouts
OH	Holmes	2152	50.60	GA	Towns	492	4.07
KY	Menifee	441	36.96	PA	Clarion	3724	3.95
KY	Magoffin	897	33.22	NY	Allegany	5148	3.77
GA	Gilmer	835	33.05	MS	Oktibbeha	4324	3.72
TN	Bledsoe	699	31.76	OH	Athens	6964	3.69
KY	McCreary	1282	31.44	PA	Centre	10754	3.58
KY	Clay	1490	30.94	WV	Brooke	1788	3.41
KY	Elliot	429	30.07	NY	Tompkins	10602	2.65
GA	Pickens	856	30.02	OH	Morgan	835	2.51
GA	Habersham	2079	29.63	OH	Monroe	959	0.94

Table IV.5: Appalachian Youth Dropouts by County, 1990

Kentucky has 5 counties, and Georgia 3 counties among the 10 Appalachian counties with the highest youth dropout rates. Of the counties with the highest dropout rates, Magoffin, McCreary, and Clay Counties, Kentucky were also among the lowest ten counties in terms of high school attainment rates for the 25 and over age group. Similarly, some Appalachian counties lead

the rest of the nation for the youth and the population 25 or more. Among the counties with the lowest dropout rates are Centre County, Pennsylvania, and Tompkins County, New York which were also among the top ten counties in regard to high school attainment rates for the 25 and over population.

## **Summary**

The Appalachian educational gap appears to be shrinking as demonstrated by the comparable educational attainment rates for youth ages 16 to 19 in Appalachia and the rest of the nation. The Appalachian population 25 and older, however, still lags the rest of the nation in educational attainment. The education gap is persistent in certain parts of Appalachia, especially the nonmetropolitan parts of Central and Southern Appalachia, even when looking at youth educational attainment. Coupled with the concentration of workers in blue collar occupations, the low employment rates even for high school graduates suggest the need for employment opportunities for more educated workers within Appalachia. More importantly, the fact that youth dropout rates are high in places that lag in high school attainment for the 25 and older age group suggests a perpetuation of the education lag in these areas. Although there are signs of improvement, continued investment in education is essential to equip youth and future workers, particularly those in nonmetropolitan Central and Southern Appalachia, with the skills to be fully integrated in the work force.

## **V. SPATIAL ACCESS TO EMPLOYMENT**

Having the physical and financial means to get to work is an important determinant of labor force participation. The literature in economics and sociology labels this issue as the spatial mismatch hypothesis. The main theme is that individuals in poor inner-city neighborhoods are spatially separated from employment growth areas outside of the city. This geographic separation reduces the information flow about jobs, as well as the ability to effectively search for jobs. In addition, high costs of commuting in terms of time and money reduce the net wage for individuals who must commute a longer distance. The wage, net of commuting cost, may be driven down to such a low level that an individual might not find it worthwhile to accept a potential job. Thus, individuals in inner-city neighborhoods who are spatially separated from jobs may have higher nonparticipation rates because of the lack of viable job opportunities.

Though the spatial mismatch hypothesis focuses on spatial access as a barrier to employment for inner-city residents, it applies to nonmetropolitan workers in the same way. That is, the lack of job opportunities in the local area causes individuals to commute longer to find employment. This raises commuting costs and lowers the net wage of individuals who are forced to commute long distances to work. In addition, the rugged terrain in Appalachia with its windy roads and narrow river valleys makes commuting more time intensive. Individuals who need more flexible work schedules, as well as those who cannot afford reliable automobiles may be particularly hindered by spatial isolation from employment opportunities.

## Do Appalachian Commuting Patterns Differ from the Rest of the Nation?

A greater proportion of metropolitan workers (45 percent) than nonmetropolitan workers (60 percent) in the rest of the United States commute less than 20 minutes (see Table V.1). While this is also true in Appalachia, the metropolitan-nonmetropolitan differential (3.7 percent) is less pronounced compared with the rest of the nation (15.4 percent).

		Less Than 10	10-19	20-39	40 or More
Total U.S.		15.95	32.28	34.13	14.70
Rest of US		15.74	31.97	34.23	15.07
Appalachia		17.27	34.26	33.50	12.45
Central		19.08	32.38	29.72	15.90
Northern		19.37	33.94	31.52	12.23
Southern		14.98	34.74	35.82	12.37
Nonmetro					
Rest of US		27.60	32.92	23.77	10.92
Appalachia		20.11	33.66	29.63	13.47
Central		19.11	31.99	29.14	16.73
Northern		22.51	32.74	28.44	12.36
Southern		18.07	35.29	31.04	13.26
Metropolitan					
Rest of US		13.35	31.77	36.34	15.90
Appalachia		15.57	34.52	35.73	12.02
Central		18.90	34.28	32.54	11.91
Northern		17.65	34.60	33.21	12.15
Southern		13.31	34.44	38.41	11.89
Rest of US	1	10.90	27.95	38.79	19.80
By	2	14.79	36.39	35.47	10.76
County	3	18.31	36.63	30.70	11.49
Type	4	24.20	33.83	25.63	12.32
	5	27.63	37.32	22.73	8.18
	6	26.55	26.58	25.66	15.89
	7	35.17	27.29	20.58	9.71
Appalachia					
By	1	12.71	28.81	39.00	17.38
County	2	14.01	37.62	38.87	7.69
Type	3	17.41	35.56	33.02	11.65
	4	20.10	34.06	29.65	12.91
	5	20.63	36.34	29.19	11.26
	6	18.80	27.52	30.38	19.87
	7	19.99	30.13	30.07	16.16

Table V.1: Percent of Workers 16 or Older by Travel Time to Work (minutes)

A larger proportion of metropolitan workers in Appalachia commute less than 10 minutes compared with the rest of the nation. The opposite is true for nonmetropolitan workers. As counties get smaller and more isolated the gap between Appalachia and the rest of the nation gets bigger with respect to shorter commute times. For the smallest nonmetropolitan counties (type

7), 20 percent of the Appalachian workers commute less than 10 minute versus 35.2 percent of the workers in the rest of the nation.<sup>13</sup>

### **Do Appalachians Commute Longer than Workers in the Rest of the Nation?**

A smaller proportion of workers in metropolitan counties in Appalachia commute an hour or more to work compared with metropolitan workers in the rest of the nation. However, in the smaller nonmetropolitan counties (type 6 and 7), a larger proportion of Appalachians commute an hour or more to work compared with the rest of the nation. This is particularly true for Central Appalachia. Figure V.1 shows the nonmetropolitan counties where the incidence of hour or more commutes is relatively high. The counties with relatively high proportion of long commutes are mostly isolated, small, and nonmetropolitan. The high incidence of long commutes reflects the lack of local jobs and the willingness of workers to spend over two hours a day commuting to and from work. Some of the Appalachian metropolitan counties including the Atlanta suburbs also have a high incidence of long commutes. Long commuting times in metropolitan counties are influenced by traffic and congestion as well as road conditions and trip distances.

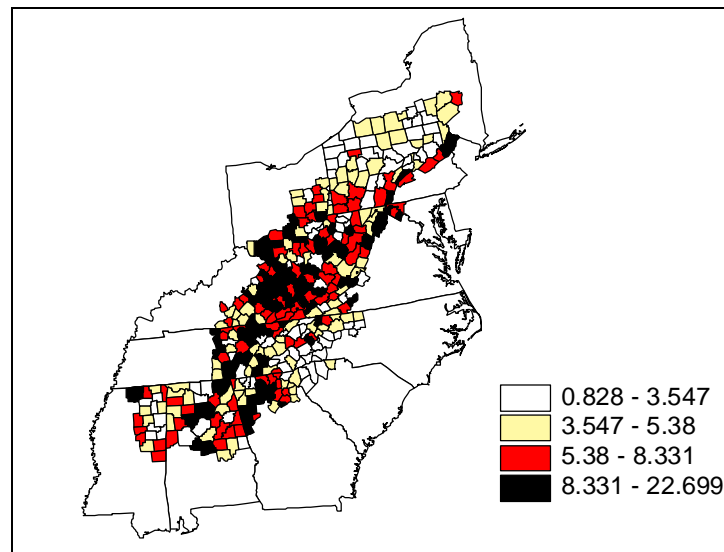


Figure V.1: Percent of Workers Commuting One Hour or More to Work  
(Legend is in quartiles)

### **How do Individuals in Appalachia Get to Work?**

It is important to know how individuals get to work particularly if individuals lack spatial proximity to jobs. For instance, in inner-city neighborhoods public transit is an important means of transportation for low income individuals. Inner-city residents could be helped by extended routes, increased frequency of service, and inside-out oriented service networks. Comprehensive public transportation networks are not feasible in smaller nonmetropolitan areas due to the lack of finances and limited population density.

<sup>13</sup> Appendix A describes each of the seven county type categories.

Public transportation is very limited in Appalachia where only 2.5 percent of workers 16 or older ride a bus, street car, subway or railroad to work. Buses are the main source among public transit used in Appalachia: 1.4 percent of Appalachia's workers ride a bus to work. In addition, most of the Appalachians who use public transit live in the Pittsburgh MSA where 7.1 percent of the workers ride a bus to work (see Northern Appalachia, county type 1 in Table V.2). Because few workers commute to work via public transportation in Appalachia as well as in nonmetropolitan counties in the rest of the nation, individuals are more dependent on private automobiles as a means of transportation. Over 90 percent of Appalachian workers ride to work in a private automobile (drive alone or carpool in a car, truck or van), compared with 86 percent in the rest of the nation. Appalachians rely on automobiles relatively more than workers in the rest of the nation in every type of county. This is especially noteworthy in Southern Appalachia where over 93.5 percent of workers in all types of counties use automobiles. Thus, access to an automobile and road infrastructure are important factors in daily lives of Appalachian workers.

	Drive Alone	Carpool	Tot Cars	Bus	Other
Total					
Rest of US	72.93	13.22	86.15	3.13	7.72
Appalachia	76.26	15.05	91.30	1.36	4.80
Nonmetro					
Rest of US	73.47	14.86	88.32	0.48	6.39
Appalachia	74.33	17.01	91.34	0.41	5.11
Metropolitan					
Rest of US	72.82	12.89	85.71	3.67	7.99
Appalachia	77.49	13.79	91.27	1.96	4.59

Table V.2: Percent of Workers 16 or Older by Means of Transportation to Work, 1990

Carpooling is a relatively more common means of transportation to work in the nonmetropolitan counties in Appalachia, especially the smaller more isolated counties. In particular, over 20 percent of the workers in the smallest counties that are not adjacent to metropolitan areas (type 7, Central, Northern and Southern) in Appalachia carpool versus 14 percent in the rest of the nation. Several factors may explain this finding. First, Appalachian workers are more likely to work in manufacturing or mining industries which employ large numbers of individuals who work similar shifts. Hence, many individuals may go to the same place at the same time for work. Second, the limited number of main roads, especially in the more rugged and hilly areas, increases the likelihood that individuals travel in the same direction for work. Third, given the reliance on cars, carpooling could be a cost savings method for workers who commute long distances each day.

### **Do Appalachians Have Access to Cars?**

Using 1990 Census Data car ownership by occupied housing units can be analyzed. This measure has several limitations. First, it does not directly show the extent to which workers have access to cars. For instance, it does not tell if two workers have to share one car, which may be significant for examining female labor force participation rates. However, if income is related to car ownership and to employment, then it is a suitable proxy for the car availability.

	Rest of US	Appal	Central	Northern	Southern
Total	8.59	6.72	7.91	7.98	5.12
Nonmetro	5.52	6.47	8.23	6.79	5.20
Metro	9.24	6.89	6.08	8.67	5.08
County Type					
1	11.71		na*	10.44	1.56
2	7.20		na*	8.86	6.58
3	5.08		6.08	7.43	4.54
4	5.30		10.41	6.82	4.52
5	5.76		8.49	6.88	6.03
6	5.44		6.29	6.05	5.49
7	5.54		7.73	6.90	5.95

\*There are no type 1 or 2 counties in Central Appalachia.

Table V.3: Percent of Occupied Housing Units with No Cars, 1990

As shown in Table V.3, Appalachia has a higher percent of nonmetropolitan and lower percent of metropolitan households that do not own cars relative to the rest of the nation. This is consistent with the fact that there is relatively less public transit available in smaller MSAs. The Pittsburgh MSA (Northern Appalachia, type 1) has a high rate of households without cars (10.4 percent) relative to the rest of Appalachia, but lower rate compared with similarly sized metropolitan counties in the rest of the nation (11.7 percent). Central nonmetropolitan Appalachian counties that are adjacent to MSAs (type 4) also have a high rate of households that lack cars (10.4 percent) which is almost twice the rate for non-Appalachian counties of the same type.

### Why Don't Appalachians Move Closer to Jobs?

The reason that Appalachians do not move may be closely tied to the local economy. In particular, the decline in land and housing values in areas that have experienced large drops in local employment may make it difficult for individuals to move. The sales value of their homes may not be enough to buy suitable housing in areas with more employment (which probably have rising home values). Similarly, families are likely to be financially constrained due to long periods of layoff and joblessness. In addition, the instability of mining employment and the frequent job site changes incurred by miners could also play a role in explaining why Appalachians do not move for jobs.<sup>14</sup>

<sup>14</sup> Weiler, Stephan. (1994) "Industrial Structure, Restructuring, and Unemployment in Regional Labor Markets," Research Paper, 9425 Morgantown, WV: Regional Research Institute for an explanation of local unemployment in terms of non-clearing labor markets.

## Summary

Appalachian workers may face more barriers to labor force participation relative to workers in the rest of the nation due to rugged terrain, lack of local jobs (high unemployment rates), and higher dependence on private automobiles for transportation. Spatial access is particularly limited in small isolated nonmetropolitan counties, especially in Central Appalachia. However, the willingness of workers (as shown by commuting patterns) to spend hours each day commuting to and from work suggests that labor market areas for the most isolated workers may be wider than for less isolated workers. The implication is that job opportunities do not necessarily have to be brought to small isolated counties experiencing high unemployment. Instead jobs that are even an hour away can be viewed as viable options for at least some of these workers. In addition, ownership of a private car and the condition of the road infrastructure are very important for reducing the employment barriers. The analysis above considered workers in Appalachia. The implications for those who are not in the labor force may be more significant, particularly if nonparticipation and unemployment result from the lack of spatial accessibility to jobs.

## VI. PRESENCE OF CHILDREN

The presence of children present barriers to employment because of the need for child care, especially for pre-school aged children. While families with two parents can share child rearing in terms of energy and costs, single-parent households have less flexibility in this regard. Days when children get sick are particularly difficult for two-parent households where both the parents work and in single-parent households where the only parent works. Unless working parents are lucky enough, and can afford to have contingency baby sitting arrangements, parents often must stay home from work when children are sick. In addition, child care can be a financial burden, especially for low-wage earners.

### Two-parent Families

Unemployment rates and employment to population ratios tend to hide the economic status of children since some families may have two working parents and others none. Children living in families with no working parents are of particular concern. The concern involves the nutritional needs of children, as well as the work attitudes that are learned from parents. These factors may influence children's attitudes for the rest of their lives. In addition, the extent of poverty is likely to be more extreme in families with no working parents.

Appalachia has a slightly larger percent of two-parent families with no parents working relative to the rest of the U.S. The nonmetropolitan-metropolitan differential is larger in Appalachia where four percent of the two-parent families have no working parents in nonmetropolitan areas compared with two percent in metropolitan areas (see Table VI.1). Nonmetropolitan Central Appalachia has the greatest proportion two-parent families with non-working parents; 12 percent of the two-parent families with children between 6 and 17, and 8.5 percent with young children have no parents in the labor force. The extent of poverty in these

areas can be expected to be much greater than for the rest of Appalachia, no matter what the cause of non-employment.

	Rest of US	Appalachia	Central	Northern	Southern
Children<6:	1.97	2.48	7.78	2.81	1.52
Nonmetro	2.26	3.91	8.47	3.63	1.77
Metro	1.90	1.90	3.46	2.30	1.39
Children 6-17:	2.33	3.34	11.10	3.31	2.32
Nonmetro	2.64	5.40	12.00	4.09	2.88
Metro	2.24	2.47	5.08	2.79	1.97
County Type					
1	2.44	1.96			
2	2.13	1.77			
3	1.93	2.91			
4	2.33	3.90			
5	2.71	7.01			
6	2.71	5.56			
7	3.02	7.30			

Table VI.1 Percent of 2-Parent Families with Non-Working Parents by Age of Children, 1990

## Mothers

Women and children are generally disproportionately represented among the poor. The ability of parents to support their families is determined by labor force participation and wages. Women have lower wages on average than men, and are generally the primary child care providers, even in married-couple families. Both factors contribute to the higher incidence of poverty among women and children. Single mothers that do not work may receive welfare, which provides a very minimal existence. However, obtaining a job may not improve living standards for single mothers due to the cost of reliable child care, and the possible loss of medical insurance coverage.

In Appalachia, females with children under six are just as likely to work whether they are married or not - about 55 percent are employed (see Table VI.2). In the non-Appalachian part of the U.S., a slightly larger proportion of married mothers with young children work, 57 percent. For mothers with children between the ages of 6-17, more single mothers work than married mothers in Appalachia and the rest of the U.S. As children get older, the percent of mothers who are employed increases about 11 percentage points for married mothers and about 16 percentage points for single mothers in Appalachia. In general, these figures suggest that single mothers are more likely to work than married mothers, and the working status of both are influenced by the age of children.

	Children Under 6		Children 6-17	
	2 Parents	Single Mom	2 Parents	Single Mom
Rest of US	57.32	54.70	68.50	71.45
Appalachia	54.96	54.91	65.64	70.97
Central	44.31	40.07	52.33	53.40
Northern	51.78	47.42	62.93	66.87
Southern	59.74	63.70	70.59	76.75
Nonmetro				
Rest of US	59.25	56.66	70.40	71.84
Appalachia	53.12	52.78	63.03	67.18
Central	43.19	38.50	51.01	51.77
Northern	50.67	49.64	61.97	67.03
Southern	61.54	62.55	71.81	75.10
Metro				
Rest of US	56.88	54.31	67.98	71.37
Appalachia	55.40	55.19	66.39	72.13
Central	51.29	49.70	61.13	63.74
Northern	52.46	46.27	63.57	66.78
Southern	58.76	64.33	69.85	77.67

Table VI.2: Percent of Mothers Employed or in Armed Forces by Family Type, 1990

Appalachian heterogeneity is highlighted by the variation in the employment of mothers across subregions. As shown in the table above, Southern Appalachia exceeds the rest of Appalachia and the nation in terms of the percent of mothers employed. In addition, a larger percentage of single mothers are employed regardless of the age of children. In Central Appalachia, particularly in the nonmetropolitan areas, the percentage of married and single mothers that are employed lags the rest of Appalachia. In contrast, the metropolitan part of Northern Appalachia has the lowest proportion of employed single mothers compared with the rest of Appalachia. The differences in employment status of mothers across Appalachia may reflect the differences in industry structure and employment growth across subregions. As described above, Central Appalachian employment is largely dominated by male oriented occupations which makes it more difficult for women, with or without children, to find employment. Meanwhile, Southern Appalachia has had tremendous employment growth which increases the employment opportunities for all individuals in the region.

## Fathers

The problem of non-working parents is not limited to single-mother families. In the United States and Appalachia, an overwhelming majority (over 85 percent) of the single-parent families with children under 18 have only the female parent present. Single fathers are more likely to work than single mothers - about 85 percent of single fathers with young children in Appalachia work (See Table VI.3). Notably, single fathers are less likely to work than married fathers regardless of the age of children. In addition, the age of children has less of an effect on the employment status of fathers than of mothers. The employment status is only slightly higher for single fathers with older children compared with those with younger children.

	Children Under 6		Children 6-17	
	2 Parents	Single Dad	2 Parents	Single Dad
Rest of US	96.43	86.46	95.18	87.50
Appalachia	95.83	84.64	93.68	85.59
Central	89.64	72.74	84.39	69.35
Northern	95.56	84.22	93.88	85.79
Southern	96.84	86.35	94.72	87.28
Nonmetro				
Rest of US	95.89	85.54	94.37	86.00
Appalachia	94.07	81.86	90.94	81.94
Central	88.90	71.14	83.34	68.22
Northern	94.63	84.03	92.70	84.33
Southern	96.22	83.98	93.53	86.78
Metro				
Rest of US	96.55	86.66	95.40	87.86
Appalachia	96.58	86.02	94.94	87.05
Central	94.24	84.34	91.40	78.23
Northern	96.14	84.36	94.67	86.87
Southern	97.17	87.84	95.44	87.58

Table VI.3: Percent of Fathers Employed or in Armed Forces by Family Type, 1990

## Summary

The extent to which children are a barrier to employment is more significant for women than for men. The employment status of men change only slightly as children get older, which suggests that child care is not an important factor in fathers' employment status. In contrast, employment rates increase as children get older for single and married mothers. Thus, age and presence of children influences the employment status of mothers. This implies that child care is an important concern for mothers, regardless of marital status.

The data presented above do not explain how and why the presence of young children lowers female employment rates. Many explanations are consistent with the results, including the desire to be home with the children, a lack of alternative child care options, and lack of flexible employment opportunities. Industrial structure may also be significant. The routine shift change for mining and manufacturing workers, also make it very difficult for families with two working parents to arrange work schedules. Given the effect on married women, who presumably have more flexibility in child care options (a partner to share sick-child duty, and more monetary resources), it is likely all of these explanations are important.

From a policy perspective, it is not clear that increasing female labor force participation will alleviate poverty or promote growth in the economy. Children need to be cared for whether mothers are married or not, and whether parents work or not. However, whether child care counts as market work depends on who provides the care. The paradox is that providing care for your own children is not treated as market work while providing care for other people's children is. The irony is that single mothers are often treated as a drain on society, even though they are, if anything, less likely to stay home to care for children compared with married mothers.

The availability of subsidized child care may increase labor force participation of non-working parents if market wages, net of the loss of income transfers, is greater than the cost of child care. This may also help draw poor individuals into the mainstream of society. From society's standpoint, subsidizing child care is worthwhile if it reduces the net transfers to families by increasing tax receipts from parents who are drawn into the labor force, and by reducing income transfers. However, providing health insurance for families with low income is vital to draw non-working parents into the labor force, and to improve public health in poor neighborhoods. In addition, child care is likely to be prohibitively expensive for infants and toddlers who need a considerable amount of personal attention. The per child cost of child care, however, is likely to fall as children get older. No matter what the details are, an effective policy aimed at increasing labor force participation of non-working parents must provide reliable and affordable child care options.

## VII. CONCLUSION

A central goal of the Appalachia Regional Commission was to introduce "Appalachia and its people into fully active membership in the American society" (PARC 1964, p. 65). Based on only employment status, a key component of this goal, Appalachia's success is mixed. Appalachia is a dynamic and heterogeneous region in terms of employment as well as socio-economic conditions. Controlling for age and disability, nonparticipation rates are particularly high in nonmetropolitan portions of Central and Northern Appalachia, but nearly match the rest of the U.S. in Southern Appalachia. Thus, while Central Appalachia might still be characterized as a "world apart," even compared with the rest of Appalachia, Appalachia as a whole no longer fits this image.

There is reason for optimism about Appalachia's growth and development. Southern Appalachia leads the rest of the nation in terms of low unemployment and high labor force participation rates. In addition, the youth education gap in Appalachia is smaller than the adult education gap. This suggests an increasing educational level of the future Appalachian worker force as youth enter the labor force and older workers retire. Despite this optimism, however, there are pockets of Appalachia that would benefit from further improvements. Youth educational attainment in Central Appalachia still lags the rest of the nation. In addition, youth high school graduates who are not enrolled in school have lower employment rates in Central Appalachia compared with the rest of the nation. Opportunities need to be created to fully integrate Appalachia's youth in the labor force.

Appalachia is not fully utilizing its human capital base, its "most valuable resource (PARC 1964, p. 48). Some demographic groups - females, blacks, high school dropouts and residents of smaller nonmetropolitan counties - are less integrated in the Appalachian labor force than others. Black and white women in Appalachia have the highest incidence of nonparticipation and the highest unemployment rates in the nonmetropolitan part of Central Appalachia. While Appalachia's black population is primarily southern, the employment rates are lowest in Central and Northern Appalachia. Employment, unemployment, and nonparticipation rates are best for each demographic group (black and white men and women) in Southern Appalachia compared with the rest of Appalachia. Employment conditions for each demographic group also vary within

Appalachia's subregion. For example, women in Central Appalachian coal counties have higher nonparticipation rates than those in noncoal counties as well as in the rest of Appalachia. In addition, nonparticipation rates increase as counties get smaller and more isolated.

Spatial access to employment opportunities may be a particular problem for Central Appalachians as well as those in smaller more isolated counties. The demonstrated willingness of Appalachians to commute long distances suggests that jobs do not need to be brought to small isolated communities to be viable employment opportunities. However, this strategy may not help women with children who need more flexible work and child care options. In particular, mothers in Central Appalachia and in smaller nonmetropolitan Appalachian counties have low labor force participation rates. To be effective, policies aimed at integrating women into the labor force must include viable child care options and flexible schedules.

Low participation and high unemployment rates are influenced by demand and supply factors. The analysis in this paper focuses on employment status only. Without also analyzing wages and earnings, it provides an incomplete picture of the living standards in an area. However, it does provide a glimpse of socio-economic conditions in Appalachia. For instance, high levels of unemployment and nonparticipation are associated with poverty areas. In addition, the traditional emphasis on mining and agricultural employment is consistent with low female participation rates, high incidence of disability, and spatial isolation from urban centers, particularly in Central Appalachia. The persistence of high unemployment in parts of Appalachia suggests that new and growing industries are not being attracted to fully employ its human capital base. A continued emphasis in mining and heavy manufacturing jobs will not ameliorate the employment conditions of the demographic groups that are less integrated in the labor force such as women and disabled individuals. For these groups, the key is a diverse employment base that is more amenable to flexible work schedules and accessible work environments.

Appalachia and its subregions are composed of dynamic and heterogeneous labor market areas. Individuals in some areas are more fully integrated in the labor force than in other areas. While most demographic groups have the lowest labor force participation rates in Central Appalachia, some groups have low employment rates in other regions, too. Spatial isolation exacerbates the employment problems for the people in all subregions in Appalachia. The distinction between place and demographic groups is an important consideration when formulating effective policy. The concentration of underemployed individuals is most striking in Central Appalachia. In contrast, even though Northern Appalachia has a larger pool of underemployed individuals, these individuals constitute a smaller proportion of the population. In addition, it may be more difficult to alleviate the underemployment of individuals that face barriers to labor force participation, either due to physical isolation from employment opportunities, or due to personal considerations such as disabilities or the responsibility of raising children. This distinction between the size of the underemployment pool and the pervasiveness of underemployment suggests that economic development policies should be place and people specific.

## APPENDIX: APPALACHIAN GEOGRAPHY

The official boundaries of Appalachia are defined by Congress and have changed since Appalachia's inception in 1964. The current definition of Appalachia includes 399 counties in 13 states. This study uses the current definition throughout. The Census reports data for independent cities separately from the counties that surround them. For this reason, the 5 independent cities in the Appalachian part of Virginia are included as separate entities in this report.

Appalachia can be analyzed on several geographic levels. The three subregions, Central, Northern and Southern Appalachia, are the official designations of the Appalachian Regional Commission. The subregions are shown in Figure A-1. Northern Appalachia is the most populated subregion with about 48 percent of Appalachia's population followed by Southern Appalachia with 42 percent and Central Appalachia with only about 10 percent (see Table A.1).

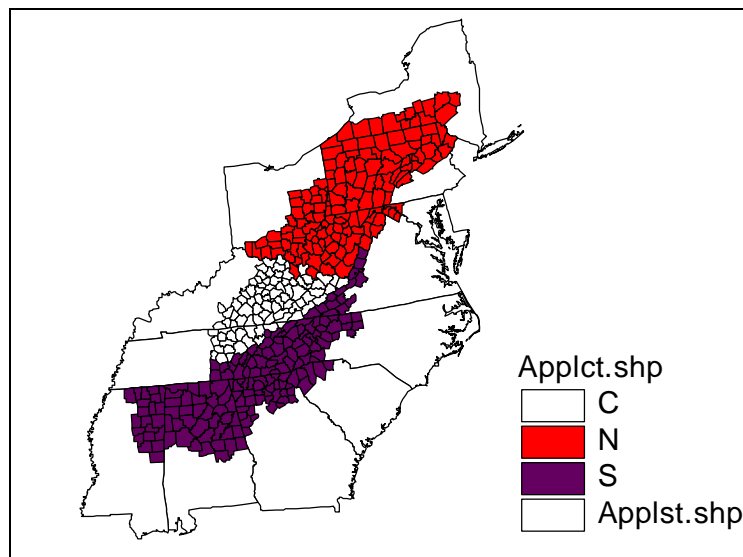


Table A.1  
Appalachian Subregions

	Total	% of Appal	Nonmetro	Metro	% Metro
Appalachia (404 counties)*	20,701,881	100.00	8,625,901	12,075,980	58.33
Central (86 counties)*	2,027,076	9.79	1,724,716	290,690	14.34
Northern (144 counties)	9,917,942	47.91	3,674,466	6,243,476	62.95
Southern (174 counties)*	8,756,863	42.30	3,226,719	5,541,814	63.29
Rest of US	228,007,992		42,272,001	185,735,991	81.46
Total US	248,709,873		50,897,902	197,811,971	79.54

\*Central includes 1 independent city, and Southern includes 4 independent cities.

Table A.1: Appalachian Population by Subregion, 1990

Appalachia can be further disaggregated into metropolitan and nonmetropolitan categories according to the current official designations of the Office of Management and Budget. About 62 percent of the population in Northern and Southern Appalachia live in metropolitan counties compared with only 14 percent in Central Appalachia. The U.S. as a whole has about 80 percent of its population in metropolitan areas.

Counties also can be ranked using a continuum based on the system developed by the U.S. Department of Agriculture and adapted for use by the U.S. Bureau of Economic Analysis in their Regional Economic Information System. The seven definitions of county types used in this study are shown in Table A.2.

		1990 Population	
		% of Appal	% of U.S.
Metropolitan Counties:			
1	Counties in metropolitan areas with 1 million or more population, core and contiguous counties	13.2	44.3
2	Counties in metropolitan areas with 250,000 to 1 million population	13.1	20.2
3	Counties in metropolitan areas of fewer than 250,000 population	32.4	16.9
Nonmetropolitan Counties:			
4	Counties with an urban population of 20,000 or more and adjacent to metropolitan area	20.2	6.6
5	Counties with an urban population of 20,000 or more and not adjacent to metropolitan area	12.6	6.1
6	Counties with an urban population less than 20,000 and adjacent to a metropolitan area	4.2	2.4
7	County with an urban population of less than 20,000 and not adjacent to a metropolitan area	4.6	3.5

Table A.2: Population by County Type, 1990

The classification is based on population and adjacency to metropolitan areas defined in terms of physical proximity as well as the extent of job commuting to central metropolitan counties. A county that physically touches a metropolitan county is classified as nonadjacent if few of its workers commute to the core metropolitan county. The text refers to categories 5 and 7 as isolated because counties in these categories have the least access to metropolitan economies in terms of jobs. Categories 6 and 7 are the most rural areas with the fewest people living in urban areas. Category 7, the most rural, most isolated group, is referred to as small isolated counties in the text.

Not only is Appalachia less metropolitan than the nation, it also has a greater share of its metropolitan population in the smallest metropolitan category. To a certain extent the seven categories represents a continuum of not only of urbanization but also of several socio-economic conditions. Some conditions in Appalachia may be associated with its less metropolitan population relative to the U.S. Using these categories to compare Appalachia with the nation adjusts for the differential levels of urbanization in the two areas.

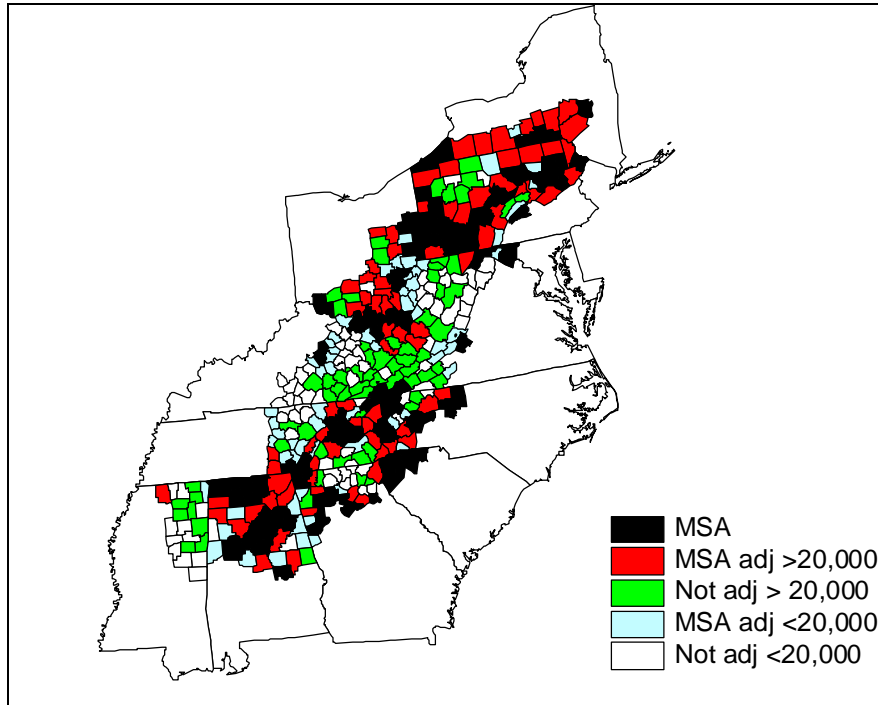


Figure A.2  
County Types in Appalachia