

Regional Differences in Family Poverty

Federal policy toward the alleviation of poverty is currently undergoing a massive overhaul as a result of the recently passed welfare reform legislation. To a large degree, this legislation will replace our current welfare programs with block grants to states. The effects of such a change are difficult to forecast. We know that poverty rates vary considerably across regions, as do the demographic characteristics of the poor, but why the extent of poverty varies as much as it does across different regions of the country is not fully understood. This is unfortunate, since the design of appropriate antipoverty policies within a federal system requires an understanding of the reasons for all these variations.

The main goal of this article is to shed some light on why poverty rates vary as much as they do in different areas of the country. Section I provides descriptive statistics on poverty rates in regions of the United States and on how characteristics of the poor and nonpoor vary among regions. The reasons for the regional differences in poverty rates are explored in Section II. The primary focus there is on the role of earnings capacity. The analysis shows that much of the regional variation in poverty rates can be accounted for by differences across regions in the distribution of potential family earnings: what families could be expected to earn if all their adult members worked full-time, relative to the poverty threshold for the family. Other factors, such as the number of weeks the family head was unemployed or whether the family head was a single woman, are very important in predicting whether particular families are poor or not, but they are less important in explaining why poverty rates vary over regions. The paper concludes with a discussion of the results.

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I. Regional Differences in Poverty Rates and Characteristics of the Poor

How best to measure poverty is a controversial subject. The official U.S. poverty statistics are based on a methodology developed at the Social Security Administration in the 1960s, which sets income thresholds

below which a family is classified as poor.¹ The thresholds vary with total family size (up to nine people), the number of family members who are children, and whether the householder (family head) is 65 years or older (for one- or two-person families). For a given family size, the threshold is higher if there is one child rather than none, and then generally increases with the number of children.² For 1994, the thresholds ranged from \$7,109 for a single elderly person to \$30,981 for a nine-member family, one of

Poverty rates vary considerably across regions, as do the demographic characteristics of the poor. The design of antipoverty policies within a federal system requires an understanding of the reasons for all these variations.

whom was a child; the threshold for a one-adult, two-child family was \$11,940. Each year the thresholds are adjusted for inflation by indexing to the CPI-U.

Table 1 lists poverty rates for the nine Census geographic divisions for 1994, with New York State and California separated from the other states in their divisions.³ The unit of analysis here is families, defined by the Census Bureau to be two or more people "residing together and related by birth, marriage or adoption" (1995, p. 10-1). The family poverty rate varies from 8.2 percent in New England to 15.8 percent in the West South Central region. The East South Central region, California, and New York also had family poverty rates above the national average of 11.6 percent. Regions with high (low) poverty rates

have been found by Bradbury (1996) generally to have a high (low) degree of family income inequality as well.

In addition to varying across the Census divisions, poverty rates also vary considerably across states within the divisions. Family poverty rates by state are displayed in Figure 1. California and New York have family poverty rates considerably higher than the other states in their divisions, and for this reason are treated here as separate geographic units. Other states were not treated separately because of sample size considerations.

The National Academy of Sciences recently issued a report (Citro and Michael 1995) recommending major changes in the way in which the official U.S. poverty rates are calculated. Of particular relevance to this study is the National Academy's recommendation that the poverty thresholds vary over geographic units to reflect differences in the cost of housing. The National Academy report includes a tentative set of housing cost adjustment factors, which vary across Census divisions and within each division by the population size of metropolitan statistical areas. The adjustment factors range from 1.2 for metro areas with at least 2.5 million people in the Pacific region to 0.83 for nonmetropolitan areas (and metro areas with less than 250,000 people) in the East South Central region (Citro and Michael 1995, Table 5-3). Applying these adjustment factors to the official 1994 poverty thresholds results in the regional family poverty rates shown in column (2) of Table 1.⁴ Adjusting for housing cost differences has a strong impact on the pattern of family poverty rates across the Census divisions, although it leaves the national rate unchanged. The West North Central region, which has low-cost housing, now has the lowest poverty rate, while California, which includes the high-cost Los Angeles and San Francisco Bay metro areas, has the highest poverty rate.⁵ New England's poverty rate is also pushed up substantially because of its high cost of housing, increasing from 8.2 to 9.8 percent.

The National Academy report also recommended that the family income measure used in the poverty calculations be expanded to include the value of

¹ The first official thresholds were based on work by Orshansky (1963, 1965); they were revised by interagency committees in 1969 and 1981. Ruggles (1990) provides a history of the development of the thresholds.

² Exceptions are three-person families, where the threshold increases as the number of children increases from one to two, and four-person families, where the threshold decreases as the number of children increases from one to two but increases as the number of children increases from two to three.

³ Data for this and subsequent tables are from the March 1995 Current Population Survey microdata file, which includes income information for calendar year 1994.

⁴ In cases where a metro area had grown larger than the largest metro area population size class for which an adjustment factor was available within its Census division, the adjustment factor for the largest metro size class available within the Census division was used.

⁵ Powers and Dupuy (1994) make a regional cost-of-living adjustment using a price index constructed by the American Federation of Teachers, and find similar changes in regional poverty rates. Friar and Leonard (1995) present poverty rates by state that adjust for differences in the cost of living.

Table 1
Regional Differences in Family Poverty Rates, 1994
 Percent

Census Geographic Division	Poverty Rate (1)	Poverty Rate Adjusted for Cost of Living (2)	Poverty Rate Adjusted for Cost of Living and In-Kind Benefits (3)	Number of Observations (4)
NEW ENGLAND Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut	8.2	9.8	9.4	3,246
MIDDLE ATLANTIC (excluding New York) New Jersey, Pennsylvania	8.9	9.1	8.1	3,462
NEW YORK STATE	14.8	16.1	15.3	2,723
EAST NORTH CENTRAL Ohio, Indiana, Illinois, Michigan, Wisconsin	10.7	10.3	8.9	5,947
WEST NORTH CENTRAL Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas	9.4	8.1	7.2	3,196
SOUTH ATLANTIC Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida	10.6	10.2	9.2	6,943
EAST SOUTH CENTRAL Kentucky, Tennessee, Alabama, Mississippi	13.1	11.0	9.7	1,922
WEST SOUTH CENTRAL Arkansas, Louisiana, Oklahoma, Texas	15.8	14.5	12.6	3,591
MOUNTAIN Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada	9.7	9.0	8.0	3,906
PACIFIC (excluding California) Washington, Oregon	8.7	9.0	8.4	1,706
CALIFORNIA	14.4	17.1	15.9	3,312
UNITED STATES	11.6	11.6	10.4	39,954

Source: Author's calculations using the March 1995 Current Population Survey microdata file, U.S. Bureau of the Census.

measure lowers the national family poverty rate by 1.2 percentage points. States vary considerably in the extent they rely on in-kind benefits rather than cash transfers, so it is not surprising that the impact of the in-kind benefits on family poverty varies considerably by region. The poverty rate for New England drops by less than one-half percentage point, while the rate for the West South Central region drops by nearly 2 percentage points.

One needs to be cautious in interpreting poverty rates adjusted for in-kind benefits and regional differences in the cost of housing, however. The Census Bureau's housing subsidy imputations are based on fairly limited information and may not adequately capture regional variations in the value of the subsidies. (It may also be the case that housing subsidies compensate for differences in housing costs across regions to a greater extent than the Census data suggest.)

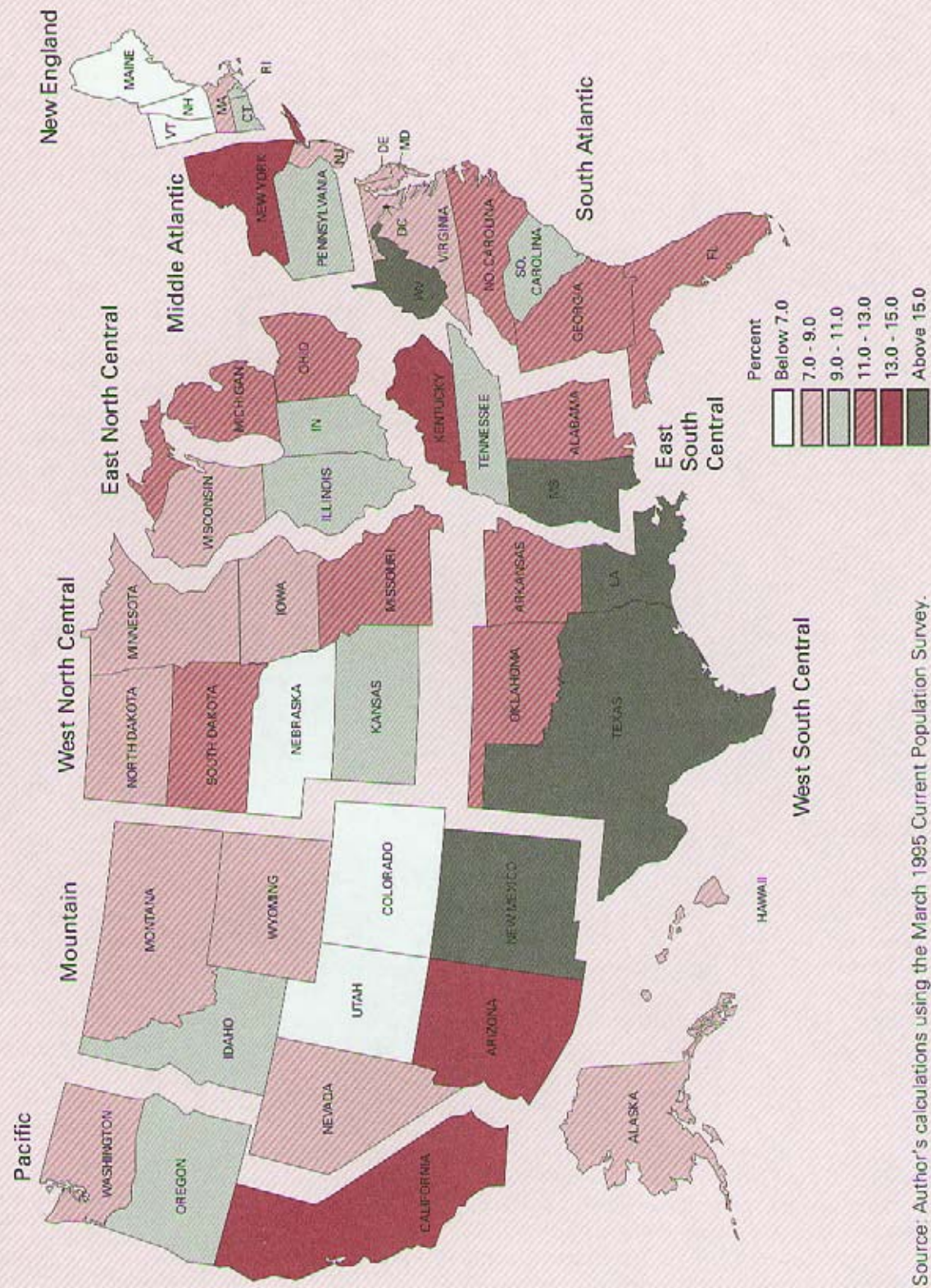
Although incorporation of the value of in-kind benefits and the regional cost-of-living index results in fairly large changes in the regional family poverty rates, some qualitative aspects of how the regional rates vary still appear to be robust. The West South Central region and New York and California con-

nonmedical, in-kind government program benefits such as food stamps, housing subsidies, and subsidized school lunches. Column (3) in Table 1 is based on calculations that compare family incomes including the imputed value of these benefits to the poverty thresholds adjusted for regional differences in housing costs.⁶ The addition of in-kind benefits to the income

⁶ Information on the face value of food stamps received, whether the household lives in publicly subsidized housing, and whether household members receive subsidized school lunches is collected in the March Current Population Survey. Based on this information, the Census Bureau imputes the cash equivalent value of the benefits accruing to each sample family from these programs. Appendix B of *Measuring the Effects of Benefits and Taxes on Income and Poverty: 1992* (U.S. Bureau of the Census, 1993) describes the imputation procedures.

1994 Family Poverty Rates by State

Figure 1



Source: Author's calculations using the March 1995 Current Population Survey.

Table 2
Regional Differences in Poverty Rates for Specific Groups, 1994
 Percent

Census Geographic Division	All Families (1)	Head With No High School Diploma ^a (2)	Head Worked Full Time/ Full Year ^a (3)	Female Head With Children Less Than 6 Years Old (4)	Black Family Head (5)	Hispanic Family Head (6)	Head Immigrated within Last 10 Years ^b (7)	Head Immigrated 10-20 Years Ago ^b (8)
New England	8.2	19.9	1.2	62.9	33.4	37.4	21.9	19.8
Middle Atlantic, excluding New York	8.9	21.1	1.9	63.2	29.2	25.5	17.2	20.3
New York State	14.8	36.9	2.7	71.5	27.9	37.8	41.8	28.7
East North Central	10.7	26.1	2.4	64.1	32.8	20.0	22.8	18.9
West North Central	9.4	24.5	3.0	52.6	30.2	21.0	21.6	0.0
South Atlantic	10.6	24.1	2.1	58.3	22.1	18.8	21.5	20.6
East South Central	13.1	27.1	2.6	68.8	28.3	20.3	47.0	10.5
West South Central	15.8	36.6	4.8	80.1	33.8	30.2	41.4	33.5
Mountain Pacific, excluding California	9.7	27.8	3.2	83.1	28.6	26.3	45.0	24.5
California	8.7	18.5	1.8	57.5	33.4	20.4	28.2	16.8
California	14.4	36.5	4.0	63.2	19.7	28.8	36.1	28.8
United States	11.6	28.7	2.8	62.5	27.4	27.9	32.5	26.0

^aComputed based only on families where neither the head nor spouse was more than 65 years old.

^bIndividuals were classified as immigrants only if they were born in a country where English is not the dominant language.

Source: Author's calculations using the March 1995 Current Population Survey microdata file, U.S. Bureau of the Census.

sistently are well above the national poverty rate, although their relative rankings depend on precisely how poverty is measured. New England, the North Central regions, the Middle Atlantic region (excluding New York), the South Atlantic region, the Mountain region, and the Pacific region (excluding California) are consistently below the national average, although again their rankings relative to each other depend on how poverty is measured.

The National Academy report makes many other suggestions for revising how poverty is defined, including deducting taxes, out-of-pocket medical expenses, work-related expenses, and child care costs (for families with no nonworking parent) from income. These changes would increase measured poverty rates, but it is not clear to what extent the increase would vary over regions. The report also recommends that the way in which the poverty thresholds vary with family size and the number of children be revised, and that the thresholds be changed over time to reflect changes in living standards. Other analysts have suggested that poverty should be defined in terms of consumption rather than income, and Slesnick (1993) has shown that a consumption-based poverty measure, incorporating adjustments for regional and family characteristics that differ from those used

in the official statistics, produces a very different distribution of poverty over regions than does the current official methodology.⁷ This is further reason for caution in drawing conclusions about the regional distribution of poverty.

Regional Differences in Poverty for Specific Groups

Despite the caveats regarding the use of the official poverty figures for regions, it is interesting to examine how poverty rates vary over regions for specific subgroups of the population. Examining Table 2, one can see that in all 11 geographic areas the poverty rate (using the current official U.S. government methodology for determining poverty status) for families where the head (householder) does not have a high school diploma (or equivalent) is much greater than the overall family poverty rate.⁸ However, the

⁷ The equivalence scale adjustment used by Slesnick (1993), rather than the use of a consumption-based definition of poverty, appears to be the primary factor underlying differences between the regional distributions of poverty found by the Census Bureau and by Slesnick.

⁸ Table 2 is based on the official poverty rate methodology, without adjustments for regional cost-of-living differences or in-kind benefits.

Table 3

Regional Differences in the Composition of the Poor, 1994

Family Characteristic	Census Geographic Division											
	New England	Middle Atlantic, excluding New York	New York	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific, excluding California	California	United States
Head with no high school diploma ^a (%)	30.8	35.4	41.4	34.0	32.7	39.6	43.1	49.0	36.7	20.2	49.3	40.3
Female family head (%)	63.3	57.2	60.1	62.2	43.7	55.3	58.2	43.8	48.3	49.4	41.6	52.6
Black family head (%)	17.6	29.3	30.7	33.1	18.1	42.4	41.1	30.0	7.2	9.1	8.6	27.5
Hispanic family head (%)	17.2	14.8	30.4	5.3	2.7	9.6	1.3	33.8	38.5	5.9	53.3	21.4
Head immigrated within last 10 years (%)	6.4	4.6	16.9	2.5	2.0	4.2	.5	6.2	10.7	7.0	19.5	7.6
Head immigrated 10-20 years ago (%)	6.8	6.1	13.3	2.1	.0	5.0	.2	7.5	5.7	5.0	24.4	7.9
Head's annual hours of work ^a	466.6	513.4	445.2	615.9	893.6	560.1	540.9	746.0	818.8	683.7	621.0	622.6
Family's annual hours of work ^b	787.4	848.5	792.2	946.5	1,633.4	1,003.3	871.6	1,297.1	1,410.6	1,216.8	1,174.8	1,079.7
Number of own children less than 6 years old	.8	.5	.7	.7	.6	.6	.5	.6	.7	.7	.8	.6
Number of related children less than 18 years old	1.6	1.7	1.8	1.9	1.8	1.7	1.7	1.9	2.0	1.7	2.1	1.8

^aComputed based on families where neither the head nor the spouse was more than 65 years old.

^bComputed based on annual hours of work for family members between the ages of 18 and 65 where neither the head nor the spouse was more than 65 years old.

Source: Author's calculations using the March 1995 Current Population Survey microdata file, U.S. Bureau of the Census.

poverty rate for this group is especially high in the West South Central region, New York, and California, which have high overall poverty rates, and lower in New England, the Middle Atlantic region (excluding New York), and the Pacific region (excluding California), which have low overall poverty rates. While attaining a high school diploma is an important determinant of poverty status, other factors that vary by region must also matter.

Column (3) of Table 2 shows poverty rates for families where the head (householder) worked at least 50 weeks of 1994, and had a normal work week of at least 35 hours. Not surprisingly, the poverty rate for

this group is relatively low across all eleven areas, but it is especially low for New England and especially high for the West South Central region and California. Again, general regional factors seem to matter.

Demographic characteristics are often good predictors of poverty. Column (4) shows poverty rates for families headed by a single woman with at least one child under the age of six. Families in this group tend to have high poverty thresholds relative to their potential labor earnings; they also often represent a relatively low labor supply because of child care needs and the high tax rates implicit in welfare programs. The poverty rate for this group is extremely

Table 4

Regional Differences in the Composition of the Nonpoor, 1994

Family Characteristic	Census Geographic Division											
	New England	Middle Atlantic, excluding New York	New York	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific, excluding California	California	United States
Head with no high school diploma ^a (%)	11.0	12.9	12.3	11.5	10.5	14.9	17.6	16.0	10.2	8.5	14.4	13.2
Female family head (%)	13.1	12.1	16.1	13.0	10.5	14.0	14.6	12.5	9.6	12.3	13.7	13.0
Black family head (%)	3.1	6.9	13.7	8.2	4.4	17.8	15.7	11.1	1.9	1.7	5.9	9.6
Hispanic family head (%)	2.6	4.2	8.7	2.5	1.1	4.9	.8	14.7	11.5	2.2	22.2	7.3
Head immigrated within last 10 years (%)	2.0	2.2	4.1	1.0	.7	1.8	.1	1.7	1.4	1.7	5.8	2.1
Head immigrated 10-20 years ago (%)	2.4	2.4	5.7	1.1	.4	2.3	.3	2.8	1.9	2.4	10.1	3.0
Head's annual hours of work ^a	1,760.4	1,685.7	1,646.5	1,768.4	1,826.9	1,713.7	1,691.6	1,805.3	1,756.5	1,757.8	1,709.0	1,738.8
Family's annual hours of work ^b	3,100.6	2,977.4	2,890.8	3,104.0	3,206.0	3,011.7	2,910.2	3,145.4	3,020.2	2,947.6	3,017.4	3,041.0
Number of own children less than 6 years old	.3	.3	.3	.3	.3	.2	.2	.3	.3	.3	.3	.3
Number of related children less than 18 years old	.8	.8	.9	.9	.9	.8	.9	.9	1.0	.9	1.0	.9

^aComputed based on families where neither the head nor the spouse was more than 65 years old.

^bComputed based on annual hours of work for family members between the ages of 18 and 65 where neither the head nor the spouse was more than 65 years old.

Source: Author's calculations using the March 1995 Current Population Survey microdata file, U.S. Bureau of the Census.

high in all 11 regions. Unlike the previous two cases, however, the poverty rate for female-headed families with young children is actually somewhat below the national average in the high-poverty West South Central region and slightly above the national average in low-poverty New England. Families that have a black or Hispanic head (householder) have high poverty rates in all regions, and families with a head or spouse over 65 years old have relatively low poverty rates across all regions (not shown).⁹ As with female-headed families with young children, the re-

gional poverty rates for these groups do not seem to vary systematically with the overall regional poverty rates.

Families headed by a recent immigrant from a non-English-speaking country (Columns (7) and (8)) have high poverty rates in all regions, and especially so in New York, California, and the West South

⁹ In the case of families headed by a married couple, the spouse with the higher predicted earnings capacity (the definition of which is discussed below) was designated to be the head.

Central region.¹⁰ Immigrants who arrived in the United States within the past 10 years generally have had higher poverty rates than those who arrived 10 to 20 years ago, reflecting their lower degree of assimilation and possibly differences in cohort characteristics as well.

Regional Differences in the Composition of the Poor

Tables 3 and 4 show how the compositions of the poor and nonpoor populations differ, by region. The proportion of family heads who lack a high school diploma varies considerably, with the New England, North Central, and Pacific (excluding California) regions having relatively low proportions of this group in both their poor and their nonpoor populations, and the South Central regions having relatively high proportions among both groups. Families with female heads are a higher proportion of the poor in the relatively low-poverty New England and East North Central areas than in the high-poverty West South Central region and California. Black families make up a higher proportion of both the poor and nonpoor in the southern regions than elsewhere, while a high proportion of Hispanic families, poor and nonpoor, is found in the western areas. Immigrant families make up a large share of both the nonpoor and the poor in New York and California.

Nonpoor families tend to work many more hours than poor families in all areas of the country; this is true whether one examines hours worked by the family head or hours worked by all adult family members. However, there is a fair amount of regional variation in hours worked by the poor. The poor work relatively few hours in New England and the Mid Atlantic region, while they have relatively high annual hours of work in the West North Central, West South Central, and Mountain regions.

One area of similarity across regions is in the number of children per family. The poor tend to have roughly twice the number of children living with them that the nonpoor do, in all areas of the country. The number of children per family varies little across regions.

¹⁰ Since immigrants are likely to be at greater risk of poverty primarily because of language problems, immigrants from Ireland, Canada, Australia, New Zealand, and the United Kingdom were not included in the immigrant group. Sample members born in Puerto Rico and other U.S. outlying territories were classified as immigrants. Some regions have relatively few immigrants and the calculated poverty rates must be treated with caution because of the small sample sizes.

II. Explaining Regional Differences in Poverty

The descriptive statistics presented so far suggest that both economic and demographic factors matter in explaining regional differences in poverty rates. Educational attainment varies quite a bit over regions and is strongly associated with a reduced probability of being poor. Demographic factors, such as the family being headed by a single parent or by a minority group member, are associated with an increased probability of being poor.

Both economic and demographic factors matter in explaining regional differences in poverty rates. Educational attainment is strongly associated with a reduced probability of being poor.

More formal statistical analysis is necessary, however, to sort out the relative importance of factors underlying regional differences in family poverty. Table 5 displays the results of a set of probit regressions examining the determinants of family poverty status. In each regression, the dependent variable equals one if the family's income is below the poverty threshold, and otherwise equals zero. The official definition is used in determining poverty status for these regressions; regional cost-of-living differences and in-kind benefits are not taken into account in this measure. Data for the probit analysis come from the March 1995 Current Population Survey (CPS), which is also the source for the descriptive tables and the official U.S. poverty estimates for 1994. All 39,954 families in the CPS file are included in the analysis.¹¹

The probit regression results reported in column (1) of Table 5 include only a set of 10 geographic area indicator variables (New England was treated as the base case and is absorbed into the constant term). The coefficients have been transformed to equal the change in the probability of the family being poor owing to the indicator variable being equal to one rather than

¹¹ The unit of analysis is primary families. Secondary families were not treated as separate observations.

zero.¹² Thus, the coefficient for a geographic area can be interpreted as showing the difference in the probability of being poor due to living in that area relative to living in New England. A negative coefficient indicates that living in the area is associated with a lower probability of being poor than living in New England, while a positive coefficient indicates the opposite. All 10 estimated coefficients are positive, indicating that the probability of being poor is lower in New England than in the other areas. This regression is simply another way of summarizing the interregional differences in poverty rates reported in Table 1.

To some degree, the interregional differences in poverty rates may be due to differences across regions in the distribution of family type and size. Families with young children headed by a single woman are especially likely to be poor, and regions with a disproportionately large number of families in this group might be expected to have higher than average poverty rates. To control for this, variables indicating whether the family is headed by a single woman or by a married couple are added to the specification, along with another variable measuring the number of children under six in families headed by a single woman. If the interregional differences in poverty rates are being driven by interregional differences in these demographic characteristics, then inclusion of these variables in the probit regression should reduce the variation in the regional coefficients (and shrink their magnitude toward zero if demographic effects account for New England's low poverty rate).

Interregional differences in the distribution of family size may also help account for the interregional differences in poverty rates. Since the poverty thresholds increase with family size, a region with a higher-than-average share of large families might be expected to have a higher-than-average poverty rate (unless the large families also tend to have higher incomes). To investigate this, a variable equal to the natural logarithm of the family's poverty threshold is included in the regression in column (2).¹³

The coefficients on the newly included variables are of the expected sign, large in magnitude, and

statistically significant. However, inclusion of these variables makes only a small difference in the geographic area coefficients. The demographic variables are useful in predicting whether a given family will be poor, but they are not very helpful in explaining interregional differences in poverty.

The next explanatory factor investigated is the degree to which the regional coefficients decrease when we control for the potential earnings of families. Geographic differences in the distribution of educational attainment and other aspects of human capital would result in some regions having higher poverty

Interregional differences in family poverty rates in the United States are to a large extent due to interregional differences in family earnings capacity relative to the poverty thresholds, and human capital is the prime determinant of earnings capacity.

rates than others. If differences in human capital across regions are driving the interregional differences in poverty rates, then the magnitude of the regional coefficients should decrease substantially (and differences between them should narrow) when potential earnings is included in the specification.

The measure of potential earnings used here is based on the concept of "earnings capacity" introduced by Garfinkel and Haveman (1977) and recently used by Haveman and Buron (1993). A family's annual earnings capacity is equal to the amount that could be earned by its adult members if all of them were to work full-time for the entire year. It will differ from actual family labor income to the extent that some of the adult family members are working less than this. As Table 3 has shown, on average the heads of poor families work considerably less than standard full-time, full-year hours.

Since wage rates are not observed for sample members who are not working, wage rates must be imputed in order to calculate earnings capacity. To do this, log wage equations with standard Heckman sample selection corrections were estimated sepa-

¹² This probability is evaluated at the mean probability of a family being poor (0.116). The poverty rate probit regressions were estimated using the March supplement weights included in the CPS microdata file.

¹³ The coefficient for this variable (and other continuous variables in subsequent regressions) is equal to the partial derivative of the probability of the family being poor with respect to the independent variable.

Table 5
Family Poverty Probit Regressions^a

	Division Effects Only (1)	Poverty Threshold and Selected Demographic Variables Added (2)	Earnings Capacity Added (3)	Additional Variables Controlled For (4)	Earnings Capacity Conditional on Region ^b (5)
Census Divisions					
Middle Atlantic, excluding New York	.009 (.010)	.016 (.012)	.007 (.013)	-.009 (.014)	.006 (.014)
New York State	.081 (.012)	.065 (.013)	.059 (.014)	.033 (.015)	.046 (.015)
East North Central	.032 (.009)	.027 (.010)	-.003 (.011)	.001 (.013)	.004 (.013)
West North Central	.016 (.011)	.036 (.012)	.011 (.013)	.045 (.018)	.016 (.016)
South Atlantic	.030 (.009)	.035 (.010)	.009 (.012)	.010 (.013)	-.001 (.013)
East South Central	.061 (.011)	.065 (.013)	.018 (.013)	.005 (.016)	-.009 (.015)
West South Central	.091 (.011)	.105 (.012)	.053 (.013)	.040 (.015)	.012 (.014)
Mountain	.019 (.011)	.029 (.013)	.000 (.014)	.009 (.016)	-.007 (.015)
Pacific, excluding California	.007 (.012)	.017 (.014)	-.004 (.015)	-.013 (.016)	-.017 (.015)
California	.075 (.010)	.072 (.012)	.037 (.013)	.008 (.015)	.006 (.015)
ln(Poverty Threshold)		.175 (.007)	.343 (.008)	.325 (.021)	.316 (.021)
ln(Earnings Capacity)			-.303 (.005)	-.278 (.007)	-.274 (.007)
Married Couple Family		-.169 (.009)	-.019 (.009)	.019 (.009)	.017 (.009)
Female Family Head		.064 (.009)	.014 (.009)	.007 (.010)	.007 (.010)
Number of Own Children Less Than 6 in a Female-Headed Family		.128 (.005)	.030 (.006)	.002 (.007)	.003 (.007)
Family Head or Spouse More Than 65 Years Old				-.092 (.007)	-.081 (.007)
Number of Related Children Less Than 18 Years Old				-.048 (.004)	-.048 (.004)
Number of Own Children Less Than 6 Years Old				.028 (.004)	.029 (.004)
Family Head Did Not Work Due to Illness or Disability				.111 (.010)	.125 (.011)
Spouse Did Not Work Due to Illness or Disability				.032 (.011)	.038 (.011)

^aFor binary variables, the coefficients are changes in the probability of being in poverty associated with the variable being equal to one rather than zero; for continuous variables, the coefficients are the partial derivatives of the probability of being in poverty. Standard errors are in parentheses.

^bThe census division the family lived in was used in predicting earnings capacity.

Table 5 continued
Family Poverty Probit Regressions^a

	Division Effects Only (1)	Poverty Threshold and Selected Demographic Variables Added (2)	Earnings Capacity Added (3)	Additional Variables Controlled For (4)	Earnings Capacity Conditional on Region ^b (5)
Percentage of Weeks in 1994 that the Family Head Was Laid Off or Looking for Work				.160 (.016)	.185 (.016)
Percentage of Weeks in 1994 that the Family Spouse Was Laid Off or Looking for Work				-.061 (.025)	-.047 (.025)
Black Family Head				.009 (.006)	.005 (.006)
Hispanic Family Head				.015 (.008)	.010 (.008)
Immigrant Family Head Who Came to the United States Between 1975 and 1985				.040 (.011)	.023 (.011)
Immigrant Family Head Who Came to the United States Between 1986 and 1995				.079 (.012)	.063 (.012)
Family Head Is 21 Years Old or Younger				.033 (.015)	.035 (.015)
Value of Family In-Kind Benefits (Thousands of Dollars)				.090 (.003)	.094 (.003)
Regional Cost-of-Living Adjustment Index				-.042 (.028)	.085 (.029)
1994 State Unemployment Rate (Fraction of the Labor Force Unemployed)				.548 (.304)	.732 (.301)
Ln Likelihood	-14,238	-11,623	-9,023	-7,933	-8,022
Independent Variables	10	14	15	30	30
Observations	39,954	39,954	39,954	39,954	39,954

rately for men and for women, and then used to impute wages for each adult sample member. For each sample member, earnings capacity was calculated by assuming that the person worked at their imputed wage rate for 40 hours per week for 52 weeks. Earnings capacity for the family was calculated by summing the individual earnings capacities of all family members who were at least 18 years old. Further details regarding the earnings capacity imputations are provided in the Appendix.

Since regional variables were not included in the wage imputations, the distribution of the earnings

capacity measure will vary over regions because of differences across regions in the distribution of workers' characteristics, but not because of differences in how these characteristics are "priced" in the regional labor markets. For example, regional variation in the earnings capacity measure will capture differences in the level of educational attainment across regions, but not interregional differences in the economic return to education.

The ability of a family to work its way out of poverty is captured by its earnings capacity relative to its poverty threshold. As the ratio of a family's earn-

ings capacity relative to the poverty line increases, one would expect the probability of the family being poor to decrease. To investigate the quantitative importance of this effect, the regression in column (3) of Table 5 adds the natural log of predicted family earnings capacity to the specification.¹⁴ Since the log of a ratio is equal to the difference between the logs of the numerator and denominator, including the natural logs of family earnings capacity and the poverty threshold in the specification is equivalent to instead including both the log of the ratio of family earnings capacity relative to the poverty threshold and the log of the poverty threshold itself.

All of the geographic coefficients shrink in size when the earnings capacity variable is included in the specification, most of them substantially. The two largest geographic coefficients in the previous column, those for California and the West South Central region, both decrease by nearly 50 percent. Of the other geographic coefficients, only the one for New York remains statistically significant (at conventional levels).

The probit results can be interpreted as indicating that interregional differences in family poverty rates in the United States are to a large extent due to interregional differences in family earnings capacity relative to the poverty thresholds.¹⁵ A prime reason why other regions have higher poverty rates than does New England is that a larger proportion of their populations have low earnings capacity. Once one controls for the ability of families to work their way out of poverty, the regional effects are much smaller than before. This is surprising, since actual hours of work by members of poor families tend to be well below the full-time, full-year level. A likely explanation is that those families whose work hours fall significantly below the full-time, full-year level have low hours of work because of their low earnings capacity. With potential earnings low, participation in welfare programs, which often place implicit taxes on earnings of beneficiaries of close to 100 percent, becomes more attractive and hours of work are reduced.

The relative earnings capacity effect is largely a combination of the effects of human capital and of family characteristics. Family size and composition determine the poverty threshold that is applicable, and also determine the number of potential earners; human capital is the prime determinant of the earnings capacity of the potential earners. Since the poverty threshold variable had relatively little effect on the geographic coefficients when it was entered in the equation without the earnings capacity variable, interregional variation in the distribution of human capital

appears to be the dominant force in generating the regional disparities in poverty rates. However, this earnings capacity measure is probably also capturing discrimination and other labor market constraints faced by minority group workers.

The analysis here is broadly consistent with research by Powers and Dupuy (1994) which also examined regional differences in poverty rates. After adjusting regional poverty rates for interregional differences in the cost of living, the generosity of transfer payments, and demographic characteristics, Powers and Dupuy still find large differences in poverty rates across regions, which they attribute to interregional differences in economic conditions. The research in this study suggests that the regional differences in economic conditions identified by Powers and Dupuy are largely the result of differences in human capital across regions.

Blank and Card (1993) also examine regional differences in poverty rates, although their focus is on the use of regional changes in poverty to quantify the effects of economic growth and wage dispersion on poverty. They find that decreases in wage dispersion within a region and increases in a region's median wage level are both strongly associated with a decreased level of poverty. This is also broadly consistent with the analysis in this study, although the focus is quite different.

The next probit regression, reported in column (4) of Table 5, adds several additional variables that one might expect to be useful in predicting whether a family is classified as poor. The inclusion of the new variables results in the coefficient for the California indicator variable becoming small and insignificant. The West South Central and New York coefficients shrink substantially, while the West North Central coefficient increases in size. The new variables themselves have coefficients that in many cases are large and highly significant. Many capture constraints that individuals may face in labor markets because of

¹⁴ Since one would expect the decrease in the probability of being poor associated with a given increase in the ratio to lessen as the ratio increases, the natural log transformation is appropriate. The standard errors reported in Table 5 have not been adjusted to take into account that family earnings capacity is based on the wage equations estimated in the previous stage.

¹⁵ The log earnings capacity coefficient is of somewhat smaller magnitude than the log poverty threshold coefficient, and of the opposite sign. This suggests that it is the log of the ratio of earnings capacity over the poverty threshold (relative earnings capacity) that is the dominant factor, with the log poverty threshold having a small positive effect on the probability of being poor independent of its role in the ratio.

discrimination, poor language skills, or deficient demand. California, New York, and the West South Central areas have relatively high concentrations of minority group members and recent immigrants who may face such constraints. California and New York were also slow to recover from the recession in the early 1990s and had relatively high unemployment rates in 1994.

The poverty regression controlling for earnings capacity discussed above (see column (3)) is based on wage imputations that do not control for regional effects. When regional effects are included in the log

When earnings capacity incorporating regional effects is controlled for in the poverty regression, only New York State is associated with a family poverty rate statistically significantly higher than that of New England.

wage regressions used as input into the earnings capacity calculations, a somewhat different picture emerges.¹⁶ The coefficient estimates in column (5) of Table 5 show that when earnings capacity incorporating regional effects is controlled for in the poverty regression, only New York State is associated with a family poverty rate statistically significantly higher than that of New England. All the other geographic coefficients are less than 0.02 and statistically insignificant.

The regional effects in the wage regressions may be capturing regional differences in the return to education and other components of human capital. Topel (1994) shows that wages of low-skilled workers deteriorated particularly rapidly during the 1970s and 1980s in regions where the supply of unskilled workers grew relative to other areas of the country, suggesting that regional variation in labor supply results in regional differences in the "price" of skill.¹⁷

It is puzzling that, unlike the other geographic areas, a good part of New York State's high poverty rate is not "explained" by the regression where family earnings capacity incorporates regional effects. The log wage regressions used to predict earnings capacity

allow predicted wages to differ due to regional effects, but do not capture regional differences in the spread of wages around the predictions. It may be that the degree of variability of wages around their expected values is greater in New York than elsewhere, with more people having low "draws" from the wage distribution (given the characteristics held constant in the wage regressions) as a result. Investigating whether this is true would be an interesting topic for future research.

III. Summary and Conclusion

This study has examined the extent of interregional variation in poverty and developed a partial explanation for it. The family poverty rate and characteristics of the poor vary widely over regions of the United States. However, much of the variation in the poverty rate can be explained by variation in the potential earnings of families relative to the poverty thresholds determined by family size and composition. Other factors, such as unemployment and whether the family recently immigrated to the United States, also are important in determining the poverty status of individual families, but play a somewhat smaller role than earnings capacity in explaining regional differences in poverty rates.

The thrust of recent federal antipoverty policy

¹⁶ In these regressions, the 10 geographic dummy variables (plus an additional dummy variable for Alaska), interacted with an indicator variable for living in a metropolitan statistical area and indicator variables for three levels of educational attainment, were included in both the labor force participation probit equation and the log wage equation.

¹⁷ In addition to regional differences in the return to human capital investment, the regional effects are probably also capturing a combination of regional differences in the distributions of employment by occupation and industry, and compensating differentials for regional differences in the cost of living and regional attractiveness. The compensating differentials should be accounted for (and to some extent are accounted for, by including the regional cost-of-living index in the regression), but the occupation and industry that would be filled by someone who is currently not working may bear only a very weak relationship to the "typical" occupation and industry in the Census division the worker lives in. To the extent that the regional effects in the wage equation are capturing regional variation in the occupation and industry mix, it may be better not to condition the wage imputations on regional factors. Another potential problem is that the "true" way in which regional factors (conditional on relative earnings capacity) affect the probability of a family being poor may be more complex than the simple additive effects included in the probit specification. Including the regional variables in the log wage equation may result in the relative earnings capacity variables picking up the effect of nonlinearities in the effects of the regional variables in the poverty equation.

has been to give more leeway to states in designing programs, to set limits on the maximum amount of time that individuals can collect benefits, and to require a greater degree of labor market activity by welfare program beneficiaries. While the primary goal of welfare reform is not to reduce interregional differences in poverty, it is interesting to consider how government policy can affect differences in the poverty rate across regions. The analysis in this article suggests that it is largely a combination of interregional differences in family size and composition and human capital that produces differences in the poverty rate

across regions. Human capital accumulation may be accelerated with greater involvement of the low-income population in the labor force, but this is likely to be a small effect, in the absence of major new training and education programs. In addition, low-skilled workers may face increased labor market competition in areas that have large welfare populations (and will experience the greatest increase in the supply of low-skilled workers). Interregional differences in poverty rates are likely to persist in the absence of changes in the interregional distribution of human capital.

Appendix

Earnings Capacity Imputation Procedures

The first step in imputing earnings capacity was to use standard selectivity adjusted regression methods to impute wage rates for all adult sample members. The selectivity adjustment is employed to allow for differences in the average value of unobserved determinants of wages between those who work and those who do not.¹⁸ Two equations were specified, a log wage equation and a selection equation:

$$\begin{aligned} \ln w_i &= x_i \beta + \varepsilon_i \\ y_i^* &= z_i \gamma + \nu_i \\ y_i &= 1 \quad \text{if } y_i^* > 0 \\ y_i &= 0 \quad \text{if } y_i^* \leq 0 \end{aligned}$$

where i is an index over individuals (sample members); w_i is the wage rate; x_i is a row vector of observed predictors of wages; y_i is a dummy variable equal to one if the sample member normally worked at least 35 hours per week and worked at least 50 weeks in 1994, and equal to zero otherwise; z_i is a row vector of observed predictors of y_i , and β and γ are column vectors of parameters. The x vector (log wage equation) consists of age and age squared, a set of seven educational attainment dummy variables, the number of children less than six years old, the number of related children under 18 years old, and indicator variables as follows: for marital status; for whether the person is black, Hispanic, or both Hispanic and foreign-born; for whether the person immigrated in the last 10 years or 10 to 20 years ago; for whether the person reported having a work disability; and for whether the person was a veteran of the armed forces. The full-time/full-year labor force participation equation includes all of the variables in the log wage equation plus family income from assets, child support payments, and whether the family owned their house. The

additional variables in the labor force participation equation are intended to capture non-wage determinants of participation.

The two error terms, ε_i and ν_i , are assumed to be drawn from a bivariate normal distribution (with the variance of ν_i normalized at 1). Given this distributional assumption, the expectation of individual i 's wage rate conditional on x_i and y_i is:

$$E(w_i | x_i, y_i) = \exp\left(x_i \beta + \frac{1}{2} \sigma_\varepsilon^2 (1 - \rho^2 \delta_i) + \rho \sigma_\varepsilon \lambda_i\right)$$

where σ_ε^2 is the variance of ε , ρ is the correlation coefficient between ε and ν ,

$$\begin{aligned} \lambda_i &= \frac{\phi(z_i \gamma)}{\Phi(z_i \gamma)} & \text{if } y_i = 1 \\ \lambda_i &= \frac{\phi(z_i \gamma)}{1 - \Phi(z_i \gamma)} & \text{if } y_i = 0 \\ \delta_i &= \lambda_i (\lambda_i + z_i \gamma) \end{aligned}$$

$\phi(\)$ is the standard normal density function, and $\Phi(\)$ is the standard normal distribution function.

Estimation was performed separately for men and women. In each case, the selection equation was first estimated using a maximum likelihood estimator. The log wage equation was next estimated for full-time/full-year workers using ordinary least squares, with the estimated values of λ_i included as a regressor. Observations were excluded from the estimation if the person had self-employment income, or if he or she was either less than 18 years old or older than 65. Parameter estimates are available from the author upon request.

The next step was to impute wage rates for each sample member using the formula for the conditional expectation shown above. The earnings capacity (expected full-time/full-year earnings) of each sample member was then computed by multiplying the imputed wage rate by 40 (hours per week) times 52 (weeks per year). Finally, earnings capacity for the family was calculated by summing the individual earnings capacities of all family members who were at least 18 years old.

¹⁸ The econometric method used here is based on Heckman (1976). Greene (1993) provides a simple exposition.

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