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Counting the Poor: Estimates of the Cost-of-Living Adjusted U.S. Poverty Population, 1969


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Recommended Citation

Hadden, Kenneth and Spiggle, Susan, "Counting the Poor: Estimates of the Cost-of-Living Adjusted U.S. Poverty Population, 1969" (1980). *Storrs Agricultural Experiment Station*. 83.
<https://opencommons.uconn.edu/saes/83>

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Received for publication May 15, 1979

The research reported in this publication was supported in part by Federal funds made available through the provisions of the Hatch Act.

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COUNTING THE POOR:
COST-OF-LIVING ADJUSTED ESTIMATES
OF THE U.S. POVERTY POPULATION, 1969

by

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I. INTRODUCTION

In 1970 the decennial Census of Population and Housing attempted to identify the numbers of persons in poverty for the nation, regions, states and selected localities. This was accomplished by comparing family income and income of unrelated individuals as reported on Census questionnaires to a matrix of poverty thresholds (see below) to determine whether the reported income was above or below the threshold appropriate to that family or individual. Those families, or more correctly, the members of those families as well as those unrelated individuals who fell below the poverty level were so designated and, when aggregated, produced a count of poor for the nation, regions, states and localities.

The poverty threshold matrix employed by the Census was developed by the Social Security Administration (Orshansky, 1965) and subsequently modified and periodically revised (cf. U.S. Bureau of the Census, 1969). This matrix, which embodies what has become the federal government's official definition of poverty, incorporates separate poverty thresholds depending upon family size, number of related children under 18 years of age, sex and age of the family head, and farm-nonfarm residence. At the core of this definition of poverty and, of course, of the matrix of poverty thresholds is the cost of an economy food plan developed by the U.S. Department of Agriculture. Costs for nonfood

Note: Received for publication May 15, 1979. This report has benefitted considerably from the suggestions and support of Douglas M. Crockett and Connecticut Legal Services, Inc.. Michele Dubiel ably assisted with the compilation of data and Wendy Fall, as usual, did a fine job typing the various drafts of this report. Any factual or judgmental errors are, of course, the sole responsibility of the authors.

items are taken to be functions of the economy food plan's cost. In short, the matrix of poverty thresholds is built upon a narrow set of empirical data.

Quite apart from the general conceptual question of whether the official poverty definition generates thresholds which meaningfully distinguish the poor from the non-poor, the thresholds have been criticized for their failure to take account of inter-areal cost-of-living differences (except for the above mentioned farm-nonfarm distinction). The Bureau of the Census is apparently well aware of this deficiency: "Poverty thresholds are computed on a national basis only. No attempt has been made to adjust these thresholds for regional, state or other local variations in the cost-of-living" (U.S. Bureau of the Census, 1972, Appendix B, P. APP-26; see Fuchs (1967) for a somewhat different criticism). To the extent that inter-areal cost-of-living differences do exist, the use of a national poverty standard results in the numbers of poor being undercounted in high cost-of-living areas and overcounted in low cost-of-living areas. Increasingly large amounts of federal funds are allocated to states and localities on the basis of the number of poor residing there. As a result, the failure to take account of existing cost-of-living differences in the past and, of course, any future decision to do so are likely to have important practical and political ramifications.

Ideally, one might wish to have reliable information for a large number of localities concerning minimally adequate levels of consumption for a broad range of goods and services which families of differing composition and sizes require, along with prices of those goods and services, so that both consumption and price differences between localities might be reflected in cost-of-living figures. These data do not presently exist and their acquisition would be a large and expensive task.

The closest extant approximation to this ideal is contained in the "lower budgets" for an urban family of four and an elderly couple compiled and published by the Bureau of Labor Statistics (cf. U.S. Department of Labor, 1970; 1972). These reports provide detailed information on living costs for three different levels of living (i.e., a lower budget, an intermediate budget and a higher budget) for 39 metropolitan areas, one nonmetropolitan community (Anchorage, Alaska) and four broad nonmetropolitan regions. The lower budget is relevant here since the cost differentials reflected in it seem most germane to the low income (poverty and near poverty) populations. It is important to note that the budgets are hypothetical since they "do not describe how families actually spend their money, but rather answer questions on how much it costs, at current price levels, to purchase the specified lists of goods and

services drawn up to represent different levels of living" (U.S. Department of Labor, 1972, p. 1).

A distinctive feature of the BLS budgets, and one which makes them more desirable than available alternatives for purposes of adjusting poverty thresholds for inter-areal cost-of-living differences, is that the budgets attempt to reflect both consumption and price differences between areas for a range of goods and services. However, Sherwood (1977) has criticized the BLS budgets on both counts. He argues that the "market basket" of goods and services (i.e., consumption) varies from one area to another at the subjective discretion of the budget makers and that, as a result, the market baskets may not actually produce the same level of satisfaction in all budget areas; and he argues that the price data have been collected on such a small scale within each budget area as to prohibit an assessment of the statistical reliability of the prices. Sherwood also points out that budgets are not available for geographic areas other than those specified above. These points clearly indicate that the BLS budgets are not the ideal data we would like to have and strongly suggest that usage of the budgets for cost-of-living adjustment purposes be accordingly qualified and tentative. In short, we will not obtain definitive cost-of-living adjustments to the poverty thresholds by using the BLS data; there is, in fact, no way presently open to us to obtain definitive results.

It seems clear that living costs do vary across areas (see, e.g., Urban Systems Research and Engineering, Inc., 1976, Ch. VI; Economic Research Service, USDA, 1976), particularly for housing and utilities. The BLS budget data provide a means (but obviously not the ideal means) of estimating the magnitude of the variation. The census poverty thresholds do not take account of any cost-of-living variation between metropolitan areas or between states or regions. The remainder of this report is devoted to obtaining estimates of the number of poor people (a) in those metropolitan areas for which BLS budgets are available, and (b) in each state, by adjusting poverty thresholds on the basis of the BLS cost-of-living data and then applying the adjusted thresholds to appropriate income distributions as reported by the Bureau of the Census. The methods employed, which differ somewhat for BLS metropolitan areas and states, are presented in detail in subsequent sections of this report.

II. COST-OF-LIVING ADJUSTED ESTIMATES OF THE POOR FOR BLS METROPOLITAN AREAS

In this section we will obtain and present estimates of the poor populations, adjusted for inter-areal cost-of-living differences, for the 34 metropolitan areas (Standard Metropolitan Statistical Areas or Standard Consolidated Areas, hereafter SMSAs) which exceeded 250,000 population in 1970 and for which the BLS has estimated living costs for 1969-70. The estimates are not current, but rather refer to 1969 because our three basic pieces of information -- the census income distributions, the poverty threshold matrix, and the BLS budget data -- all pertain to 1969.

A. Methodology and An Illustration (Hartford, CT)

We begin by noting that the family composition detail of our estimates is constrained by the detail of the Census's published income distributions, for reasons that will become evident. As a result, only a portion of the poverty threshold matrix is relevant (see Table 1); we are, in

Table 1: Weighted Average Thresholds at the Poverty Level in 1969 by Size of Family for Nonfarm Residence

<u>Size of Family</u>	<u>Weighted Average Poverty Threshold</u>
2 persons	\$2383
3 persons	2924
4 persons	3743
5 persons	4415
6 persons	4958
7 or more persons	6101
Unrelated individuals	1840

Source: U.S. Bureau of the Census, 1972, Appendix B, Table A.

effect, ignoring other variables in the matrix (e.g., sex of family head, age of family head, number of related children under 18) which will require an adjustment later.

Making use of the BLS "lower" budget for an urban family of four persons, we take the lowest area budget

presented -- the nonmetropolitan South -- as a standard and determine proportionately how much higher living costs are in each of the 34 SMSAs; this provides us with a "cost-of-living multiplier" (see Table 2). The last column in Table 2 shows the adjusted poverty threshold for a four person family; that is, the cost-of-living multiplier for each SMSA, is applied to the poverty threshold for a family of four from Table 1 (\$3743). This adjusted poverty threshold is perfectly correlated with the lower budget across SMSAs but has been scaled-down to approximately the original poverty threshold level (except, of course, for the upward cost-of-living adjustment). Each of the other poverty thresholds appearing in Table 1 are similarly adjusted using the multiplier for each SMSA. Making use of published Census income data by size of family for each SMSA, we then count the number of people in each family size who have incomes below the appropriate adjusted poverty threshold. These counts by family size are aggregated for each SMSA thus providing us with a preliminary cost-of-living adjusted count of the poor population in each of the 34 SMSAs.

An Example -- Hartford, CT SMSA: The first column of Table 3 presents the adjusted poverty thresholds by family size for Hartford; the remainder of the table contains the numbers of families falling within each of the Census income categories. The income categories encompassing the adjusted poverty thresholds are indicated by parentheses; the number of persons in each family size who fall below the adjusted poverty threshold are calculated by summing the number of families in the income categories below that containing the adjusted threshold and adding to that sum the number of families, below the threshold within the income category containing the threshold, obtained by linear interpolation, and finally multiplying the sum by the number of persons in the families. For example, for family size 2, we sum $1120 + 1074 + (.931 \times 2314) = 4348.3$. Multiplying the number of families below the adjusted poverty threshold times the number of persons in each family (i.e., two) yields an estimate of 8697 persons living in families with two members below the adjusted threshold. We similarly obtain estimates for each of the other family sizes, as shown in Table 4, and sum across the various family size categories to obtain our preliminary adjusted estimate of the number of poor in Hartford in 1969.

A Family Composition Effect: It would be inappropriate to compare the adjusted number of poor obtained in the above described way with the number obtained by the Census and to conclude that the difference is solely due to the cost-of-living adjustment. In addition to a cost-of-living effect, the adjusted figures also contain a family composition effect arising out of our use of less detailed poverty thresholds

Table 2: Annual Costs of a Lower Budget of a Four Person Family (Spring 1970), Cost-of-Living Multiplier, and Adjusted Poverty Thresholds for a Four Person Family: 34 SMSAs

<u>SMSA</u>	<u>Annual Costs of a Lower Budget</u>	<u>Cost-of-Living Multiplier*</u>	<u>Adjusted Poverty Thresholds</u>
Atlanta	\$6424	1.04	\$3893
Austin	6197	1.01	3780
Bakersfield	6910	1.12	4192
Baltimore	7018	1.14	4267
Baton Rouge	6411	1.04	3893
Boston	7351	1.20	4492
Buffalo	7022	1.14	4267
Chicago-NW Indiana	7273	1.18	4417
Cincinnati	6611	1.07	4005
Cleveland	7080	1.15	4304
Dallas	6683	1.09	4080
Dayton	6712	1.09	4080
Denver	6697	1.09	4080
Detroit	6931	1.13	4230
Hartford	7577	1.23	4604
Honolulu	8597	1.40	5240
Houston	6481	1.05	3930
Indianapolis	7101	1.15	4304
Kansas City	6981	1.14	4267
Lancaster	6698	1.09	4080
Los Angeles-Long Beach	7507	1.22	4566
Milwaukee	7079	1.15	4304
Minneapolis-St. Paul	7140	1.16	4342
Nashville	6326	1.03	3855
New York-NE NJ	7183	1.17	4379
Orlando	6562	1.07	4005
Philadelphia	6958	1.13	4230
Pittsburgh	6701	1.09	4080
San Diego	7166	1.17	4379
San Francisco- Oakland	7686	1.25	4679
Seattle-Everett	7630	1.24	4641
St. Louis	6987	1.14	4267
Washington, D.C.	7242	1.18	4417
Wichita	6722	1.09	4080

* Base of the multiplier is the nonmetropolitan South;
lower budget = \$6150

Source: U.S. Department of Labor, 1972, Table A-1.

Table 3: Adjusted Poverty Thresholds and Family Income by Family Size for Hartford, CT
 SMSA: 1969

Family Size Categories	Adjusted Poverty Threshold	Distribution of Families by Census Income Categories								
		Less than \$1000	\$1000-1999	\$2000-2999	\$3000-3999	\$4000-4999	\$5000-5999	\$6000-6999	\$7000-7999	More than \$8000
2 members	\$2931	1120	1074	(2314)	2515	2597	2777	3158	3467	37192
3 members	3597	413	436	528	(635)	801	1090	1312	1739	27918
4 members	4604	351	340	338	506	(544)	657	927	1291	29273
5 members	5430	176	220	215	335	320	(332)	501	720	19150
6 members	6098	140	68	90	169	159	304	(296)	328	10251
7 members	7504	89	73	53	81	136	179	166	(226)	4642
8 members	7505	28	5	26	31	50	44	49	(32)	1427
9 members	7504	--	6	6	30	25	6	13	(21)	614
10 or more	7504	3	19	8	6	--	19	18	(39)	403
Unrelated Individuals	2263	8640	8084	(5618)	4728	4394	4561	4347	3816	10952

Source: Tables 1 and 2 above; U.S. Bureau of the Census, 1972, Tables 199, 200.

Table 4: Preliminary Adjusted Estimates of the Number of Poor Persons, by Family Size, for Hartford SMSA: 1969

<u>Family Size Category</u>	<u>Adjusted Estimates of Number of Poor</u>
2 members	8697
3 members	5268
4 members	7454
5 members	7044
6 members	5754
7 members	6236
8 members	1993
9 members	869
10 or more	927
Unrelated Individuals	<u>18202</u>
TOTAL	62444

Source: Table 3 above, and see text.

(i.e., we used weighted average thresholds) and less detailed family types than the census used in its count. Because the SMSAs we are obtaining estimates for do not have the same proportions of female-headed families or families headed by persons over 65 years old, for example, the weighted thresholds we used, which are based upon national breakdowns, are not strictly appropriate to each SMSA. Thus, the adjusted estimates we have obtained include both cost-of-living and family composition effects. We require, in short, a way of distinguishing between the cost-of-living effect and the family composition effect.

This may be accomplished by isolating the family composition effect as follows: use the unadjusted weighted average poverty thresholds (see Table 1) and the income distribution data (see Table 3) to estimate the number of poor that would have been counted had the census used the weighted average poverty thresholds instead of the more detailed thresholds that were, in fact, used by the Bureau of the Census. The procedures for doing this are the same as employed above except, of course, no cost-of-living adjustment is made. The resulting count indicates the "contribution" of the family composition effect to the preliminary adjusted poor count obtained earlier. The remainder can be considered to be an estimate of number of poor people in each SMSA when cost-of-living differences have been taken into account.

The Hartford SMSA Illustration Continued: The first column of Table 5 reproduces the information contained in Table 4, the second column shows the estimated number of poor allowing only the family composition effect to operate, and the third column total shows the actual census count of poor persons in the Hartford SMSA. The difference

Table 5: Preliminary Adjusted Estimates of the Poor and Estimates of Poor Allowing Family Composition Effect Only, by Family Size, and Actual Census Count of the Poor for Hartford SMSA: 1969

<u>Family Size Category</u>	<u>Preliminary Adjusted Estimates</u>	<u>Family Composition Effect Estimates</u>	<u>Actual Census Count</u>
2 members	8697	6160	--
3 members	5268	4011	--
4 members	7454	5620	--
5 members	7044	5394	--
6 members	5754	3716	--
7 members	6236	4394	--
8 members	1993	1512	--
9 members	869	669	--
10 or more	927	568	--
Unrelated Individuals	18202	15431	--
TOTAL	62444	47475	44876

Source: Tables 1, 3 and 4 above; U.S. Bureau of the Census, 1972, Table 207.

between the actual census count and the preliminary adjusted estimate ($62,444 - 44,876 = 17,568$) is the increment due to the combination of both cost-of-living and family composition effects. The difference between the actual count and the family composition effect estimate ($47,475 - 44,876 = 2,599$) is the portion attributable to family composition effects only. The remainder ($17,568 - 2,599 = 14,969$) is the estimated additional number of poor persons in the Hartford SMSA when Hartford's cost-of-living is taken into account in defining poverty thresholds. Adding this number to the actual census count yields a cost-of-living adjusted number of poor in the Hartford SMSA of 59,845, or 33% more than identified by the census.

B. Summarized Results of Cost-of-Living Adjustments to the Number of Poor for 34 SMSAs in 1969

The above described procedures were carried out for each of the 34 SMSAs for which the requisite data were available. The results are presented in Table 6. The last two columns are of major interest. Column (4) shows the estimated number of poor in each SMSA when cost-of-living in the SMSA is taken into account, net of the family composition effect; Column (5) indicates the percentage by which the census count of poor has been increased by taking cost-of-living into account.

III. COST-OF-LIVING ADJUSTED ESTIMATES
OF THE POOR FOR STATES

In this section we obtain and present estimates of the poor populations, adjusted for inter-areal cost-of-living differences, for the 50 states for 1969. While the basic methodology employed is essentially the same as in the preceding section, the final estimates we obtain for states must be regarded more tentatively than those obtained for SMSAs. This is mainly due to the fact that we had specific cost-of-living data for each of the SMSAs whereas the BLS budget data do not cover all 50 states, or even portions of all 50 states. As a result, it becomes necessary to make a number of disputable assumptions concerning the cost-of-living effect on metropolitan and nonmetropolitan portions of each state. These assumptions, along with the general methodology, are spelled out below.

A. Methodology

We begin, as before, with the census poverty thresholds and the BLS cost-of-living data. We will now, however, make full use of the cost-of-living information for all 39 SMSAs, Anchorage and the four nonmetropolitan regions; the lower budget figures for an urban family of four for each of these areas, along with the cost-of-living multiplier (nonmetropolitan South is the base) and the adjusted census poverty thresholds for a family of four are contained in Table 7. As before, we will generalize these multipliers to all family sizes for the given area.

Unlike the preceding situation, we now have populations for which no BLS cost-of-living data directly apply. As a consequence, we make the following assumptions concerning the cost-of-living multiplier to be used for those populations for which we do not have specifically relevant BLS data:

Table 6: Preliminary Adjusted Estimates of the Poor, Estimates of the Poor Allowing Family Composition Effects Only, Actual Census Counts of the Poor, Total Number of Estimated Poor Persons When Cost-of-Living is Taken Into Account, and the Percentage Increase in the Number of Poor When Cost-of-Living is Taken into Account for 34 SMSAs: 1969

SMSA	(1) Preliminary Adjusted Estimate	(2) Family Comp. Effects Estimate	(3) Actual Census Count	(4) Cost-of-Living Estimate [= (1) - (2) + (3)]	(5) Percent Increase Due to Cost-of-Living [= (4) - (3) ÷ (3)]
Atlanta	175,766	166,823	160,787	169,730	5.6%
Austin	54,437	53,712	45,278	46,003	1.6
Bakersfield	62,277	53,380	51,931	60,828	17.1
Baltimore	281,955	237,088	229,100	273,967	19.6
Baton Rouge	55,862	54,149	49,056	50,769	3.5
Boston	333,406	259,882	227,603	301,127	32.3
Buffalo	153,320	126,275	121,152	148,197	22.3
Chicago	806,811	659,198	634,792	782,405	23.3
Cincinnati	164,985	149,990	144,033	159,028	10.4
Cleveland	225,037	190,759	184,625	218,903	18.6
Dallas	206,593	182,149	173,799	197,799	14.1
Dayton	81,256	71,961	67,031	76,326	13.9
Detroit	411,646	354,259	351,294	408,681	16.3
Denver	142,502	126,824	116,010	131,688	13.5
Hartford	62,444	47,475	44,876	59,845	33.4
Honolulu	104,644	62,129	52,546	95,061	80.9
Houston	266,183	248,684	247,749	265,248	7.1
Indianapolis	123,936	100,295	96,775	120,416	24.4
Kansas City	147,244	122,595	119,920	144,569	20.6
Lancaster	36,981	32,244	28,518	33,255	16.6
Los Angeles- Long Beach	1,014,745	779,016	750,395	986,124	31.4
Milwaukee	137,359	113,808	109,004	132,555	21.6
Minnesota- St. Paul	157,586	127,698	118,407	148,295	25.2

Table 6: Preliminary Adjusted Estimates of the Poor, Estimates of the Poor Allowing Family Composition Effects Only, Actual Census Counts of the Poor, Total Number of Estimated Poor Persons When Cost-of-Living is Taken Into Account, and the Percentage Increase in the Number of Poor When Cost-of-Living is Taken into Account for 34 SMSA: 1969 (Continued)

SMSA	(1) Preliminary Adjusted Estimate	(2) Family Comp. Effects Estimate	(3) Actual Census Count	(4) Cost-of-Living Estimate [=(1)-(2)+(3)]	(5) Percent Increase Due to Cost-of-Living [=(4)-(3)÷(3)]
Nashville	84,443	81,586	74,625	77,482	3.8
New York	1,602,625	1,374,319	1,342,671	1,570,977	17.0
Orlando	71,225	64,785	60,279	66,719	10.7
Philadelphia	584,730	499,707	473,490	558,513	18.0
Pittsburgh	272,352	238,309	225,526	259,569	15.1
San Diego	225,840	181,737	136,310	180,413	32.4
San Francisco- Oakland	416,641	318,682	301,831	399,790	32.5
Seattle-Everett	147,466	109,509	105,709	143,666	35.9
St. Louis	309,104	260,927	254,832	303,009	18.9
Washington, D.C.	316,815	250,101	231,344	298,058	28.8
Wichita	48,837	42,300	40,335	46,872	16.2

Source: Table 1, 2 above, and sources cited in Tables 1, 2, 3 and 5 above.

Table 7: Annual Costs of a Lower Budget of an Urban Family of Four, Cost-of-Living Multipliers and Adjusted Poverty Thresholds for a Four Person Family: 39 SMSAs, Anchorage and 4 Nonmetropolitan Regions

<u>Area</u>	<u>Annual Costs of a Lower Budget</u>	<u>Cost-of-Living Multiplier*</u>	<u>Adjusted Poverty Threshold**</u>
Northeast			
Boston, MA	\$7351	1.20	\$4492
Buffalo, NY	7022	1.14	4267
Hartford, CT	7577	1.23	4604
Lancaster, PA	6698	1.09	4080
New York-NE NJ	7183	1.17	4379
Philadelphia, PA-NJ	6958	1.13	4230
Pittsburgh, PA	6701	1.09	4080
Portland, ME	7130	1.16	4342
Nonmetro Areas	6709	1.09	4080
North Central			
Cedar Rapids, Iowa	6863	1.12	4192
Champaign-Urbana, IL	7235	1.18	4417
Chicago-NW IN	7273	1.18	4417
Cincinnati, OH-KY-IN	6611	1.07	4005
Cleveland, OH	7080	1.15	4304
Dayton, OH	6712	1.09	4080
Detroit, MI	6931	1.13	4230
Green Bay, WI	6769	1.10	4177
Indianapolis, IN	7101	1.15	4304
Kansas City, MO-KS	6981	1.14	4267
Milwaukee, WI	7079	1.15	4304
Minneapolis-St.Paul, MN	7140	1.16	4342
St. Louis, MO-IL	6987	1.14	4267
Wichita, KS	6722	1.09	4080
Nonmetro Areas	6783	1.10	4117
South			
Atlanta, GA	6424	1.04	3893
Austin, TX	6197	1.01	3780
Baltimore, MD	7018	1.14	4267
Baton Rouge, LA	6411	1.04	3893
Dallas, TX	6683	1.09	4080
Durham, NC	6771	1.10	4117
Houston, TX	6481	1.05	3930
Nashville, TN	6326	1.03	3855
Orlando, FL	6562	1.07	4005
Washington, D.C.-MD-VA	7242	1.18	4417
Nonmetro Areas	6150	1.00	3743

Table 7: Annual Costs of a Lower Budget of an Urban Family of Four, Cost-of-Living Multipliers and Adjusted Poverty Thresholds for a Four Person Family: 39 SMSAs, Anchorage and 4 Nonmetropolitan Regions (Continued)

<u>Area</u>	<u>Annual Costs of a Lower Budget</u>	<u>Cost-of-Living Multiplier*</u>	<u>Adjusted Poverty Threshold**</u>
West			
Bakersfield, CA	\$6910	1.12	\$4192
Denver, CO	6697	1.09	4080
Los Angeles-Long Beach, CA	7507	1.22	4566
San Diego, CA	7166	1.17	4379
San Francisco-Oakland, CA	7686	1.25	4679
Seattle-Everett, WA	7630	1.24	4641
Honolulu, Hawaii	8597	1.40	5240
Nonmetro Areas	6978	1.13	4230
Anchorage, Alaska	10783	1.75	6550

* Base of the multiplier is \$6150 (nonmetro South)

** The unadjusted threshold = \$3743; see Table 1 above.

Source: U.S. Dept. of Labor, 1972, Table A-1

(1) the nonmetropolitan population of each state will be assumed to have the cost-of-living of the region in which the state is located. For example, the nonmetropolitan population of Connecticut will have its poverty thresholds adjusted by the multiplier for the "nonmetropolitan northeast" (which is 1.09); (2) the metropolitan populations are less easily handled because not every state has a BLS SMSA located in it, nor are all of the SMSAs in most states included in the BLS series. We will use a procedure of assigning cost-of-living multipliers to the poverty thresholds of the metropolitan populations of each state as follows:

(a) If a state contains a single BLS SMSA, its multiplier will be assumed to hold for the state's entire metropolitan population.

(b) If a state contains more than one BLS SMSA, we will weight the multipliers by the population sizes of SMSAs so that we obtain a single weighted average cost-of-living multiplier which will be assumed to hold for the state's entire metropolitan population.

(c) If a state does not contain a BLS SMSA but contiguous states do, then we will obtain a weighted average multiplier

(as in (b) above) based upon all of the BLS SMSAs in immediately contiguous states; this weighted average multiplier will be assumed to pertain to the state's metropolitan population.

(d) If a state contains no BLS SMSAs and neither do immediately contiguous states, then we will proceed (as in (c) above) to obtain a weighted average cost-of-living multiplier based upon all of the BLS SMSAs in the next contiguous states; this multiplier will be assumed to hold for the state's metropolitan populations.

The above assumptions allow us to associate a metropolitan and a nonmetropolitan cost-of-living multiplier with each state. Because the requisite income distribution data are readily available only on a state-wide basis (i.e., income distributions by size of family for metropolitan and nonmetropolitan populations of states separately are not published by the Census) we must combine the metropolitan and nonmetropolitan multipliers for each state. This is done by weighting the two multipliers according to the state's metropolitan and nonmetropolitan population sizes.

We now have a single weighted average cost-of-living multiplier for each state (see Table 8). This is then applied to the Census poverty thresholds, by size of family, to obtain a set of adjusted poverty thresholds for each state. Making use of state income distributions by size of family, we obtain a preliminary adjusted count of the poor in each state.

As in the preceding section of this report, we then repeat these procedures using the original census poverty thresholds (from Table 1 above) to estimate the number of persons the census would have identified as poor had it used our methodology but without making cost-of-living adjustments. This will permit us to remove the family composition effect (as discussed in the preceding section) as well as a farm-nonfarm residence effect, which is introduced by our not taking account of the different poverty thresholds for farm families and nonfarm families, from our final estimate of the poor.

Table 8: Weighted Average Cost-of-Living Multipliers and Components Thereof for 50 States: 1969

<u>State</u>	<u>Weighted Average Multipliers</u>	<u>Components</u>		
		<u>Area</u>	<u>Multi- plier</u>	<u>Weight*</u>
a. States with a single BLS SMSA				
Colorado	1.10	Denver	1.09	.717
		West N-M	1.14	.283
Connecticut	1.21	Hartford	1.23	.826
		NE N-M	1.09	.174
Florida	1.05	Orlando	1.07	.686
		South N-M	1.00	.314
Georgia	1.02	Atlanta	1.04	.497
		South N-M	1.00	.503
Illinois	1.16	Chicago	1.18	.801
		NC N-M	1.10	.199
Indiana	1.13	Indianapolis	1.15	.619
		NC N-M	1.10	.381
Kansas	1.10	Wichita	1.09	.423
		NC N-M	1.10	.577
Maryland	1.12	Baltimore	1.14	.843
		South N-M	1.00	.157
Massachusetts	1.18	Boston	1.20	.847
		NE N-M	1.09	.153
Michigan	1.12	Detroit	1.13	.767
		NC N-M	1.10	.233
Minnesota	1.13	Minneapolis-St. Paul	1.16	.569
		NC N-M	1.10	.431
Tennessee	1.01	Nashville	1.03	.489
		South N-M	1.00	.511
Washington	1.21	Seattle-Everett	1.24	.660
		West N-M	1.14	.340
Wisconsin	1.13	Milwaukee	1.15	.576
		NC N-M	1.00	.424

Table 8: Weighted Average Cost-of-Living Multipliers and Components Thereof for 50 States: 1969 (Continued)

<u>State</u>	<u>Weighted Average Multipliers</u>	<u>Components</u>		
		<u>Area</u>	<u>Multi- plier</u>	<u>Weight*</u>
b. States with more than one BLS SMSA				
California	1.21	Bakersfield	1.12	.023
		Los Angeles-Long Beach	1.22	.603
		San Diego	1.17	.110
		San Francisco- Oakland	1.25	.264
		Cal Metro	1.22	.927
		West N-M	1.14	.073
		Missouri	1.13	St. Louis
Kansas City	1.14	.324		
Mo. Metro	1.14	.641		
NC N-M	1.10	.359		
New York	1.16	Buffalo	1.14	.092
		New York-NE NJ	1.17	.908
		NY Metro	1.17	.865
		NE N-M	1.09	.135
Ohio	1.12	Cincinnati	1.07	.265
		Cleveland	1.15	.539
		Dayton	1.09	.196
		Ohio Metro	1.12	.777
		NC N-M	1.10	.223
Pennsylvania	1.11	Lancaster	1.09	.031
		Philadelphia	1.13	.616
		Pittsburgh	1.09	.354
		Penn Metro	1.12	.794
		NE N-M	1.09	.206
Texas	1.04	Austin	1.01	.076
		Dallas	1.09	.414
		Houston	1.05	.511
		Texas Metro	1.06	.735
		South NM	1.00	.265
c. States with no BLS SMSAs				
Alabama	1.02	Tenn. Metro	1.03	.237
		Ga. Metro	1.04	.595
		Fla. Metro	1.07	.168
		Alabama Metro	1.04	.523
		South N-M	1.00	.477

Table 8: Weighted Average Cost-of-Living Multipliers and Components Thereof for 50 States: 1969 (Continued)

State	Weighted Average Multipliers	Components		
		Area	Multi- plier	Weight*
Arizona	1.19	Calif Metro	1.22	.909
		Colo. Metro	1.09	.091
		Arizona Metro	1.21	.745
		West N-M	1.14	.255
Arkansas	1.03	La. Metro	1.04	.037
		Texas Metro	1.06	.529
		Mo. Metro	1.14	.362
		Tenn. Metro	1.03	.072
		Ark. Metro	1.09	.309
		South N-M	1.00	.691
Delaware	1.08	Penn. Metro	1.12	.764
		Md. Metro	1.14	.236
		Del. Metro	1.12	.704
		South N-M	1.00	.296
Idaho	1.16	Wash. Metro	1.24	.158
		West N-M	1.14	.842
Iowa	1.12	Mo. Metro	1.14	.197
		Minn. Metro	1.16	.142
		Wisc. Metro	1.15	.108
		Ill. Metro	1.18	.553
		Iowa Metro	1.17	.356
		NC N-M	1.10	.644
Kentucky	1.06	Tenn. Metro	1.03	.034
		Mo. Metro	1.14	.170
		Ill. Metro	1.18	.476
		Ind. Metro	1.15	.065
		Ohio Metro	1.12	.255
		Kentucky Metro South N-M	1.15 1.00	.400 .600
Maine	1.11	Mass. Metro	1.20	.216
		NE N-M	1.09	.784
Mississippi	1.00	La. Metro	1.04	.342
		Tenn. Metro	1.03	.658
		Miss. Metro	1.03	.177
		South N-M	1.00	.823

Table 8: Weighted Average Cost-of-Living Multipliers and Components Thereof for 50 States: 1969 (Continued)

<u>State</u>	<u>Weighted Average Multipliers</u>	<u>Components</u>		
		<u>Area</u>	<u>Multi- plier</u>	<u>Weight*</u>
Montana	1.15	Minn. Metro	1.16	.417
		Colo. Metro	1.09	.280
		Wash. Metro	1.24	.304
		Mont. Metro	1.17	.244
		West N-M	1.14	.756
Nebraska	1.11	Mo. Metro	1.14	.674
		Colo. Metro	1.09	.326
		Nebr. Metro	1.12	.428
		NC N-M	1.10	.572
Nevada	1.20	Calif. Metro	1.22	.807
		West N-M	1.14	.193
New Hampshire	1.12	Mass. Metro	1.20	.273
		NE N-M	1.09	.727
New Jersey	1.14	NY Metro	1.17	.689
		Pa. Metro	1.12	.311
		NJ Metro	1.15	.769
		NE N-M	1.09	.231
New Mexico	1.12	Texas Metro	1.06	.751
		Colo. Metro	1.09	.249
		N.M. Metro	1.07	.311
		West N-M	1.14	.689
North Carolina	1.02	Ga. Metro	1.04	.716
		Tenn. Metro	1.03	.282
		NC Metro	1.04	.373
		South N-M	1.00	.627
North Dakota	1.11	Minn. Metro	1.16	.119
		NC N-M	1.10	.881
Oklahoma	1.05	Texas Metro.	1.06	.500
		Mo. Metro	1.14	.340
		Colo. Metro	1.09	.160
		Okla. Metro	1.10	.501
		South N-M	1.00	.499
Oregon	1.19	Wash. Metro	1.24	.099
		Cal. Metro	1.22	.901
		Oregon Metro	1.22	.612
		West N-M	1.14	.388

Table 8: Weighted Average Cost-of-Living Multipliers and Components Thereof for 50 States: 1969 (Continued)

State	Weighted Average Multipliers	Components		
		Area	Multi- plier	Weight*
Rhode Island	1.19	Conn. Metro	1.23	.172
		Mass. Metro	1.20	.828
		RI Metro	1.21	.847
		NE N-M	1.09	.153
South Carolina	1.02	Ga. Metro	1.04	.393
		South N-M	1.00	.607
South Dakota	1.11	Minn. Metro	1.16	.143
		NC N-M	1.10	.857
Utah	1.10	Colo. Metro	1.09	.776
		West N-M	1.14	.224
Virginia	1.09	Md. Metro	1.14	.529
		Tenn. Metro	1.03	.145
		D.C. Metro	1.18	.326
		Va. Metro	1.14	.612
		South N-M	1.00	.338
West Virginia	1.04	Ohio Metro	1.12	.327
		Penn. Metro	1.12	.514
		MD Metro	1.14	.159
		W. Va. Metro	1.12	.313
		South N-M	1.00	.687
d. States with no metropolitan populations				
Vermont	1.09	NE N-M	1.09	1.000
Wyoming	1.14	West N-M	1.14	1.000
3. Special cases -- outlying states				
Alaska	1.75	Anchorage	1.75	1.000
Hawaii	1.40	Honolulu	1.40	1.000

* Weights are determined on the basis of relative population sizes of the areas under consideration. For states with either multiple BLS SMSAs or multiple contiguous (or next contiguous) states with BLS SMSAs, two separate weights are involved: (1) a weight determined for the metropolitan population of the state in question, and (2) a weight for the total population, based on the metropolitan weight (obtained under 1 above) and nonmetropolitan regional weight. Otherwise, only the second weighting procedure is employed.

Source: Table 7 above; U.S. Bureau of the Census, 1972, Table 138.

B. Summarized Results of Cost-of-Living Adjustments to
The Number of Poor for 50 States in 1969

The results obtained using the above described estimating procedures are presented in Table 9. The first column contains the preliminary adjusted estimate of the number of poor in each state; this estimate includes a family composition effect and a farm-nonfarm residence effect, which we wish to remove, along with the cost-of-living effect. The second column presents the estimate of the poor allowing the family composition and farm-nonfarm residence effects, but not cost-of-living, to operate. The difference between the first and second column provides an estimate of the increment in the number of poor in each state due to cost-of-living variations. When this difference is added to the official census count of the poor (Column 3), we obtain the cost-of-living adjusted estimate of the number of poor persons, by state, as shown in Column 4. Finally, the last column shows the percentage increase in the estimated number of poor in each state arising from cost-of-living differences, as we have assumed them to be operating, from one state to another.

Table 10 presents a regional and national summary of information contained in the last 3 columns of Table 9. The estimating procedures used here result in an increase of about 15 percent in the number of poor nationally when inter-areal cost-of-living variations have been taken into consideration in defining poverty thresholds. Similarly, each of the census regions have an increase in their numbers of poor; the South had by far the smallest increase, reflecting the relatively lower BLS budgets in that region.

IV. LIMITATIONS

The estimates of the number of poor persons we have obtained in Sections II and III above using the described methodology for taking account of inter-areal cost-of-living variations must be regarded more as illustrative than definitive. This derives more from the inherent difficulties of quantitatively defining an attribute as elusive as poverty than from the obvious weaknesses in the methodology and data employed here.

We can briefly consider three distinct weaknesses or limitations of the results presented in this report. First, the definition of poverty employed by the Census raises a number of questions regarding both the absolute level of the poverty thresholds and the pattern of variation of the

Table 9: Preliminary Adjusted Estimates of the Poor, Estimates of the Poor Allowing Family Composition and Farm-Nonfarm Residence Effects Only, Actual Census Counts of the Poor, Total Number of Estimated Poor When Cost-of-Living is Taken into Account, and the Percentage Increase in the Number of Poor When Cost-of-Living is Taken Into Account for 50 States: 1969

State	(1) Preliminary Adjusted Estimates	(2) Family and Farm- Nonfarm Effects Estimates	(3) Actual Census Counts	(4) Cost-of-Living Estimate [=(1)-(2)+(3)]	(5) Percent Increase Due to Cost-of-Living [=(4)-(3)÷(3)]
Alabama	904,352	874,671	852,111	881,792	3.58
Alaska	83,475	40,317	35,555	78,713	121.4
Arizona	350,094	277,711	266,498	338,881	27.2
Arkansas	545,480	537,930	519,961	527,511	1.5
California	2,983,622	2,304,546	2,148,920	2,827,996	31.6
Colorado	335,820	292,619	262,929	306,130	16.4
Connecticut	301,487	229,353	212,637	284,771	33.9
Delaware	71,026	64,065	58,261	65,222	11.9
Florida	1,205,595	1,138,881	1,085,250	1,151,964	6.1
Georgia	985,858	962,481	920,594	943,971	2.5
Hawaii	134,638	78,301	68,364	124,731	82.4
Idaho	130,046	101,390	91,689	120,345	31.3
Illinois	1,450,160	1,198,217	1,110,293	1,362,236	22.7
Indiana	672,050	552,078	494,004	613,976	24.3
Iowa	440,589	368,542	317,243	389,290	22.7
Kansas	364,646	313,615	275,261	326,292	18.5
Kentucky	817,817	764,723	714,783	767,877	7.4
Louisiana	972,750	951,810	927,334	948,274	2.3
Maine	174,821	145,744	130,902	159,979	22.2
Maryland	482,337	412,629	386,829	456,537	18.0
Massachusetts	677,771	538,203	473,847	613,415	29.5
Michigan	1,027,249	880,011	820,058	967,296	18.0
Minnesota	537,240	448,700	397,027	485,567	22.3
Mississippi	785,109	785,109	761,530	761,530	0.0
Missouri	859,386	729,051	670,977	801,312	19.4

Table 9: Preliminary Adjusted Estimates of the Poor, Estimates of the Poor Allowing Family Composition and Farm-Nonfarm Residence Effects Only, Actual Census Counts of the Poor, Total Number of Estimated Poor When Cost-of-Living is Taken into Account, and the Percentage Increase in the Number of Poor When Cost-of-Living is Taken into Account for 50 states: 1969 (Continued)

State	(1) Preliminary Adjusted Estimates	(2) Family and Farm- Nonfarm Effects Estimates	(3) Actual Census Count	(4) Cost-of-Living Estimate [=(1)-(2)+(3)]	(5) Percent Increase Due to Cost-of-Living [=(4)-(3)÷(3)]
Montana	126,160	101,538	91,627	116,249	26.9
Nebraska	252,192	217,382	187,611	222,421	18.6
Nevada	61,402	46,160	43,333	58,575	35.2
New Hampshire	88,706	76,197	64,984	77,493	19.2
New Jersey	721,322	606,806	573,718	688,234	20.0
New Mexico	270,672	234,906	226,640	262,406	15.8
New York	2,575,200	2,087,837	1,971,560	2,458,923	24.7
North Carolina	1,106,149	1,081,053	992,946	1,018,042	2.5
North Dakota	128,793	109,974	92,494	111,313	20.3
Ohio	1,318,216	1,126,798	1,042,082	1,233,500	18.4
Oklahoma	530,017	493,730	464,022	500,309	7.8
Oregon	286,951	251,480	235,451	270,922	15.1
Pennsylvania	1,547,597	1,322,575	1,227,951	1,452,973	18.3
Rhode Island	128,043	114,581	99,799	113,261	13.5
South Carolina	648,468	633,976	592,568	607,060	2.4
South Dakota	159,553	137,911	119,143	140,785	18.2
Tennessee	865,832	851,760	835,470	849,542	1.7
Texas	2,254,226	2,137,621	2,038,621	2,154,630	5.7
Utah	149,259	129,289	118,490	138,460	16.9
Vermont	70,609	62,585	51,307	59,331	15.6
Virginia	852,296	760,803	689,249	780,742	13.3
Washington	483,695	371,756	336,011	447,950	33.3
West Virginia	415,021	395,741	378,693	397,973	5.1
Wisconsin	554,571	477,154	421,064	498,481	18.4
Wyoming	51,726	41,905	37,962	47,783	25.9

Source: Tables 1 and 8 above; U.S. Bureau of the Census, 1972, Tables 199, 200.

Table 10: Actual Census Counts of the Poor, Total Number of Estimated Poor When Cost-of-Living is Taken into Account, and the Percentage Increase in the Number of Poor When Cost-of-Living is Taken into Account for Census Regions and the U.S.: 1969

Census Region	Actual Census Count	Cost-of-Living Adjusted Estimate of the Poor	Percentage Increase Due to Cost-of-Living
Northeast	4,806,705	5,908,380	22.9%
North Central	5,947,257	7,152,469	20.3
South	12,217,626	12,812,976	4.9
West	3,963,469	5,139,141	29.7
U.S. Total	26,935,057	31,012,966	15.2

Note: Washington, D.C. is excluded from the South and U.S. Summaries.

Source: Table 9 above and sources cited there.

specific family-type thresholds. How, for example, is one to understand the large differential between the Census's non-farm male-headed family of four poverty threshold (\$3745) in 1969 and the BLS lower budget for an urban family of four in the Spring of 1970 (\$6960)? The method of annually adjusting the Census poverty thresholds, which makes use of the Consumer Price Index (CPI), probably introduces inequities which may be pronounced for some categories of people. For example, to the extent that food prices rise more rapidly than the CPI and to the extent that people at the lower end of the income distribution spend more on food, the CPI adjusted thresholds underestimate the increase in relevant costs and thereby underestimate the number of poor (cf. Stephenson, 1977, pp. 20-21). The CPI adjustment similarly does not take account of the rapidly escalating costs of health and medical care which probably results in important underestimates of the elderly and disabled poor for whom these costs may be a substantial and recurring expense. The Census poverty thresholds are also limited, as pointed out in the Introduction to this report, by a narrow empirical base -- the U.S. Department of Agriculture's economy food plan costs and nonfood cost estimates based on a perhaps outdated consumer expenditure survey -- and by a set of thresholds which are nationally invariant. The focus of this report, of course, has been upon this latter issue.

Second, our use of the BLS lower budget level as the means by which inter-areal cost-of-living adjustments were

made will undoubtedly be criticized, probably for reasons discussed in the Introduction above (see Sherwood, 1977; and McNeil, 1976). An important question in this regard is: Should we accept the Census count of the poor, believing it to be deficient, or should we attempt to eliminate such deficiencies in whatever tentative ways may be available? The latter position seems to be the most defensible and is the one adopted in this report.

Third, we have introduced a number of weaknesses ourselves by making assumptions which are clearly questionable, particularly in Section III. We can reasonably argue that the incomplete geographic coverage of the BLS data and the nature of published Census income data forced us to make assumptions, but they need not have been those we, in fact, made. The assumptions we did make are arbitrary and defensible only in a relative sense. We have attempted to present the methodology in sufficient detail so that the careful reader can form his or her own judgement concerning their plausibility or implausibility and, thus, the plausibility of the estimates.

In closing, let us stress one more time the need for a critical eye in viewing the results presented here. Qualifications should be imposed upon these estimates, both absolutely and relatively, deriving from the sorts of questions and issues raised in the preceding paragraphs.

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