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an average by using selected weights assigned to each. The variable or the weights are chosen after the production indicated by each variable is known. Under such circumstances the estimator cannot escape being influenced by his preconceived notions of what the production is. If, however, he assigned weights to the several variables before knowing the production indicated by them, on the basis of their previous performance as correct indicators or on the basis of the peculiar conditions influencing the probable merits of the several variables as indicators in that particular year, his judgment would not be influenced by his preconceived ideas or hunches as to production. Thus, a high degree of objectivity would be attained in making the production estimate without sacrificing the benefits of judgment.

Much the same sort of objective procedure can be applied in business forecasting. The degree of objectivity attained will depend not only upon the ingenuity of the forecaster and the kind of data available, but also upon the persistence of forecasters in attempting to attain this objectivity. It is for this reason that we labor the point and urge that it be given more consideration by forecasters in the future.

Part Six

A STATISTICAL STUDY OF
INCOME DIFFERENCES AMONG
COMMUNITIES

HERBERT E. KLARMAN

Discussion

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This paper was originally written for a seminar conducted by Milton Friedman at the University of Wisconsin. Mr. Friedman contributed extensive suggestions, technical and editorial, at every stage of the manuscript's preparation.

A Statistical Study of Income Differences Among Communities

HERBERT E. KLARMAN

MANY FACTORS that might be used in explaining differences in average income among communities can readily be listed: e.g., size of community, regional location, employment opportunities, climate, racial composition, and standard of literacy. It is the purpose of this paper to analyze two of these factors, namely, size of community and region, in an attempt to ascertain their respective importance as measures of intercommunity income differences.

Community size and region in themselves do not determine income levels. Each, however, reflects a multiplicity of substantive economic factors that bear directly upon income. Large cities, for example, provide remunerative employment in financial organizations, and professional persons with relatively large incomes tend to concentrate there. Farming, on the other hand, was for a long time a depressed, over-supplied occupation. In the absence of substantial mobility in the factors of production areas that lack resources tend to remain economically inferior.

Whether income differences among communities are correlated with community size or with regional location has considerable weight in deciding the direction of the investigation into the substantive factors that affect income. If either region or size of community has no close association with income differentials, the whole set of economic factors underlying the uncorrelated term may be excluded from further study.

The answer to this question has implications also for governmental action, in the fields, for example, of agriculture, internal migration, education, and welfare. By way of illustration, reference may be made to certain implications of a federal policy of grants-in-aid to the states, which employs average income as the index of a state's fiscal capacity. Presumably the aim of such a policy is to equalize essential governmental services among the states, without simultaneously causing undue disparities in their respective tax efforts. Federal funds are therefore to be distributed in direct proportion to need and in inverse proportion to fiscal capacity or average income.

It is of some moment, however, whether in a given instance a mean is truly a measure of central tendency or merely a resultant

of arithmetic computation. The implications of a low average income for a state are not the same when it describes a more or less homogeneous set of low income communities as when it describes a heterogeneous conglomeration of small and large income communities, with the small overwhelmingly predominant. In the first instance, if the entire group is uniformly poor, outside help for every community is indicated. In the second, if the low mean income for the state results from the combination of many poor communities and several rich communities, help is indicated only for the poor ones. Such aid may come from the rich communities within the state as well as from rich communities located elsewhere.

In this paper an attempt is made to study the nature of the geographic distribution of income that underlies statewide averages.

TABLE I
Average Incomes of Families in Five Geographic Regions

GEOGRAPHIC REGION	AVERAGE INCOME PER FAMILY			
	Median		Mean	
	All families	Nonrelief families	All families	Nonrelief families
New England	\$1,230	\$1,365	\$1,810	\$2,011
North Central	1,260	1,410	1,786	1,973
South	995	985	1,326	1,431
Mountain and Plains	1,040	1,220	1,363	1,537
Pacific	1,335	1,485	1,775	1,937

SOURCE: *Consumer Incomes in the United States*, Table 6, p. 22.

We want to ascertain whether income differences are smaller within regions than between regions; and whether the differences are smaller within than between groups of communities of the same size. If it is found that income differences among communities are correlated with the size of community and not with regional location this would call for help to poor communities from rich ones rather than for outside help for an entire region (or state). In the latter event, internal equalization would be the foremost consideration in a grants-in-aid policy.

It is important to recognize that the estimates of per capita income discussed in this paper are in terms of money income, not of real income. No attention is given to the influence of differences in the cost of living upon money income, or perhaps even more significantly, to the bearing of differences in standards of living

upon money income. Both are difficult problems. In the absence of adequate information, the initial presumption is against the operation of differentials that offset observed differences in money income.

Average family income is higher in the North than in the South; likewise, it is higher in large cities than on farms. The data published by the National Resources Committee do not cast doubt on these relations (Tables 1 and 2). They do, however, raise several questions. Differences in income exist among both geographical regions and communities of varying size. Are these differences in-

TABLE 2

Average Incomes of Nonrelief Families in Six Types of Communities

TYPE OF COMMUNITY	AVERAGE INCOME PER FAMILY	
	Median	Mean
Metropolises	\$1,730	\$2,704
Large cities	1,560	2,177
Middle-size cities	1,360	1,813
Small cities	1,290	1,653
All urban communities	1,475	2,064
Rural nonfarm	1,210	1,607
Farms	965	1,259
All rural communities	1,070	1,408
All communities	1,285	1,781

SOURCE: *Consumer Incomes in the United States*, Table 7, p. 23.

dependent, or does one set of differences merely reflect the other? For example, may not the differences among communities of different size be the basic factor, and the relatively high income in the North merely reflect the predominance of large cities there? This possibility could be ruled out only if the distribution of communities by size were the same in every region. If this were the case, either the average income would be nearly the same in every region or size of community would not be one of the basic factors explaining income differences among regions.

I The Data Used

The best data for answering the question whether income differences among communities are associated with regional location or with size of community would be on average incomes of all families

in representative communities, classified both by region and by size of community. Data approximately satisfying these requirements were provided by the Study of Consumer Purchases.¹

To get uniformity of observations from the Study of Consumer Purchases data, it was necessary to use income averages that do not cover all families in the communities sampled. The averages are restricted to native white complete nonrelief families. A family signifies two or more persons, dependent on a common income, who live together as an economic unit. It is native if both husband and wife are native born. It is complete if it contains both a husband and wife, with or without other persons. It is a relief family if any of its members received any direct or work relief from any source at any time during the year covered by the estimates.

The utilization of data pertaining only to nonrelief native white complete families narrows the scope of the investigation and hence limits the generality of the conclusions. If the groups excluded from this study constituted the same percentage of the population in every community sampled, their exclusion would not affect the reliability of the conclusions. The fact that native white complete nonrelief families represent in general a small percentage of all families would not be material. However, Table 3 shows that this percentage varies considerably, from 25 per cent in New Britain, Connecticut, to 64 per cent in Muncie, Indiana. But it also shows that the variations are sizable within both regions and size of community classes. The conclusions drawn from our sample are probably no less reliable than those drawn from the Study of Consumer Purchases as a whole.

The data used in this study are the mean and median incomes of nonrelief native white complete families in certain communities (Tables 4 and 5); and for the same communities and families, the mean incomes of three occupational groups, namely, wage earning, clerical, and business and professional (Tables 8, 9, and 10).

The communities have been grouped into five regions, New

¹ The Consumer Purchases Study on Family Income and Expenditures was conducted jointly by the Bureau of Labor Statistics, Department of Labor, and the Bureau of Home Economics, Department of Agriculture. Income data were collected from approximately 300,000 families in cities and villages and on farms in thirty states. The information on income was obtained in personal interviews with the families, through random house to house canvassing, chiefly from July 1935 through June 1936. For details, see *Consumer Incomes in the United States* (National Resources Committee, Washington, 1938).

TABLE 3
Nonrelief Complete Native White Families, Number of and as a Percentage of all Families in Various Communities

REGION AND COMMUNITY *	NONRELIEF COMPLETE NATIVE WHITE FAMILIES AS A % OF ALL FAMILIES	Total	NUMBER OF FAMILIES				Negro & other color
			White			Foreign born	
			Total	Non-relief complete native	Other native		
<i>New England</i>							
Providence, R. I.	27.4	60,077	58,455	16,457	11,479	30,519	1,622
New Britain, Conn.	24.6	16,073	15,983	3,947	1,825	10,211	90
Haverhill, Mass.	30.5	12,870	12,791	3,928	3,458	5,405	79
Wallingford, Conn.	35.5	3,083	3,079	1,094	462	1,523	4
Willimantic, Conn.			3,054			1,312	14
<i>North Central</i>							
Columbus, Ohio	53.2	79,263	70,850	42,148	21,990	6,712	8,413
Springfield, Ill.	57.1	20,981	19,866	11,986	5,039	2,841	1,115
Springfield, Mo.	61.4	16,655	15,977	10,223	5,384	370	678
Muncie, Ind.	63.7	13,738	12,805	8,754	3,723	328	933
New Castle, Pa.	39.1	11,682	11,230	4,572	2,868	3,790	452
Dubuque, Iowa	49.2	11,068	11,052	5,447	4,108	1,497	16
Logansport, Ind.	58.0	5,548	5,487	3,219	1,973	295	61
Beaver Falls, Wis.	40.0	4,156	3,951	1,665	1,072	1,214	205
Mattoon, Ill.	53.9	3,884	3,848	2,097	1,674	77	36
Peru, Ind.	61.7	3,452	3,411	2,132	1,167	112	41
Connellsville, Pa.	44.4	3,272	3,151	1,454	1,075	622	121
<i>South</i>							
Atlanta, Ga.	42.0	67,749	45,430	28,511	14,679	2,240	22,319
Mobile, Ala.	35.3	16,277	9,472	5,748	3,031	693	6,805
Columbia, S. C.	41.9	10,851	6,753	4,549	2,002	202	4,098
Gastonia, N. C.	57.1	3,791	2,890	2,166	683	41	901
Albany, Ga.	28.1	3,762	1,565	1,056	470	39	2,197
<i>Mountain and Plains</i>							
Denver, Colo.	49.2	86,095	83,086	42,356	26,197	14,533	3,009
Pueblo, Colo.	43.4	12,937	11,925	5,615	4,082	2,228	1,012
Butte, Mont.	33.4	9,565	9,462	3,197	2,612	3,653	103
Billings, Mont.	56.3	4,894	4,753	2,753	1,194	806	141
<i>Pacific</i>							
Portland, Ore.	48.0	88,115	87,112	42,261	22,461	22,390	1,003
Aberdeen-Hoquiam, Wash.	36.5	9,320	9,261	3,404	2,413	3,444	59
Bellingham, Wash.	40.1	8,689	8,655	3,485	2,540	2,630	34
Everett, Wash.	35.8	8,580	8,529	3,071	2,444	3,014	51

* Communities in each region are arranged in descending order of population.

SOURCE: Study of Consumer Purchases.

England, North Central, South, Mountain and Plains, and Pacific; and into five size of community classes: ²

Large cities	(6)	100,000 to 1,500,000 population
Middle-size cities	(14)	25,000 to 100,000 "
Small cities	(29)	2,500 to 25,000 "
Village units	(10)	rural nonfarm communities up to 2,500 population
Farms	(20)	

To answer the question whether income differences among communities are associated with regional location or with size requires, as already suggested, a twofold classification. Grouping the mean and median incomes of the several communities by region and size of community results in a five by five table with twenty-five cells, each cell containing one or more communities. Since the mean figures for the southern farms were unavailable in the summer of 1941, when this analysis was made, the entire farm group is neglected in the analysis of mean incomes, with a loss of five cells. In the analysis of median incomes, however, all twenty-five cells were used.

For each cell a simple arithmetic mean of the individual community means was computed (Table 6). Likewise a median income was obtained for each cell by finding the middle item of its combined frequency distribution, derived in turn by summing the frequency distributions of the communities in the cell (Table 7).

II Size of Community Differences in Income

The table of mean incomes displays a fairly consistent order when size of community is viewed as the primary classification (Table 6a). In every region incomes are highest in the large cities. Except in the South, incomes are uniformly lowest in the villages. Greater variation prevails, however, with respect to the middle-size and the small cities.

The pattern of steady descent in the income scale from the large city through the middle-size city, small city, village unit, to the farm is nowhere to be found in the table of median incomes (Table 7a). Still, this pattern seems to be more or less typical, since only one size

²The number in the parenthesis indicates the number of communities in the particular size grouping that were sampled by the Consumer Purchases Study. The regional and size of community classifications here employed are those used in the Study (*Consumer Incomes in the United States*, pp. 42-43). The Study sampled also two metropolitan communities, New York and Chicago, but we have made no use of the data for these communities.

TABLE 4

Mean Incomes of Families in Several Communities, Classified by Region and Size of Community, 1935-1936

Region	LARGE CITIES		MIDDLE-SIZE CITIES		SMALL CITIES		VILLAGE UNITS		FARM UNITS	
	Name	Mean income	Name	Mean income	Name	Mean income	Name	Mean income	Name and type of farming	Mean income
New England	Providence, R. I.	\$1955	New Britain, Conn. Haverhill, Mass.	\$1764 1653	Wallingford, Conn. Willimantic, Conn. Westbrook, Me. Greenfield, Mass.	\$2231 1951 1517 1778	Vermont-Massachusetts	\$1682	Vermont (Dairy)	\$1346
North Central	Columbus, Ohio	2058	Dubuque, Iowa Muncie, Ind. New Castle, Pa. Springfield, Ill. Springfield, Mo.	1504 1710 1726 1951 1511	Beaver Falls, Pa. Connellsville, Pa. Logansport, Ind. Peru, Ind. Mattoon, Ill. Mt. Vernon, Ohio New Phila., Ohio Lincoln, Ill. Beaver Dam, Wis. Boone, Iowa Columbia, Mo. Moberly, Mo.	1663 1664 1463 1484 1581 1531 1478 1439 1412 1529 1918 1450	Pennsylvania-Ohio-Mich.-Wis.-Ill.-Iowa	1379 1415 1309	Pennsylvania (General) Ohio (General) Michigan (Dairy & g'l) Wisconsin (Dairy) Illinois (Corn or cash grain) Iowa (Animal)	1654 1359 1240 1408 1746 1103
South	Atlanta, Ga.	2158	Columbia, S. C. Mobile, Ala.	2408 1832	Albany, Ga. Griffin, Ga. Gastonia, N. C. Sumter, S. C.	2221 1572 1483 1908	Georgia-S. C.-N. C.-Mississippi	1579 2428	N. Carolina (Self-sufficient) N. Carolina (Cotton, tobacco) S. Carolina (Cotton, tobacco) Georgia (Cotton) Mississippi (Cotton)	Data not yet re-leased
Mountain and Plains	Denver, Colo. (Omaha, Neb.)	2063 *2022	Butte, Mont. Pueblo, Colo.	2149 1652	Billings, Mont. Greeley, Colo. Logan, Utah Provo, Utah Dodge City, Kan.	2268 1872 1718 1656 1513	Kansas-N. Dak.-Colo.-Montana-S. Dak.	1447 1762	North Dakota (Wheat) Kansas (Wheat) Colo.-Mont.-S. Dak. (Livestock)	763 994 1193
Pacific	Portland, Ore.	1890	Aberdeen-Hoquiam, Wash. Bellingham, Wash. Everett, Wash.	1763 1597 1668	Astoria, Ore. Eugene, Ore. Klamath Falls, Ore. Olympia, Wash.	1884 1839 1919 1848	Calif.-Oregon-Wash.	1760 1449	Washington (Dairy) Oregon (Fruit & g'l) Central Calif. (Fruit, dairy) South Calif. (Fruit)	1386 1430 1787 1983

In computations of variance analysis, figure for Omaha was used in several places where Denver was intended.

SOURCE: Study of Consumer Purchases.

TABLE 5

Median Incomes of Families in Several Communities, Classified by Region and Size of Community, 1935-1936

Region	LARGE CITIES		MIDDLE-SIZE CITIES		SMALL CITIES		VILLAGE UNITS		FARM UNITS	
	Name	Median income	Name	Median income	Name	Median income	Name	Median income	Name *	Median income
New England	Providence, R. I.	\$1554	New Britain, Conn.	\$1508	Wallingford, Conn.	\$1690	Vermont-Massachusetts	\$1477	Vermont	\$1181
			Haverhill, Mass.	1459	Willimantic, Conn.	1529				
					Westbrook, Me.	1299				
					Greenfield, Mass.	1595				
North Central	Columbus, O.	1751	Dubuque, Iowa	1279	Beaver Falls, Pa.	1449	Pennsylvania-Ohio-Michigan-Wisconsin-Illinois-Iowa	1167	New Jersey	1468
			Muncie, Ind.	1468	Connellsville, Pa.	1508			Pennsylvania	1471
			New Castle, Pa.	1486	Logansport, Ind.	1303			Ohio	1214
			Springfield, Ill.	1657	Peru, Ind.	1322			Michigan	1105
			Springfield, Mo.	1315	Mattoon, Ill.	1373			Wisconsin	1305
					Mt. Vernon, O.	1307			Illinois	1519
					New Phila., O.	1276			Iowa	966
					Lincoln, Ill.	1186				
					Beaver Dam, Wis.	1253				
					Boone, Ia.	1400				
					Columbia, Mo.	1508				
					Moberly, Mo.	1269				
			South	Atlanta, Ga.	1879	Columbia, S. C.			1975	Albany, Ga.
Mobile, Ala.	1532	Griffin, Ga.				1256	N. Carolina	1591		
		Gastonia, N. C.				1166	S. Carolina	1153		
		Sumter, S. C.				1596	Georgia	794		
Mountain and Plains	Denver, Colo.	1705	Butte, Mont.	1817	Billings, Mont.	1947	Kansas-N. Dakota-Colo.-Montana-S. Dakota	1209	N. Dakota	705
			Pueblo, Colo.	1517	Greeley, Colo.	1556			Kansas	857
					Logan, Utah	1486			Colorado-Montana-S. Dakota	
					Provo, Utah	1422				
					Dodge City, Kan.	1327				
Pacific	Portland, Ore.	1654	Aberdeen-Hoquiam, Wash.	1512	Astoria, Ore.	1683	California-Oregon-Washington	1552	Washington	1182
			Bellingham, Wash.	1387	Eugene, Ore.	1652			Oregon	1199
			Everett, Wash.	1477	Klamath Falls, Ore.	1689			Washington	1429
					Olympia, Wash.	1676			Central Calif.	1534
								South Calif.		

See Table 4, same column, for type of farming.

SOURCE: Study of Consumer Purchases.

of community group is ever out of line in a given region. The large cities have the highest incomes in three regions and the second highest in two. The middle-size cities show the second highest earnings in two regions, and the third highest in the remaining three. The small cities once again display the least uniformity. The village units rank fourth in three regions, third and fifth in the other two. The farms rise above the lowest rank in only one instance.

TABLE 6

Mean Incomes of Families, by Region and Size of Community

REGION	LARGE CITIES	MIDDLE-SIZE CITIES	SMALL CITIES	VILLAGE UNITS	AVERAGE
New England	\$1,955	\$1,709	\$1,869	\$1,682	\$1,804
North Central	2,058	1,680	1,551	1,461	1,688
South	2,158	2,120	1,796	2,004	2,019
Mountain and Plains	2,063	1,901	1,805	1,605	1,843
Pacific	1,890	1,676	1,873	1,605	1,761
Average	2,025	1,817	1,779	1,671	1,823

SOURCE: Table 4.

a) RANKS OF SIZE OF COMMUNITY CLASSES BY MEAN INCOME, FIVE REGIONS

New England	1	3	2	4
North Central	1	2	3	4
South	1	2	4	3
Mountain and Plains	1	2	3	4
Pacific	1	3	2	4

b) RANKS OF REGIONS BY MEAN INCOME, FOUR SIZE OF COMMUNITY CLASSES

SIZE OF COMMUNITY	NEW ENGLAND	NORTH CENTRAL	SOUTH	MOUNTAIN & PLAINS	PACIFIC
Large cities	4	3	1	2	5
Middle-size cities	3	4	1	2	5
Small cities	2	5	4	3	1
Village units	2	5	1	3-5	3-5

The impressions conveyed by these tables of ranks are confirmed by statistical tests of significance. An analysis of ranks yields a χ^2 of 12.12 for Table 6a and of 15.2 for Table 7a, values that would be exceeded by chance less than once in a hundred times.³ An analysis of variance based on Table 6 yields a similar result.

³ Milton Friedman, 'The Use of Ranks to Avoid the Assumption of Normality Implicit in the Analysis of Variance', *Journal of the American Statistical Association*, Dec. 1937. The degrees of freedom available are respectively 3 for Table 6a and 4 for Table 7a.

TABLE 7

Median Incomes of Families, by Region and Size of Community

REGION	LARGE CITIES	MIDDLE-SIZE CITIES	SMALL CITIES	VILLAGE UNITS	FARM UNITS
New England	\$1,554	\$1,481	\$1,510	\$1,447	\$1,181
North Central	1,751	1,430	1,376	1,154	1,255
South	1,879	1,740	1,345	1,474	1,150*
Mountain and Plains	1,705	1,630	1,735	1,322	837
Pacific	1,654	1,455	1,670	1,405	1,287

* Since the data for the farms of the South were not available in the summer of 1941, the median for that cell is a guess.

SOURCE: Table 5.

a) RANKS OF SIZE OF COMMUNITY CLASSES BY MEDIAN INCOME, FIVE REGIONS

New England	1	3	2	4	5
North Central	1	2	3	5	4
South	1	2	4	3	5
Mountain and Plains	2	3	1	4	5
Pacific	2	3	1	4	5

b) RANKS OF REGIONS BY MEDIAN INCOME, FIVE SIZE OF COMMUNITY CLASSES

SIZE OF COMMUNITY	NEW ENGLAND	NORTH CENTRAL	SOUTH	MOUNTAIN & PLAINS	PACIFIC
Large cities	5	2	1	3	4
Middle-size cities	3	5	1	2	4
Small cities	3	4	5	1	2
Village units	2	5	1	4	3
Farms	3	2	4	5	1

III Regional Differences in Income

A ranking of regions by size of mean incomes (Table 6b), unlike the ranking of size of community classes, displays no discernible order, except in the South, which ranks first in three of the four size of community classes.⁴ New England ranks second twice and

⁴ The unexpectedly high incomes in the South have so far escaped efforts at explanation.

At first glance, the exclusion of Negroes from the data used might seem to account for the apparent prosperity (high average income and low relief ratio, *Consumer Incomes in the United States*, p. 74, Table 9A) of the South. The average income of nonrelief Negro families is about one-third that of nonrelief white families (*ibid.*, p. 28 and p. 100, Table 22B), and the exclusion of this numerically large stratum of the population raises the average income of the region to what is perhaps an unaccustomed level. However, this argument loses much of its force in view of a general tendency for foreign born whites to locate in other regions. The latter group is also subject to occupational disabilities, although probably in less degree. Table 3 shows that the proportion of total families represented by the sample of complete nonrelief

third and fourth once; the North Central region fifth twice, and third and fourth once. The Mountain and Plains region ranks second twice, third once, and ties with the Pacific region for third and fourth place in the village group. In addition to this tie, the Pacific region ranks fifth twice, and first once.

A ranking of the five regions by median income (Table 7b) displays even greater variability. The haphazardness of the regional rankings is such that the Mountain and Plains region occupies a first, second, third, fourth, and fifth place.

Statistical tests of significance reveal that the observed degree of consistency among the regional rankings might easily have arisen by chance. For Table 6b, χ^2 is 5.95; for Table 7b, 1.6. The former would be exceeded by chance more than one time in ten; the latter, more than half the time.⁵

IV Explanation of Size of Community Differences in Income

Statistical analysis points to the conclusion that income differences among communities are correlated with differences in community size, not with regional location. We shall now attempt to account for the relation between size of community and income.

Some factors that may underlie it cannot be measured. On the Pacific Coast, for instance, two groups of villages of the same size have entirely different income levels.⁶ Clearly, neither factor under investigation in this paper explains this income difference. The explanation lies in the industrial structure of the villages. One group, in Washington and Oregon, is composed of independent communities; the other, in California, of what are almost suburbs

native white families is about as high and just as variable in the South as in the other regions.

The authors of *Consumer Incomes in the United States* have suggested unrepresentative sampling as the explanation (*ibid.*, p. 36). However, this admission is not conclusive in the face of a review that blames unrepresentative sampling for exactly the opposite error, that of consistently understating the income of the South in communities of each size (Rufus S. Tucker, 'The National Resources Committee's Report on Distribution of Income', *Review of Economic Statistics*, Feb. 1940, p. 165). Mr. Tucker finds that the sample communities in the South "were on the whole abnormally deficient in the comforts of life", that is, abnormally in relation to actual living conditions in that region.

⁵ Four degrees of freedom are available in both tables. To obtain comparability with the analysis of the means (Table 6), the farm group was then omitted from the analysis of the median incomes (Table 7). The results were not affected.

⁶ Consumer Purchases Study, *Family Income and Expenditures*, Pacific Region, Part One, Urban and Village Series, p. 110.

TABLE 8
Mean Incomes of Wage Earning Families in Several Communities, Classified by Region and Size of Community, 1935-1936

Region	LARGE CITIES		MIDDLE-SIZE CITIES		SMALL CITIES		VILLAGE UNITS	
	Name	Mean income	Name	Mean income	Name	Mean income	Name	Mean income
New England	Providence, R. I.	\$1430	New Britain, Conn.	\$1407	Wallingford, Conn.	\$1574	Vermont-Mass.	\$1364
			Haverhill, Mass.	1350	Willimantic, Conn.	1362		
North Central	Columbus, Ohio	1624	Dubuque, Iowa	1251	Westbrook, Me.	1312		
			Muncie, Ind.	1446	Greenfield, Mass.	1544		
			New Castle, Pa.	1438	Beaver Falls, Pa.	1431	Pennsylvania-Ohio	1115
			Springfield, Ill.	1478	Connellsville, Pa.	1521	Michigan-Wisconsin	1108
		Springfield, Mo.	1267	Logansport, Ind.	1338	Illinois-Iowa	957	
				Peru, Ind.	1411			
				Mattoon, Ill.	1438			
				Mt. Vernon, Ohio	1334			
				New Phila., Ohio	1202			
				Lincoln, Ill.	1150			
				Beaver Dam, Wis.	1219			
				Boone, Iowa	1375			
				Columbia, Mo.	1215			
				Moberly, Mo.	1374			
South	Atlanta, Ga.	1599	Columbia, S. C.	1515	Albany, Ga.	1613	Georgia-S. Carolina	1079
			Mobile, Ala.	1349	Griffin, Ga.	1154	N. Carolina-Miss.	1187
					Gastonia, N. C.	1092		
					Sumter, S. C.	1222		
Mountain and Plains	Denver, Colo.	1457	Butte, Mont.	1697	Billings, Mont.	1700	Kansas-North Dakota	927
			Pueblo, Colo.	1451	Greeley, Colo.	1176	Colo.-Mont.-S. Dakota	1216
					Logan, Utah	1103		
				Provo, Utah	1187			
				Dodge City, Kan.	1194			
Pacific	Portland, Ore.	1529	Aberdeen-Hoquiam, Wash.	1469	Astoria, Ore.	1438	California	1473
			Bellingham, Wash.	1353	Eugene, Ore.	1504	Oregon-Washington	1131
			Everett, Wash.	1467	Klamath Falls, Ore.	1569		
				Olympia, Wash.	1488			

SOURCE: *Study of Consumer Purchases*.

TABLE 9
Mean Incomes of Clerical Families in Several Communities, Classified by Region and Size of Community, 1935-1936

Region	LARGE CITIES		MIDDLE-SIZE CITIES		SMALL CITIES		VILLAGE UNITS	
	Name	Mean income	Name	Mean income	Name	Mean income	Name	Mean income
New England	Providence, R. I.	\$1878	New Britain, Conn.	\$1742	Wallingford, Conn.	\$2028	Vermont-Mass.	\$1785
			Haverhill, Mass.	1723	Willimantic, Conn.	1738		
					Westbrook, Me.	1534		
North Central	Columbus, Ohio	2089	Dubuque, Iowa	1694	Greenfield, Mass.	1837	Pennsylvania-Ohio Michigan-Wisconsin Illinois-Iowa	1505 1618 1385
			Muncie, Ind.	1777	Beaver Falls, Pa.	1870		
			New Castle, Pa.	1749	Connellsville, Pa.	1818		
			Springfield, Ill.	2004	Logansport, Ind.	1562		
			Springfield, Mo.	1643	Peru, Ind.	1421		
					Mattoon, Ill.	1678		
					Mt. Vernon, Ohio	1598		
					New Phila., Ohio	1492		
					Lincoln, Ill.	1717		
					Beaver Dam, Wis.	1747		
					Boone, Iowa	1632		
South	Atlanta, Ga.	2190	Columbia, S. C.	2215	Columbia, Mo.	1927	Georgia-S. Carolina N. Carolina-Miss.	1681 2024
			Mobile, Ala.	1867	Moberly, Mo.	1569		
					Albany, Ga.	2026		
					Griffin, Ga.	1799		
					Gastonia, N. C.	1783		
Mountain and Plains	Denver, Colo.	2000	Butte, Mont.	1989	Sumter, S. C.	2085	Kansas-North Dakota Colo.-Mont.-S. Dakota	1533 1668
			Pueblo, Colo.	1743	Billings, Mont.	2107		
					Greeley, Colo.	1635		
					Logan, Utah	1543		
					Provo, Utah	1637		
					Dodge City, Kan.	1555		
					Astoria, Ore.	1953		
Pacific	Portland, Ore.	1899	Aberdeen-Hoquiam, Wash.	1826	Eugene, Ore.	1848	California Oregon-Washington	1829 1508
			Bellingham, Wash.	1668	Klamath Falls, Ore.	1962		
			Everett, Wash.	1739	Olympia, Wash.	1965		

SOURCE: *Study of Consumer Purchases.*

TABLE 10
Mean Incomes of Business and Professional Families in Several Communities, Classified by Region and Size of Community, 1935-1936

Region	LARGE CITIES		MIDDLE-SIZE CITIES		SMALL CITIES		VILLAGE UNITS	
	Name	Mean income	Name	Mean income	Name	Mean income	Name	Mean income
New England	Providence, R. I.	\$3066	New Britain, Conn.	\$2596	Wallingford, Conn.	\$3718	Vermont-Mass.	\$2394
			Haverhill, Mass.	2323	Willimantic, Conn.	3132		
					Westbrook, Me.	2334		
North Central	Columbus, Ohio	2776	Dubuque, Iowa	2152	Greenfield, Mass.	2553	Pennsylvania-Ohio Michigan-Wisconsin Illinois-Iowa	2043 2012 1796
			Muncie, Ind.	2428	Beaver Falls, Pa.	2192		
			New Castle, Pa.	2392	Connellsville, Pa.	2070		
			Springfield, Ill.	2732	Logansport, Ind.	1802		
			Springfield, Mo.	2017	Peru, Ind.	1875		
					Mattoon, Ill.	1988		
					Mt. Vernon, Ohio	2189		
					New Phila., Ohio	2098		
					Lincoln, Ill.	1849		
					Beaver Dam, Wis.	1952		
					Boone, Iowa	1857		
South	Atlanta, Ga.	2890	Columbia, S. C.	3382	Columbia, Mo.	2761	Georgia-S. Carolina N. Carolina-Miss.	2135 3093
			Mobile, Ala.	2568	Moberly, Mo.	1779		
					Albany, Ga.	2954		
					Griffin, Ga.	2712		
					Gastonia, N. C.	2631		
Mountain and Plains	Denver, Colo.	2836	Butte, Mont.	3233	Sumter, S. C.	2646	Kansas-North Dakota Colo.-Mont.-S. Dakota	1779 2366
			Pueblo, Colo.	2111	Billings, Mont.	3034		
					Greeley, Colo.	2259		
					Logan, Utah	2127		
					Provo, Utah	1908		
					Dodge City, Kan.	1770		
					Astoria, Ore.	2492		
Pacific	Portland, Ore.	2517	Aberdeen-Hoquiam, Wash.	2415	Eugene, Ore.	2308	California Oregon-Washington	2514 1913
			Bellingham, Wash.	2123	Klamath Falls, Ore.	2837		
			Everett, Wash.	2172	Olympia, Wash.	2341		

SOURCE: *Study of Consumer Purchases.*

of metropolitan centers. The communities in the second group partake to a large extent of the income characteristics of the cities of which they are suburbs, and their income level is higher.

A Size of family

Size of family is clearly not important in explaining family income differences among urban communities. The mean number of persons per family in the urban group varies from 3.5 to 3.7. It is only on farms that the average rises to 4.5.⁷

TABLE 11

Mean Incomes of Wage Earning Families, by Region and Size of Community

REGION	LARGE CITIES	MIDDLE-SIZE CITIES	SMALL CITIES	VILLAGE UNITS	AVERAGE
New England	\$1,420	\$1,379	\$1,448	\$1,364	\$1,403
North Central	1,624	1,376	1,334	1,060	1,349
South	1,599	1,432	1,270	1,133	1,359
Mountain and Plains	1,457	1,574	1,272	1,072	1,344
Pacific	1,529	1,430	1,500	1,302	1,440
Average	1,526	1,438	1,365	1,186	1,379

SOURCE: Table 8.

a) RANKS OF SIZE OF COMMUNITY CLASSES BY MEAN INCOME OF WAGE EARNING FAMILIES, FIVE REGIONS

REGION	LARGE CITIES	MIDDLE-SIZE CITIES	SMALL CITIES	VILLAGE UNITS
New England	2	3	1	4
North Central	1	2	3	4
South	1	2	3	4
Mountain and Plains	2	1	3	4
Pacific	1	3	2	4

b) RANKS OF REGIONS BY MEAN INCOME OF WAGE EARNING FAMILIES, FOUR SIZE OF COMMUNITY CLASSES

SIZE OF COMMUNITY	NEW ENGLAND	NORTH CENTRAL	SOUTH	MOUNTAIN & PLAINS	PACIFIC
Large cities	5	1	2	4	3
Middle-size cities	4	5	2	1	3
Small cities	2	3	5	4	1
Village units	1	5	3	4	2

B Occupation

In each region and community size group, incomes tend to be highest for professional and business families, next highest for clerical families, and lowest for wage earning families (Tables 11,

⁷ *Consumer Incomes in the United States*, p. 23. It will be recalled that the conclusions of this paper regarding size of community income differences do not depend on the inclusion of the farm group in the analysis (footnote 5).

12, 13). The distribution of families among these three occupational groups is apparently not the same in all communities, the business and professional families tending to be concentrated in the larger communities.

To test whether differences in the occupational composition of communities account in part for the observed differences in average family income, hypothetical averages that eliminate the influence of occupational distribution were computed (Table 14). The hypo-

TABLE 12

Mean Incomes of Clerical Families, by Region and Size of Community

REGION	LARGE CITIES	MIDDLE-SIZE CITIES	SMALL CITIES	VILLAGE UNITS	AVERAGE
New England	\$1,878	\$1,733	\$1,789	\$1,785	\$1,796
North Central	2,089	1,733	1,669	1,503	1,749
South	2,190	2,041	1,923	1,853	2,002
Mountain and Plains	2,000	1,866	1,695	1,601	1,790
Pacific	1,899	1,744	1,932	1,669	1,811
Average	2,011	1,823	1,802	1,682	1,830

SOURCE: Table 9.

a) RANKS OF SIZE OF COMMUNITY CLASSES BY MEAN INCOME OF CLERICAL FAMILIES, FIVE REGIONS

REGION	LARGE CITIES	MIDDLE-SIZE CITIES	SMALL CITIES	VILLAGE UNITS
New England	1	4	2	3
North Central	1	2	3	4
South	1	2	3	4
Mountain and Plains	1	2	3	4
Pacific	2	3	1	4

b) RANKS OF REGIONS BY MEAN INCOME OF CLERICAL FAMILIES, FOUR SIZE OF COMMUNITY CLASSES

SIZE OF COMMUNITY	NEW ENGLAND	NORTH CENTRAL	SOUTH	MOUNTAIN & PLAINS	PACIFIC
Large cities	5	2	1	3	4
Middle-size cities	5	4	1	2	3
Small cities	3	5	2	4	1
Village units	2	5	1	4	3

thetical averages are weighted averages of the values in the corresponding regional-size-of-community cells of Tables 11, 12, and 13, which show respectively the average incomes of wage earning, clerical, and business and professional families. The weights are equal to the percentage of all families in the United States in each occupational group and are the same for all cells of Table 14. When the occupational distribution is the same for all cells, differences among the cells cannot be attributed to differences in occupational composition.

There is greater variability in averages of actual family incomes than in those of hypothetical (Tables 6 and 14).⁸ Some part of the variability in Table 6, of income differences among communities, is therefore attributable to differences in occupational composition.

It is clear from Table 14a, however, that differences in occupational composition do not account for all the income differences among size of community classes. In every region the hypothetical

TABLE 13

Mean Incomes of Business and Professional Families, by Region and Size of Community

REGION	LARGE CITIES	MIDDLE-SIZE CITIES	SMALL CITIES	VILLAGE UNITS	AVERAGE
New England	\$3,066	\$2,460	\$2,934	\$2,394	\$2,714
North Central	2,776	2,344	2,034	1,950	2,276
South	2,890	2,975	2,736	2,614	2,804
Mountain and Plains	2,836	2,722	2,220	2,073	2,463
Pacific	2,517	2,237	2,745	2,214	2,428
Average	2,817	2,547	2,534	2,249	2,537

SOURCE: Table 10.

a) RANKS OF SIZE OF COMMUNITY CLASSES BY MEAN INCOME OF BUSINESS AND PROFESSIONAL FAMILIES, FIVE REGIONS

New England	1	3	2	4
North Central	1	2	3	4
South	2	1	3	4
Mountain and Plains	1	2	3	4
Pacific	2	3	1	4

b) RANKS OF REGIONS BY MEAN INCOME OF BUSINESS AND PROFESSIONAL FAMILIES, FOUR SIZE OF COMMUNITY CLASSES

SIZE OF COMMUNITY	NEW ENGLAND	NORTH CENTRAL	SOUTH	MOUNTAIN & PLAINS	PACIFIC
Large cities	1	4	2	3	5
Middle-size cities	3	4	1	2	5
Small cities	1	5	3	4	2
Village units	2	5	1	4	3

means are lowest in villages; in three of the five regions they are highest in large cities and in the other two, next to the highest. χ^2 for Table 14a is 10.68, somewhat less than the corresponding value for Table 6a, but still quite large since it would be exceeded by chance less frequently than twice in a hundred times.

A ranking of the five regions by hypothetical mean income

⁸ Variability is measured by the sum of squares of the differences between cell means and the grand mean. The sum of squares for Table 6 is 754,771; for Table 14, it is 685,906; the difference is 68,865.

(Table 14b) displays less consistency. χ^2 is 6.40, which would be exceeded by chance more than ten times in a hundred.

Similar tests of regional and size of community differences in income have been made for each occupational group separately. The tables of ranks on which they are based are given in Tables 11a, 11b, 12a, 12b, 13a, and 13b, and the values of χ^2 and the proba-

TABLE 14

Hypothetical Mean Incomes of Families, Assuming Uniformly Distributed Working Population, by Region and Size of Community

REGION	LARGE CITIES	MIDDLE-SIZE CITIES	SMALL CITIES	VILLAGE UNITS	AVERAGE
New England	\$1,955	\$1,741	\$1,917	\$1,726	\$1,835
North Central	2,028	1,709	1,590	1,389	1,679
South	2,066	1,970	1,796	1,677	1,877
Mountain and Plains	1,938	1,942	1,612	1,448	1,735
Pacific	1,870	1,710	1,922	1,621	1,781
Average	1,971	1,814	1,767	1,572	1,781

SOURCE: Tables 11, 12, and 13 and occupational percentages 52.9, 20.2, and 26.9 for wage earning, clerical, and business and professional families, respectively, adapted from *Consumer Incomes in the United States*, p. 26.

a) RANKS OF SIZE OF COMMUNITY CLASSES BY HYPOTHETICAL MEAN INCOME, FIVE REGIONS

New England	1	3	2	4
North Central	1	2	3	4
South	1	2	3	4
Mountain and Plains	2	1	3	4
Pacific	2	3	1	4

b) RANKS OF REGIONS BY HYPOTHETICAL MEAN INCOME, FOUR SIZE OF COMMUNITY CLASSES

SIZE OF COMMUNITY	NEW ENGLAND	NORTH CENTRAL	SOUTH	MOUNTAIN & PLAINS	PACIFIC
Large cities	3	2	1	4	5
Middle-size cities	3	5	1	2	4
Small cities	2	5	3	4	1
Village units	1	5	2	4	3

bilities attached to them, in Table 15. The tests of size of community differences for these tables yield values of χ^2 which, while higher than could reasonably be attributed to chance, are on the borderline of significance, the probabilities all being slightly larger than one in a hundred. The regional differences for each occupational group, like those for all groups combined, are not significant. Apparently, therefore, incomes within an occupation are somewhat more homogeneous than incomes in general. To the extent that this

homogeneity exists, differences in occupational composition are important for the explanation of the income differences among size of community classes.

TABLE 15

Summary of χ^2 and Corresponding Probability in Study of Mean Incomes of Occupational Groups

a) TESTS OF SIGNIFICANCE OF SIZE OF COMMUNITY DIFFERENCES ¹

	χ^2	P
Wage earning families	10.68	.01 to .02
Clerical families	10.20	.01 to .02
Business and professional families	10.68	.01 to .02

b) TESTS OF SIGNIFICANCE OF REGIONAL DIFFERENCES ²

Wage earning families	1.4	>.50
Clerical families	7.6	>.10
Business and professional families	9.6	.02 to .05

¹ In test of size of community income differences, 3 degrees of freedom are available. The corresponding χ^2 at P = .01 is 11.341; at P = .05, χ^2 is 7.815.

² In test of regional income differences, 4 degrees of freedom are available. The corresponding χ^2 at P = .01 is 13.277; at P = .05, it is 9.488.

V Summary

Analysis of the data from the Study of Consumer Purchases shows that income differences among communities varying in size are significant. The distribution of the better paid occupations, like the professions and executives of corporations, in favor of the large cities may be one factor explaining this significant difference. The income differences among regions are apparently not significant.

Discussion

DANIEL S. GERIG, JR. AND LAURA WENDT

Mr. Klarman analyzes differences in average income among communities of varying size within the same region and among communities of the same size in different regions. His analysis is based on income figures for one color-nativity group, native born whites. Restriction of the comparison to this particular group limits the generality of his conclusions, particularly since the omission of other groups does not affect all regions to the same degree. Mr.

Klarman concludes that variations in average income are more closely correlated with size of community than with regional location, average income tending to be low in small communities and high in large communities. He does not make clear, however, the bearing of this differentiation upon the problem of allocating federal grants-in-aid among states.

The grants-in-aid administered by the Social Security Board are made not to regions as such, or to individual communities, but to state governments. The funds are distributed among its subdivisions by the state itself. Accordingly, it is necessary in allocating grants among states in accordance with fiscal capacity to work with a summary figure for each state, such as the state per capita income. Presumably low average income is a sign of low fiscal capacity, whether the community is large or small. Thus, if a state consists primarily of low income communities, sufficiently preponderant to cause the state's per capita income to be low, the state would seem to be eligible for favorable treatment in the distribution of grants regardless whether most of its communities are large or small.

Mr. Klarman states that if a low per capita income of a state results from the combination of many poor communities with several rich communities, the rich communities should be able to take care of some of the welfare needs of the poor communities. The extent to which this is possible depends, of course, on the actual proportion of the two types of community. Under the public assistance programs the states now provide one-half of the total cost. Presumably the wealthier communities in each state are already contributing a more than proportionate share of state revenues and thus, to some extent, are already aiding the poorer communities. This is not to imply, however, that the former can bear the entire cost of welfare needs in a state, for even though there may be concentrations of wealth in the large cities, neither their tax systems nor that of the states can tap this wealth as effectively as can the federal government. Furthermore, the existence of a high average income in a large community does not preclude the possibility of a large volume of welfare need in the same community.

We should like to make clear that the proposed use of state per capita income figures for grants-in-aid is not primarily as a series for measurement of the need but as an index reflecting relative differences in tax raising ability. The ascertainment of the total need under the public assistance program comes about through the

intake and case work activities of the state agencies, which determine the number of needy persons in each state who will receive aid and the size of the payment to each person. The state per capita income figures would not be used to throw any additional light on the aggregate amounts needed in the states but rather to provide a basis for varying the percentage share of the total cost to be borne by the federal government in inverse relation to the capacity of the states to finance their share. We do not think that the omission of foreign born whites and Negroes in the North is by any means a complete offset to the omission of Negroes in the South. The ratio of the incomes of Negroes to native whites in the South is undoubtedly considerably below that of the incomes of foreign born to native whites in the North. Likewise, the incomes of Negroes in the South are considerably below those of Negroes in North Central cities, and the ratio of incomes of Negroes to those of native whites is lower in the South than in the North Central cities. In other words, the typical lowness of incomes of Negroes is an extremely important factor in the general lowness of average income in the South, and the omission of data on the incomes of Negroes from any study of regional differentials makes such a study incomplete. Mr. Klarman states in his introduction that the omission of incomes of other than native white persons limits the generality of the possible conclusions but he has not adequately qualified his subsequent generalizations to take account of this limitation.

In order to show the importance of including all color-nativity groups in this comparison when its implications for a grants-in-aid policy are under consideration, we have compiled figures from the Study of Consumer Purchases relating to average incomes of families in all color-nativity groups by size of community and region. Whereas Mr. Klarman's comparison was made on the basis of non-relief native white normal families only, the figures we present in Tables 1 and 2 relate to all nonrelief families—native white, foreign born white, Negro and other color, including both normal and broken families. They were available from a study conducted previously in the Bureau of Research and Statistics of the Social Security Board, in which published and unpublished data from the National Resources Committee study on *Consumer Incomes in the United States* were used to study differences in income distribution among regions and states. Mr. Klarman's figures on average income are developed on the basis of raw sample data from the Study of Consumer Purchases classified by size of community within region.

The figures in Tables 1 and 2 below are based on the sample data from the Study of Consumer Purchases after their processing by the National Resources Committee. Samples for communities of the same size in a region were averaged by the National Resources Committee to obtain a composite sample for that type of community within the region, a color-nativity break being maintained where

TABLE 1

Mean Incomes of Nonrelief Families in United States, by Region and Size of Community, 1935-1936

REGION	LARGE CITIES	MIDDLE-SIZE CITIES	SMALL CITIES	VILLAGES	FARMS
New England	\$2,289	\$1,750	\$2,264	\$1,856	\$1,392
North Central	2,379	1,835	1,568	1,578	1,441
South	1,841	1,824	1,527	1,578	1,111
Mountain and Plains	2,160	1,868	1,803	1,689	1,021
Pacific	2,072	1,713	1,790	1,837	1,987

a) RANKS OF SIZE OF COMMUNITY CLASSES BY MEAN INCOMES, FIVE REGIONS

REGION	1	2	3	4	5
New England	1	4	2	3	5
North Central	1	2	4	3	5
South	1	2	4	3	5
Mountain and Plains	1	2	3	4	5
Pacific	1	5	4	3	2

b) RANKS OF REGIONS BY MEAN INCOMES, FIVE SIZE OF COMMUNITY CLASSES

SIZE OF COMMUNITY	NEW ENGLAND	NORTH CENTRAL	SOUTH	MOUNTAIN & PLAINS	PACIFIC
Large cities	2	1	5	3	4
Middle-size cities	4	2	3	1	5
Small cities	1	4	5	2	3
Villages	1	4	5	3	2
Farms	3	2	4	5	1

SOURCE: *Consumer Incomes in the United States*, National Resources Committee, August 1938, and unpublished data from the National Resources Committee.

the sample data permitted. There is one further difference in the two sets of figures to which attention should be called. The sample data used in our tables are the National Resources Committee data after adjustment for under-representation of families with high incomes.¹ The sample income data for the individual communities Mr. Klarman used had not been adjusted for this factor.

The mean income for each type of community (Table 1), consists of a weighted average of the mean incomes of all color-nativity groups in that type of community, obtained by weighting the means

¹ This adjustment was made by the National Resources Committee with the use of data from income tax returns. See *Consumer Incomes in the United States*, pp. 80-7.

for each group by the number of families in the group. The distribution of families by color-nativity group and size of community was estimated largely from the 1930 Census.

The median incomes for these families (Table 2) have been derived from the distribution of all nonrelief families by income level in each type of community within each region, as published in *Consumer Incomes in the United States*, Tables 14B-18B. This method differs from that used by Mr. Klarman in calculating the median incomes. At the end of Section I he states "a median income was obtained for each cell by finding the middle item of its combined frequency distribution, derived in turn by summing the frequency distributions of the communities in the cell". His method is somewhat open to question in that it has the effect of involuntarily weighting the several samples for a type of community by the percentage of coverage of each sample. This is undesirable. In the absence of any objective system for weighting the various communities of the same size, it would be better to average the percentage income frequency distributions for the various communities of the same size and then obtain the median from this average distribution. Actually there may be little difference in the size of the medians obtained by the two methods, but technically the method suggested seems more desirable than the one used by Mr. Klarman.²

Table 1, showing the mean incomes of nonrelief families by region and size of community, should be compared with Table 6 of Mr. Klarman's paper, while Table 2, showing the median incomes of these families classified in the same manner, should be compared with his Table 7.

The ranking of the mean incomes by size of community as the primary classification (Table 1a) shows some consistency. Large cities rank first uniformly, while farms rank lowest with the exception of the Pacific region. There is not as high a degree of consistency in the other size units. When the median is used as the basis for comparison, there is somewhat less consistency.

There is one outstanding difference in the ranks of regions with respect to the average income in each size of community in Tables 1b and 2b as compared with Mr. Klarman's figures. When all color-nativity groups are compared, the South ranks *lowest* in 7 out of

² The method suggested is the procedure used generally by the National Resources Committee in combining the sample income data from communities of the same type in the same region. See *Consumer Incomes in the United States*, p. 54.

10 cases. In contrast it ranked *highest* in 6 out of 9 cases in Mr. Klarman's study, where the comparison was restricted to native-white normal families.

Thus, when all color-nativity groups are taken into account, the low average incomes in the South appear to result not only from the prevalence of small communities and farms in that region, as Mr.

TABLE 2
Median Incomes of Nonrelief Families in United States, by Region and Size of Community, 1935-1936

REGION	LARGE CITIES	MIDDLE-SIZE CITIES	SMALL CITIES	VILLAGES	FARMS
New England	\$1,361	\$1,326	\$1,419	\$1,457	\$1,184
North Central	1,646	1,370	1,293	1,163	1,236
South	1,484	1,272	1,093	1,159	780
Mountain and Plains	1,607	1,571	1,493	1,341	860
Pacific	1,544	1,392	1,545	1,433	1,349

a) RANKS OF SIZE OF COMMUNITY CLASSES BY MEDIAN INCOME, FIVE REGIONS

New England	3	4	2	1	5
North Central	1	2	3	5	4
South	1	2	4	3	5
Mountain and Plains	1	2	3	4	5
Pacific	2	4	1	3	5

b) RANKS OF REGIONS BY MEDIAN INCOME, FIVE SIZE OF COMMUNITY CLASSES

SIZE OF COMMUNITY	NEW ENGLAND	NORTH CENTRAL	SOUTH	MOUNTAIN & PLAINS	PACIFIC
Large cities	5	1	4	2	3
Middle-size cities	4	3	5	1	2
Small cities	3	4	5	2	1
Villages	1	4	5	3	2
Farms	3	2	5	4	1

SOURCE: *Consumer Incomes in the United States*, National Resources Committee, August 1938, and unpublished data from the National Resources Committee.

Klarman has shown, but also from a general lowness of incomes in all sizes of communities in that region as compared with other regions. To the extent that our data are valid, it seems that regional location is of more importance in connection with average income than Mr. Klarman's analysis suggests.

DWIGHT B. YNTEMA

Despite its limitations, Mr. Klarman's paper is of considerable interest because it directs attention to analysis of income data per-

taining to different areas of the country. Investigations of this kind are clearly needed at present. They provide the basis for proper interpretation of data now available and pave the way toward further developments in the field. They become important indeed if inter-area income data are to serve any useful end in the formulation of administrative decisions such as might be made in connection with the government programs to which Mr. Klarman alludes. It is unfortunate that Mr. Klarman did not develop in some detail his discussion of the several lines of investigation that inter-area studies might take and the qualifications that apply to findings in this field. I should like to comment briefly on these and related matters.

The fact that the consumer income data used by Mr. Klarman are for family incomes during the 1935-36 period in different regions and in communities of different sizes, measured in current local prices, points to three important considerations. The composition of the family, in the first place, is not necessarily uniform as among areas. Consequently, family incomes will tend to vary as a result of several factors such as the demographic characteristics of the family's breadwinners, including number, race, nationality, age, sex; the number and quality of the vocations represented in the family; and the amount of non-labor income accruing to members of the family. Furthermore, families in different areas are situated in different environments that affect both the income-earning capacities of family members and the income-spending habits of families. Finally, special mention should be made of a particular environmental consideration, namely, prices. Inter-area price differentials will affect family incomes through their effects upon wages, salaries, and other returns. They will also affect expenditure patterns and real incomes through their effects upon the prices of the many commodities and services that the family buys. I mention these points because they seem necessary to proper orientation of Mr. Klarman's study.

Mr. Klarman elects to abstract successively from certain of the numerous factors contributing to inter-area heterogeneity. In the first place, he limits his study to consideration of family incomes of native white complete nonrelief families. This at once restricts the analysis to a specific type of income-receiving and income-spending unit that is much more homogeneous than would be implied in an agglomeration of family and single individual types of all kinds. In consequence, of course, findings are also limited to the specific family type unless a broader applicability can be established. (The

reasoning in support of such broader applicability is far from conclusive.) A second element of homogeneity is deduced from information concerning family size as measured in terms of number of persons per family. Family size, Mr. Klarman finds by reference to the data, is substantially constant among cities and villages although somewhat larger on farms. Finally, a positive step in the direction of homogeneity is made by Mr. Klarman through his separate study of incomes of wage earning, clerical, and business and professional families in cities and villages and the development of hypothetical average incomes based upon constant weights for these three types of families. The analysis, in the end, centers upon differences in income received in various regional and urbanization areas by native white complete nonrelief families in cities and villages after standardization of broad occupational groups.

Tentative conclusions are indicated by Mr. Klarman at successive stages in his analysis. The conclusions follow from the given line of study and, strictly interpreted, can apply only to the particular family type considered. It is quite natural that Mr. Gerig and Miss Wendt should question the application of the findings to all families when the underlying data are exclusively for native white complete nonrelief families. Mr. Gerig and Miss Wendt desire an inter-area index of capacity to raise the state and local public funds required to defray part of the costs of certain programs in which the federal government has elected to become a participant. For this purpose, they prefer a composite average income of all families actually located in the different areas. The two lines of study are in interesting contrast with each other. I would suggest, however, that a large number of additional factors making for heterogeneity still remain to be taken into account in connection with either study.

The family income data, as stated above, measure income in terms of what was called 'current local prices'. The expression has far-reaching implications from the income-earning as well as from the income-spending standpoint. Immediately apparent is the fact that the existence of inter-area differentials in prices of identical factors or products (illustrated, respectively, by wage rates for specific types of labor and prices of specific consumption commodities or services) will directly affect real family incomes. Conceptually, it is just as important to adjust for inter-area price differences as it is to adjust for period-to-period changes in prices when study is made of the real income of a given economy over a period of years. Although there is no need to develop this seemingly obvious point,

I am constrained to suggest that in many cases the influence of price differentials is too readily assigned an inconsequential role.

Equally important, perhaps, are quantity and quality differentials on both the income-earning and income-spending sides. Mr. Klarman's attempt to abstract from heterogeneity among broad occupational classes may be used in illustration of one quantity differential that is operative on the income-receiving side. Allowance for this factor is only the beginning since in standardizing family earnings among areas it would be desirable to recognize several additional factors, e.g., hours and weeks worked, particular occupations, earnings of secondary family workers, and non-labor incomes of families. Even if moderately fine adjustments be made in abstracting from actual quantitative differentials, it is likely that qualitative differences will still persist within these categories. Thus, the fact that better paid occupations (like 'the professions and executives of corporations' to which Mr. Klarman alludes) appear to be relatively more numerous in large cities is supplemented by the strong possibility that on the average the earning capacity of persons in these pursuits is more or less positively correlated with the size of the community in which they have located. This suggests many factors (training, experience, working conditions, climatic influences, etc.) that may tend to produce important qualitative differentials among areas.

On the expenditure side, quantity and quality differentiation is also present. Habits of consumers are not uniform because of differences in climate, vocation, and many other factors intrinsic to the physical, economic, and cultural characteristics of the areas. Evidence of inter-area variation is present among as well as within major budget categories. Both the relative size of the total food and clothing budgets, for example, and their composition are influenced by the peculiarities of the given settings. In the recreation category, differences are likely to be especially striking. Here, the relative costs of recreation and the availability of facilities for recreation in combination with differences in tastes tend to introduce striking disparities in consumption patterns. It must be remembered, of course, that the question is not one of the proportion of total consumer expenditure devoted to any given budget category. Rather the question is that of the real return from actual expenditures after allowance for differentials in prices and recognition of peculiarities in the quantitative and qualitative composition of budgets. Ideally, the budgets themselves should not neglect

goods that are substantially free in some areas and definitely economic in others.

The foregoing comments are intended to stress the importance of price and budget factors in modifying observed inter-area differences in incomes as measured in 'current local prices'. These factors are commonly recognized as imposing severe limitations on comparisons of incomes among nations. Yet the two cases have much in common; they are different chiefly in degree. Factors of this kind constitute a major barrier to successful application of income data to inter-area problems within the nation as well as among nations.

On the assumption that this problem may some day be acceptably resolved, I should like to add to Mr. Klarman's list of uses to which findings may be put. He speaks of their bearing upon government action in such fields as agriculture, internal migration, education, and welfare. I would add a quite different field—that of taxation, and especially federal taxation of personal incomes—as a case deserving particular attention. As long as personal income tax rates were at fairly low levels, failure to take into account inter-area differences in real incomes was not of great consequence. But, with the much higher rates now prevailing, the elemental equities of the case call for some recognition of inter-area differentials in real income deriving from given dollar incomes of various amounts. This point is made with all due respect for the administrative complexities and the legal (constitutional) obstacles involved. It is added because the inter-community differences in family incomes that Mr. Klarman calls to our attention would seem to result in part from inter-community differences in real incomes accruing from given dollar incomes.

Part Seven

ADEQUACY OF ESTIMATES
AVAILABLE FOR COMPUTING
NET CAPITAL FORMATION

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OFFICE OF PRICE ADMINISTRATION

This paper is necessarily in considerable part simply a means of bringing together observations made by the pioneer estimators. The National Bureau of Economic Research is responsible for, and Simon Kuznets is the author of, the basic methods, measures, and compilations in this field. Mr. Kuznets' monumental work, *Commodity Flow and Capital Formation*, blazed a trail of preeminent importance in economic statistics, a trail now being extended and improved in the Department of Commerce.

The National Bureau's publication, *Capital Consumption and Adjustment*, by Solomon Fabricant, affords the complementary estimates necessary for derivation of Mr. Kuznets' 'approximate' measures of net capital formation. No one could be as well aware as these two notable statisticians of the weaknesses that inhere in the measures. Their works contain most of the observations that can be made concerning the adequacy of their measures of gross capital formation and capital consumption. The writer is, accordingly, deeply indebted to both.