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CHAPTER 3

Stability of Composition and Patterns of Income

THE ANALYSIS in the preceding chapter was confined to data for /
1936. Although the data for 1929 and 1935 are less extensive, they
can be used in conjunction with the 1936 data to study changes
in income patterns over time.[1] Comparison of the data for the
three years will determine, first, whether an individual reports
income from the same sources year after year; second, whether
the patterns at the several income levels remain approximately
the same.

  These income patterns provide two tests of the stability of the
functional grouping of individuals. (1) If individuals receive the
same receipts for a period, their functional group does not
change, provided the receipts are in approximately the same pro-
portions. On the other hand, if the sources change considerably,
a functional classification of individuals in one year is not valid
for the next. In extreme cases a wage earner in one year might be
a business man the next. (2) The stability of patterns at specific
income levels in different years (though the individuals may be
different) tests the stability of the average relation among indi-
vidual incomes within the three functional groups. But if the
patterns of income reported at specific income levels differ from
one year to the next, the ranking of the three groups by size of

[1] *Wisconsin Individual Income Tax Statistics: Patterns of Income, 1929 and 1935.*

average total income in one year may not indicate the rankings in other years.

A   STABILITY OF AN INDIVIDUAL'S INCOME PATTERN

The persistence of an individual's pattern of income over time cannot be tested exactly. However, a sample of 13,184 identical tax paying families in Wisconsin that reported certain receipts in two successive years during 1929-35 indicated that except when the chief source is capital gains, individuals tend to receive their incomes from the same sources over a long period.[2] Of the six receipts covered—wages, interest, dividends, business profits, rent, and capital gains—wages were the most common source (Table 10). The percentage of families reporting wages in one year, but not in the next, was highest in 1931. Yet, of the 10,687 families who reported wages in 1931, only 332, or 3.1 percent, did not report wages in 1932. At least 75 percent of the families who reported interest, dividends, business profits, or rent in any one year reported these items again the next year.[3] Capital gains are least recurrent. Fewer than 51 percent of the families who reported capital gains in any one year reported them also the next year. However, capital gains were reported as the largest source in 1936 on only 2,430 returns, or by about one-half of one percent of all persons who filed that year; 1,617 reported some other property receipt as the second largest source (App. Table 1). Consequently, though capital gains tend to be intermittent, the individuals who report capital gains as the largest source in one year will probably be classified as investors the next year because their second largest source is also from property.

[2] *Wisconsin Individual Income Tax Statistics: Changes in Income of Identical Taxpayers, 1929-1935.* These data are for families, whereas the patterns are analyzed on the basis of individual incomes. The rough tests for which the family data are used are not affected by the noncomparability of the income-receiving units.

[3] Total income on the Wisconsin income tax return includes business profits and net rent only when they are positive (see Part I). If a family reported a business profit one year and a business loss the next, it would be counted in Table 10 as not having received business income in successive years. If we were to include negative as well as positive business incomes, the percentage of families receiving business incomes in successive years would undoubtedly be considerably larger than that shown in Table 10.

TABLE 10

Number in Sample of 13,184 Families that Received Selected Receipts in Two Successive Years, 1929-1935

FAMILIES RECEIVING SPECIFIED RECEIPT	WAGES & SALARIES		INTEREST		DIVIDENDS		BUSINESS PROFITS*		NET RENT		CAPITAL GAINS	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
At least once, 1929-35	11,517		4,923		4,806		2,795		3,085		1,482	
In 1929, total	10,868		3,389		2,727		1,970		1,920		624	
In 1929, but not in 1930	289	2.66	504	14.87	466	17.09	325	16.50	317	16.51	432	69.23
In 1930, but not in 1929	235	2.17	576	16.64	656	22.49	225	12.03	377	19.04	226	54.07
In 1930, total	10,814		3,461		2,917		1,870		1,980		418	
In 1930, but not in 1931	281	2.60	490	14.16	484	16.59	308	16.47	355	17.93	299	71.53
In 1931, but not in 1930	154	1.44	471	13.68	517	17.53	225	12.59	303	15.72	199	62.58
In 1931, total	10,687		3,442		2,950		1,787		1,928		318	
In 1931, but not in 1932	332	3.11	680	19.76	697	23.63	371	20.76	403	20.90	243	76.42
In 1932, but not in 1931	176	1.67	308	10.03	475	17.41	234	14.18	317	17.21	104	58.10
In 1932, total	10,531		3,070		2,728		1,650		1,842		179	
In 1932, but not in 1933	326	3.10	584	19.02	838	30.72	178	10.79	395	21.44	104	58.10
In 1933, but not in 1932	254	2.43	319	11.37	377	16.63	432	22.69	325	18.36	207	73.41
In 1933, total	10,459		2,805		2,267		1,904		1,770		282	
In 1933, but not in 1934	220	2.10	367	13.08	408	18.00	189	9.93	302	17.06	175	62.06
In 1934, but not in 1933	249	2.37	385	13.64	603	24.49	296	14.72	415	22.04	195	64.57
In 1934, total	10,488		2,823		2,462		2,011		1,883		302	
In 1934, but not in 1935	256	2.44	356	12.61	435	17.67	205	10.19	288	15.29	149	49.34
In 1935, but not in 1934	198	1.90	349	12.39	511	20.13	245	11.95	399	20.01	297	66.00
In 1935, total	10,430		2,816		2,538		2,051		1,994		450	

Wisconsin Individual Income Tax Statistics: Changes in Income of Identical Taxpayers, 1929-1935, Tables 2, 5, 6, 7, 8 and 9.

* Excluding business losses.

B   STABILITY OF INCOME PATTERNS
AT SPECIFIC INCOME LEVELS

Data detailed enough to permit a classification of incomes by size and functional groups are not available for years other than 1936. The tabulations of 1929 and 1935 tax returns give only frequency distributions of combinations of the largest two receipts and the number of receipts classified by size of total income.[4] Since the largest receipt on the 1929 and 1935 returns is not designated, the double and multiple source returns cannot be classified by functional group. Nevertheless, since the combinations of the largest two receipts reported by individuals at each income level are known, it is possible to test whether the combinations of receipts reported most often at each income level are approximately the same in the three years.

The 55 patterns reported at each income level were arrayed in the order of their frequency in 1929, 1935, and 1936.[5] Of these 55 patterns, 7 were single source, 24 double, and 24 multiple source returns. Ranks were assigned to the patterns at each income level every year, and the average rank of each pattern for the three years computed. If the rank of a given pattern at one income level is always attributable to chance, the set of ranks of that pattern for three years would be a random sample of three items with an expected value of 28 (i.e., the middle rank of 55 items). The average rank of each pattern would then differ from 28 only by chance, and the differences among the average ranks of the patterns would not be 'significant'. If the variations from 28 cannot (on the hypothesis being tested) be attributed to chance, the differences among the average ranks would be considered 'significant'.

Tested by the Analysis of Ranks, the differences among the average ranks of the patterns at the various income levels proved

[4] *Wisconsin Individual Income Tax Statistics: Patterns of Income, 1929 and 1935*, pp. A1-5 and A18-26.
[5] The term 'pattern' is used in a more general sense at this point. The largest receipt on each return cannot be determined from the basic data.

Individuals were therefore classified by their largest two receipts. Consequently, the patterns show for each return: (1) total income; (2) the number of receipts; and (3) the types of receipt reported as the largest two.

significant.[6] The patterns reported most often at a given income
level in one year tend to be reported most often in the other two
years.

The test provides only partial evidence that, at any given in-
come level, the distribution of persons among the three functional
groups remained approximately the same from one year to the
next. It shows merely that the various *combinations* of receipts
reported most frequently at given income levels in one year
tended to be reported most frequently in other years. Lack of
data preclude testing the stability of the relative size of each re-
ceipt. Thus, although the combination of wages and dividends
might be reported most frequently at the $50,000 level in each
of two years, dividends might be larger in one year, and wages the
other.

A test of the stability of the composition of income does, how-
ever, provide some evidence on the size of specific receipts re-
ported at each income level. A stable composition of income
together with a stable percentage distribution of returns among
the various combinations of receipts at a given income level
would constitute further, though not definitive, evidence that
the percentages of individuals who are wage earners, entrepre-
neurs, and investors at the several income levels tend to remain
the same for a period of years.

C   STABILITY OF INCOME COMPOSITION
AT SPECIFIC INCOME LEVELS

Composition of income by *total* income levels, i.e., the sum of all
positive receipts, can be computed for 1936 alone. By levels of

[6] Milton Friedman, The Use of Ranks to Avoid the Assumption of Normality
Implicit in the Analysis of Variance, *Journal of the American Statistical Associa-
tion*, 1937 (32), pp. 675-701.

It was not feasible to make the test for the one group above the $100,000 level
because so few returns were reported. Most of the 55 combinations were not reported
even once, and it would have been necessary to assign the same rank to each. This
would mean that the average ranks for most of the combinations would not differ
significantly simply because most of them have zero frequencies.

The test involves the use of a statistic called x_r^2, which has approximately the
x^2 distribution if the rankings are unrelated. For every income group the value
of x_r^2 was much larger than the value that would be exceeded by chance alone
once in a hundred times.

economic income—the difference between *total* income and the sum of net business and partnership losses, rent losses, capital gains, labor expenses, interest paid for business purposes, and other miscellaneous negative incomes—however, it can be computed for 1929, 1934, and 1935 as well.[7] Tests of the stability of composition based upon economic income yield results similar to those yielded by tests based on total income.[8]

The seven panels of Chart 2 show the percentage of aggregate income contributed by each of seven types of receipt at each economic income level for the four years. Panel A illustrates the procedures used in constructing the chart. The wage percentages are shown along the Y-axis; economic income along the X-axis.[9] Points are plotted for each $100 group up to $1,000; for each $500 group, $1,000-5,000;[10] for each $5,000 group, $5,000-25,000; and for all groups combined above the $25,000 level. The percentages for each income group are plotted at the midpoint of the group intervals [11] and the 'wage curve' is drawn by connecting the points for a single year by straight lines. In Panels B-G similar curves are shown for the other receipts.

Wisconsin income tax returns, it will be recalled, probably cover all incomes above $2,000 except those of federal employees. Corrections for under- and nonreporting of taxable incomes and estimates of the composition of the income of nonfilers have not been made for the four years. The tax returns for incomes in the

[7] *Wisconsin Individual Income Tax Statistics, 1929,* Table 2, pp. A8-13; *1934,* Table 2, pp. A8-13; *1935,* Table 2, pp. A8-13; *1936,* Table 2, pp. A8-13.

[8] Aggregate wages, interest, and dividends received by individuals at each total income level are given for 1929 and 1935 in *Wisconsin Individual Income Tax Statistics: Patterns of Income, 1929 and 1935,* pp. A5-13, A23-30. The percentages that wages, interest, and dividends constituted of total income by income groups in 1929 and 1935 were approximately the same as those based on the economic income classification.

[9] The X-axis is on a logarithmic scale because income cannot be plotted conveniently on standard size paper if an arithmetic scale is used.

[10] Though data are available by $100 intervals up to $3,000, $500 intervals are used because it was found after considerable experimentation, that the curves based on the narrower group intervals are much more difficult to read and not appreciably more informative.

[11] Except for the points for the over $25,000 group, which were plotted at the computed average economic income for this group. While there is a finer division at this end of the income scale, it was not used because in many cases there were no returns. To avoid discontinuities, all groups above $25,000 were combined.

CHART 2

Composition of Total Income by Economic Income Bracket
Individual Income Tax Returns, 1929 and 1934-1936

————— 1929 ——·—·— 1934 ···············1935 ————— 1936

Panel A: Wages

Panel B: Dividends

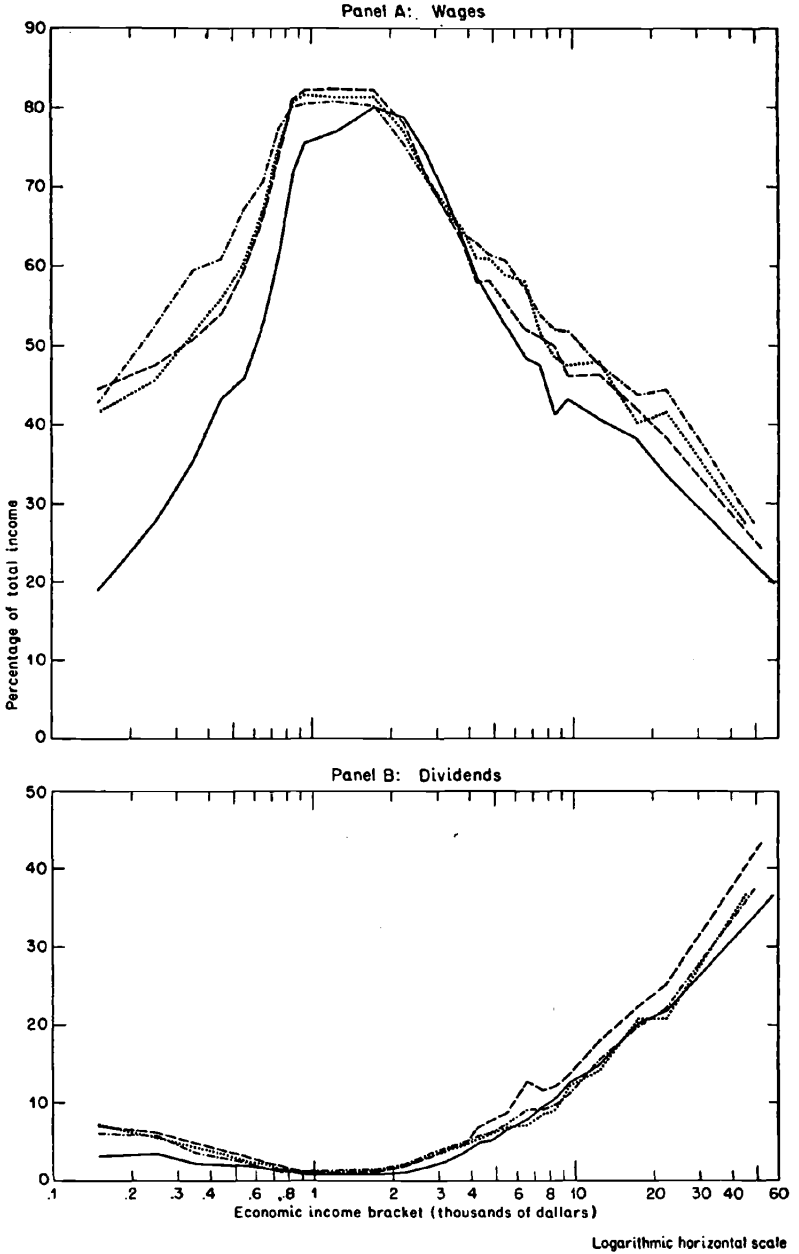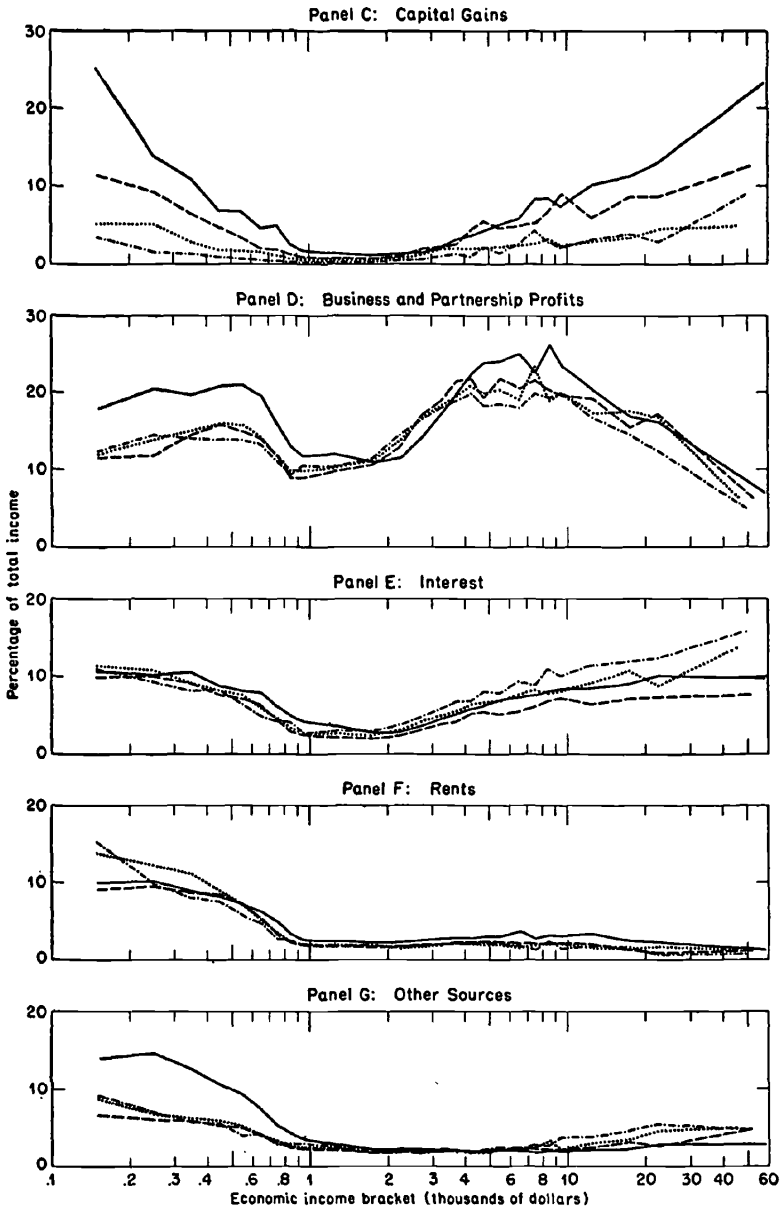Economic income bracket (thousands of dollars)

Logarithmic horizontal scale

CHART 2 *(concluded)*

Composition of Total Income by Economic Income Bracket
Individual Income Tax Returns, 1929 and 1934-1936

——— 1929   —·——·—1934   ·············1935   — — — 1936

Panel C: Capital Gains

Panel D: Business and Partnership Profits

Panel E: Interest

Panel F: Rents

Panel G: Other Sources

Percentage of total income

Economic income bracket (thousands of dollars)

Logarithmic horizontal scale

$1,000-2,000 group, estimated to account for more than one-third of all incomes at this level in 1936, seem representative. But the returns for incomes below $1,000 constitute a much smaller and, probably, unrepresentative sample.[12] The data for incomes below $1,000 are, therefore, of limited value for testing the stability of income composition in this group.

The stability of composition at any given income level is striking. One curve in each panel of Chart 2 is for a year when national income was high, 1929, and three curves for years when national income was low but increasing, 1934-36. However, the composition of income curves do not differ greatly in shape. Aside from the lowest income groups, the percentages for each receipt at any given income level are approximately the same in all years considered. The average income characteristics of individuals at a given income level in different years tend to be similar, with the following exceptions: rent—a minor item, a section of the wage curve, capital gains, and interest. Most of the differences appear random, and many that do not can be traced to technical peculiarities of the data.

For example, the 'business income' (Panel D) and 'other sources' (Panel G) curves for 1929 are at substantially higher levels than the curves for the three later years, because many nontaxable farmers were dropped from the assessors' rolls between 1929 and 1934.[13] Farmers are heavily concentrated in the lower groups and the decrease in the number reporting resulted in lower percentages of business profits and other sources, the major receipts of farmers.[14]

The large differences between the capital gains curves are explained partly by the difference between the definition of income used to classify individuals by size of income (economic income) and to compute composition (total income). An increase

[12] Tax assessors' practices resulted in a disproportionately high representation of nonfarm entrepreneurs, single persons, and property income recipients in this income area, and their policies regarding filing by persons with small incomes varied during the period (see note 13).

[13] In 1929 about 31,000 farmers filed returns; in 1936 only 10,000 (*Wisconsin Individual Income Tax Statistics, 1929*, II, A213; *1936*, III, A213).

[14] 'Other sources' at these lower levels are made up largely of the value of merchandise withdrawn from business for personal use; in the case of farmers, of the value of farm products used for home consumption. For farmers who keep no records, $90 for each adult and $60 for each child is added.

in capital gains does not 'alter the economic income classifica-
tion, but augments total income at each economic income level
by the amount of the increase in capital gains. Consequently, the
capital gains percentages must rise. The opposite occurs when
capital gains decline. This alone would suffice to raise the capital
gains curve in good years and to lower it in bad.

Above the $4,000 level the 1936 dividend curve is higher
than the dividend curves for the other years, probably because
a federal undistributed profits tax was imposed on 1936 cor-
porate profits. The abnormally large increase in dividend pay-
ments over the preceding year caused the dividend curve to
rise.[15] It is not entirely clear why the dividend curve did not
rise below the $4,000 level.[16] On the other hand, the variations
over time in the share of rent appear to be basic. Above the
$1,000 level the 1929 curve is clearly higher than the rent curves
for the other years. The decline in the contribution of rent to
aggregate income after 1929 is about the same at all levels above
$1,000.

Above the $1,000 level the height of the interest curve varies
inversely with aggregate income: when aggregate income is low,
interest becomes larger at all levels, and vice versa. Accordingly,
the interest curves in Panel E are highest in 1934. Although the
1929 curve does not bear out this generalization, there is evi-
dence that it is overstated relative to the other years. From 1929
to 1934, there was a shift from private to public bond holdings,
and from local and state to federal bonds.[17] Since interest receipts
from federal bonds are not taxable in Wisconsin, a larger per-

[15] The undistributed profits tax caused an even larger increase in dividend pay-
ments from 1935 to 1936 than is usual when business conditions improve.

[16] It is tempting to explain the failure of the dividend curve to rise below the
$4,000 level on the ground that low income recipients probably invested in large
corporations whose dividend policy was not affected greatly by the undistributed
profits tax. However, for the nation as a whole, low income recipients received a
substantial proportion of dividends from small and medium-size corporations,
though the proportion was smaller for low income than for high income recipients
(*Treasury Bulletin,* Jan., 1943, p. 5). These facts suggest that the rise in the divi-
dend curve below $4,000 should have been smaller than the rise at higher levels;
they do not explain why the dividend curve did not rise at all below $4,000.

[17] See Carl S. Shoup, *Principles of National Income Analysis* (Houghton Mifflin,
1947), Table 13, page 109, and *Annual Report of the Secretary of the Treasury,*
Fiscal year ending June 30, 1946, Table 107, pp. 670-1.

centage of all interest payments was reported on state tax returns in 1929 than in later years. A correction for interest not reported might shift the 1929 curve to a position below the 1936 curve.

The share of wages in incomes below the $800 and above the $4,500 level seems to vary inversely with movements in aggregate income. Although there is some difference in ranks in the lower and upper sections of the income scale, there is a definite tendency for wages to contribute a bigger share to aggregate income when national income is small, and a smaller share when national income is large (Table 11).[18]

On the whole, despite differences in the rent, interest, capital gain, and part of the wage curves, Chart 2 seems to indicate that income at given levels retains much the same composition year after year. The characteristics distinguishing the three functional groups in 1936—differences in the size and distribution of their incomes, and in the manner and kind of receipts that were secondary sources—apparently persist.

[18] If Friedman's method of testing the significance of the difference between ranks is used, the average ranks for each year differ significantly. Without further analysis, this test would seem to imply that the height of curves at *all* income levels is inversely related to aggregate income received. However, Table 11 shows that the ranks below $800 and above $4,500 are so markedly different that the inclusion of the seven groups between $800 and $4,500, where the ranks do not differ significantly, makes no appreciable difference in the test.

TABLE 11

Ranks of the Share of Wages in Total Income
by Economic Income Bracket, 1929, 1934-36

ECONOMIC INCOME BRACKET	1929	1934	1935	1936
$0- 99	4	1	2	3
100- 199	4	2	3	1
200- 299	4	1	3	2
300- 399	4	1	2	3
400- 499	4	1	2	3
500- 599	4	1	2	3
600- 699	4	1	2	3
700- 799	4	1	2	3
800- 899	4	3	2	1
900- 999	4	3	2	1
1,000- 1,499	4	3	2	1
1,500- 1,999	1	4	3	2
2,000- 2,499	1	4	3	2
2,500- 2,999	1	4	3	2
3,000- 3,499	1	3	2	4
3,500- 3,999	3	2	1	4
4,000- 4,499	3	1	2	4
4,500- 4,999	4	1	2	3
5,000- 5,999	4	1	2	3
6,000- 6,999	4	2	1	3
7,000- 7,999	4	1	2	3
8,000- 8,999	4	1	3	2
9,000- 9,999	4	1	2	3
10,000-14,999	4	2	1	3
15,000-19,999	4	1	3	2
20,000-24,999	4	1	2	3
25,000 & over	4	2	1	3
	AVERAGE	RANKS		
All Brackets	3.5	1.8	2.1	2.6
$0- 799	4.0	1.1	2.3	2.6
800-4,499	2.4	3.0	2.2	2.3
4,500 & over	4.0	1.3	1.9	2.8

Chart 2, Panel A.
Rank 1 is given to the highest percentage, rank 2 to the next highest, etc.