A COMPARISON OF DEPENDENT AND PRODUCTIVE GROUPS
IN VARIOUS POPULATIONS


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## A. Introduction

In considering the broad general problem of social security
it is necessary to study the interplay of the various forces in-
volved. Thus, a balance is essential between those who must be aided
in achieving economic security and those who must provide this aid.
On the one hand, all persons suffering severe economic distress
should be aided, while on the other hand the legal definition of
those who are in economic distress must not be made so broad as to
leave too small a group to aid them. For example, a national pen-
sion of $100 a month to each person aged 45 and over would be un-
sound because the cost would be too heavy a burden for the remainder
of the population. It is important therefore to have some reasonable
measure of the burden borne by those who must support the dependents.

The Social Security Act has as its objective the alleviation
of the following severe types of economic insecurity: dependency
due to unemployment, blindness, and old age, dependency among child-
ren, and economic loss due to bad public health conditions. The
group that is to pay the costs consists chiefly of those in the pro-
ductive group, aged 15 or 20 to 65.

The purpose of this report is to compare the sizes of the
dependent and productive groups in various populations. The depend-
ent groups are composed of the individuals at the two extremities of

the life scale, the children and the aged. For the purposes of this
study the aged will be defined as those who are 65 years old and over,
the children will be defined as those who are 14 years old and under,
and the productive as those aged 15 to 64. These definitions have
been adopted because the available data is, in most instances, sub-
divided into these age groups. The limit of age 65 for old age cor-
responds to the standard set up in Titles I and II of the Social
Security Act. In the section dealing with foreign material it is
necessary to redefine the three groups as 19 years and under, 20 to 59,
and 60 and over because of the grouping in the original data. It is
beyond the scope of this report to attempt any precise measure of the
financial burden of the dependent upon the productive. Similarly, no
account can be taken of dependency arising from unemployment or physi-
cal and mental disability.

## B. Dependency Trends in the United States

Table I gives a percentage breakdown of the population of the United States into the three groups under consideration. Figures are shown for decennial years from 1870 to 1980 and also for 1935. The figures up to 1930 are taken from the United States Census, while the later figures are from the population estimates of the Committee on Economic Security. Inherent in all these figures are inaccuracies of reporting and method in the past and, obviously, inaccuracies of estimates as to the future. In the following discussion the data will be referred to as though it were accurate and completely dependable, with full recognition that there are inaccuracies present.

In 1870 children constituted almost 40% of the population, in 1930, 29%, and in 1980 they will form only 21%. Thus, the proportion of children is halved between 1870 and 1980. On Chart I this same data is presented graphically, and it can be seen that the decline in the proportion of children is quite steady. Three distinct trends are discernible in this decline, namely for the periods 1870-1920, 1920-1950, and 1950-1980. In the second of these periods the decline is steepest, with a levelling off after 1950.

The decrease in the proportion of children is balanced by an increase in both the productive and aged groups. The productive group increased from about 58% in 1870 to 65% in 1930, while the aged increased from 3.0% to 5.4%. Thus, the absolute decrease of 10% in the proportion of children from 39% in 1870 to 29% in 1930 was absorbed chiefly by the productive group which had an absolute increase

Table I


SUMMARY OF CHILDREN, PRODUCTIVE, AND AGED [a]
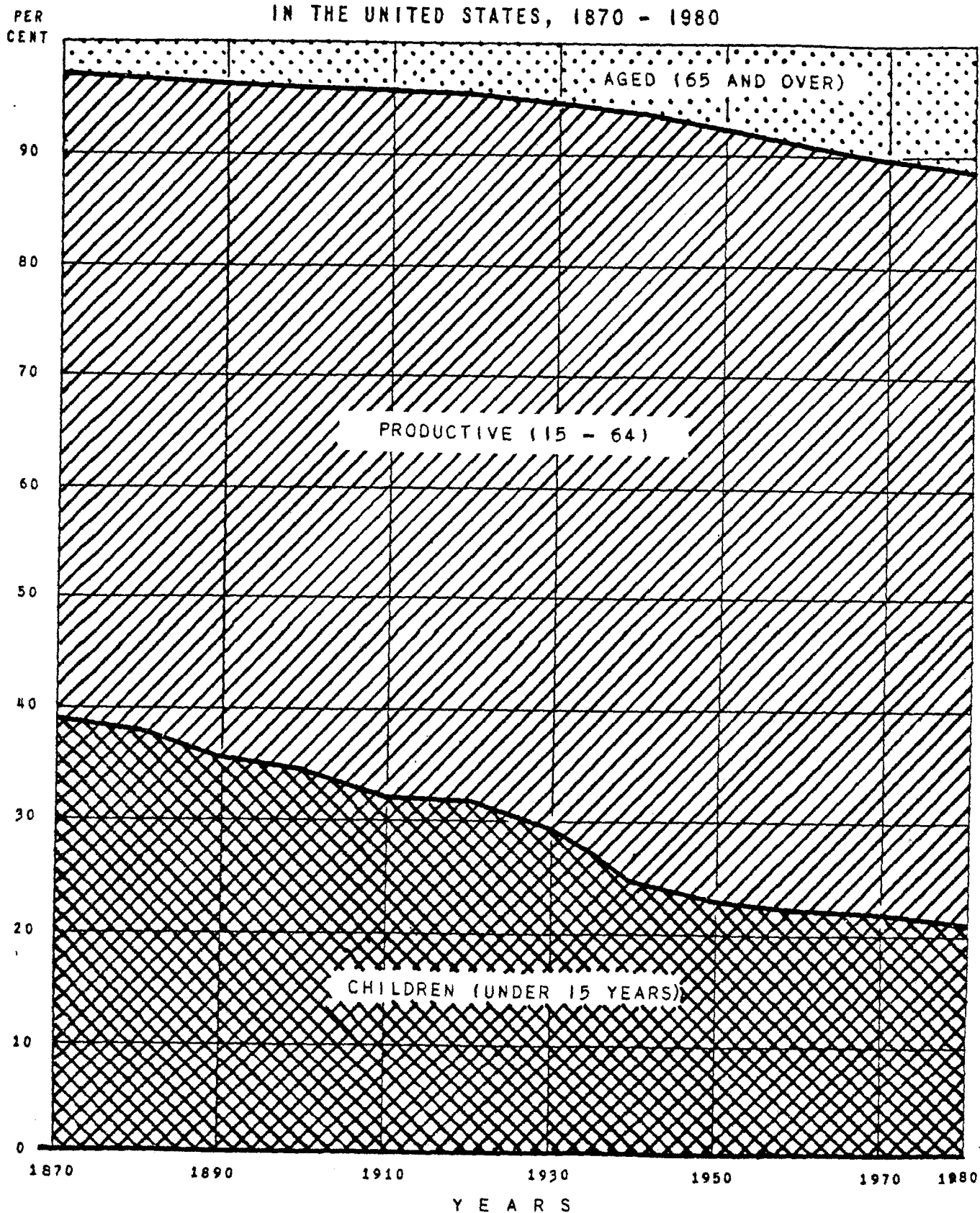IN THE UNITED STATES, 1870-1980 [b]

| Year | Percentage Distribution of Population | | | As Percent of Productive | | |
|------|----------|------------|------|----------|------|-----------|
|      | Children | Productive | Aged | Children | Aged | Dependent |
| 1870 | 39.2 | 57.8 | 3.0 | 67.8 | 5.2 | 73.0 |
| 1880 | 38.1 | 58.5 | 3.4 | 65.2 | 5.9 | 71.1 |
| 1890 | 35.6 | 60.5 | 3.9 | 58.8 | 6.4 | 65.2 |
| 1900 | 34.5 | 61.4 | 4.1 | 56.1 | 6.6 | 62.7 |
| 1910 | 32.1 | 63.6 | 4.3 | 50.6 | 6.8 | 57.4 |
| 1920 | 31.8 | 63.5 | 4.7 | 50.2 | 7.4 | 57.6 |
| 1930 | 29.4 | 65.2 | 5.4 | 45.1 | 8.3 | 53.4 |
| 1935 | 27.2 | 67.0 | 5.8 | 40.6 | 8.7 | 49.3 |
| 1940 | 24.8 | 68.9 | 6.3 | 36.0 | 9.1 | 45.1 |
| 1950 | 23.1 | 69.2 | 7.7 | 33.3 | 11.2 | 44.5 |
| 1960 | 22.4 | 68.3 | 9.3 | 32.8 | 13.6 | 46.4 |
| 1970 | 21.9 | 68.0 | 10.1 | 32.1 | 14.8 | 46.9 |
| 1980 | 21.1 | 67.6 | 11.3 | 31.2 | 16.8 | 48.0 |


[a]  Children are aged 0-14, productive 15-64, and aged are 65 and over.

[b]  Figures from 1870 to 1930 are from the Census.  Figures from 1935 to 1980
are from estimates of the Committee on Economic Security.

CHART I

# PERCENTAGE DISTRIBUTION OF CHILDREN, PRODUCTIVE AND AGED
## IN THE UNITED STATES, 1870 - 1980

PER
CENT

AGED (65 AND OVER)

90

80

70

PRODUCTIVE (15 - 64)

60

50

40

30

20

CHILDREN (UNDER 15 YEARS)

10

0

1870   1890   1910   1930   1950   1970   1980

Y E A R S

of over 7%, with the aged making up the remainder of the 10% shift.
However, the aged group had by far the largest relative change, in-
creasing by about 70% from 1870 to 1930.

From 1930 to 1950 the productive group increases slightly
(from 65% to 69%) and then decreases slowly to 68% in 1980. On the
other hand, the aged continue to increase at a rapid rate, the per-
centage in 1980 being almost double that in 1930. In this case the
decrease in the proportion of children from 29% in 1930 to 21% in
1980 is absorbed chiefly by the aged group which increases from 5.4%
to 11.3%, while the productive group accounts for the remainder of
the shift.

It is interesting to note on Chart I that the curve for the
proportion of the aged has two distinct sections. The increase in
this group up to 1920 is rather gradual, but after 1930 there is a
much more rapid increase which begins to fall off towards the end
of the period considered. After 1980 the estimates seem to indicate
that the proportion of the aged will increase to a peak of about 13%
in 2000 and will decrease thereafter to an ultimate level of about
11½%. This small shift in the aged group will have little effect
on the proportions in the other two groups which will remain at about
the 1980 level.

In considering the problem of the impact of the dependent upon
the productive who must support them, a handy tool of comparison is
the dependency ratio, which is the ratio of the dependent group (chil-
dren or aged) to the productive group. The dependency ratio for chil-
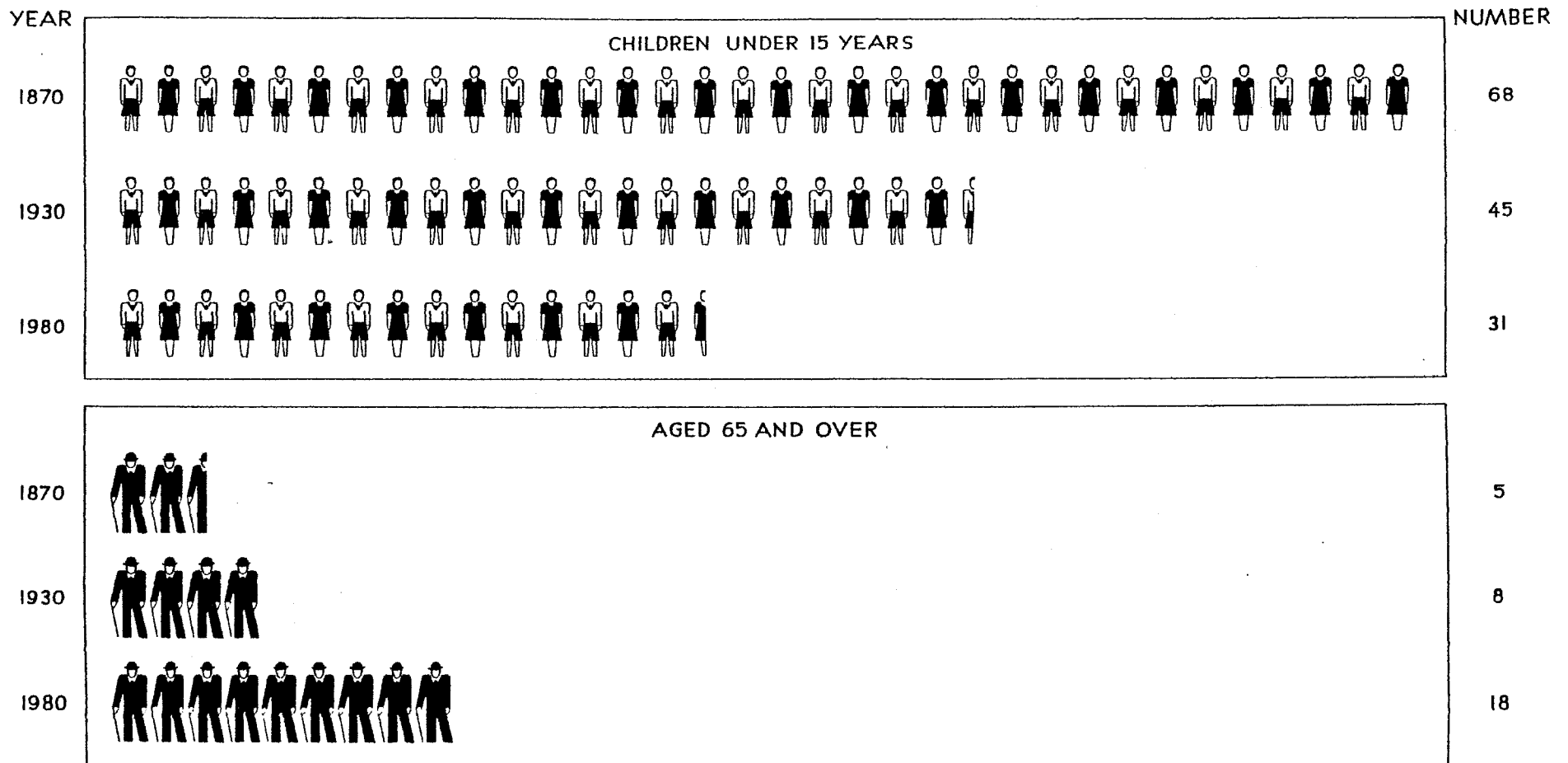dren declines quite sharply from 68% in 1870 to 33% in 1950 and then

slowly decreases to 31% in 1980. Thus, in 1870 there were four chil-
dren for every six persons in the productive group, while in 1930
there were three children for every six productives, and in 1980 there
will be only two children for every six productives. This great de-
cline is due chiefly to the decrease in the proportion of the children
and also to a slight increase in the productive group. The depend-
ency ratio for the aged increases steadily from 5% in 1870 to 17% in
1980 due to the great increase in the number of aged persons. Chart II
presents pictorially the above statistics.

Important conclusions may be drawn from the dependency ratio
for children and aged combined. This decreased from 73% in 1870 to
53% in 1930. After 1930 there is a decline to 45% in 1950, followed
by a slight increase to 48% in 1980. The sharp decrease prior to 1930
is due to the much more rapid decrease in the children as compared to
the aged, while the level trend after 1930 is due to the fact that the
decrease in the children approximates the increase in the aged.

The great decline in the dependency ratio for children has been
responsible for many important changes in our social and economic
structure. In the early years when the children made up 40% of the
total population, the productive group with the less effective pro-
duction methods of that time was too small to care adequately for
them so that many children were recruited for the labor market. With
the population shifts previously described the proportion of children
became much smaller and the apparent need for child labor decreased,
with a resulting increase in educational opportunities and costs.
Now the productive group plus that portion of the aged which is

# CHART II

## COMPARISON OF CHILDREN WITH AGED POPULATION IN THE U. S., 1870-1980*

YEAR

NUMBER

### CHILDREN UNDER 15 YEARS

1870 — 68

1930 — 45

1980 — 31

### AGED 65 AND OVER

1870 — 5

1930 — 8

1980 — 18

Each Figure Represents 2 Persons

*Data for 1870 and 1930 are from the Census. Data for 1980 is from the estimates of the Committee on Economic Security.

gainfully employed have grown to such a size that even with most
children in school the labor supply exceeds the demand. This seems
to indicate that the aged will probably be removed from the labor
market just as the children had been in the past. In order to do
this it seems necessary to offer pecuniary inducements such as pen-
sions and annuities to remove the aged group from gainful occupation.

At first glance the problem of old-age dependency seems to be
quite overpowering since the proportion of the aged will double in
the next forty years and thus the cost of granting benefits to the
aged will continue to mount. Since, however, the proportion of child-
ren decreases more rapidly than the proportion of the aged increases,
the picture is not so gloomy as it would at first appear. The de-
pendency ratio for children and aged combined decreases slowly from
53% in 1930 to 48% in 1980. This indicates that the combined weight
of caring for both the children and the aged will apparently grow
lighter in the future. The "problem of old-age dependency" seems less
impressive when combined with that of childhood dependency. The de-
crease in this vital ratio from 1930 to 1980 might point the way to
two different alternatives in the treatment of dependency without a
corresponding increase in total cost: first, a more liberal treatment
of the aged, and second, a more generous provision for children in re-
gard to training and education.

## C. Dependency Ratios for States

Under the Social Security Act many of the provisions are State-administered. Thus, it is of importance to examine the shifts in age distribution among the individual States. Here, inaccuracies in age estimates may be even greater than in the national data previously discussed.

Table II shows the dependency ratios for each State for 1900, 1930, and 1960. The 1960 figures are obtained from population estimates of Thompson and Whelpton. For the United States total in 1960, there is only a slight difference between these estimates and those of the Committee on Economic Security as shown in Table I. The dependency ratio for children in 1960 in Table I is 32.8% as against 30% in Table II and for the aged it is 13.6% as against 14%.

In 1900 the dependency ratio for children varied quite considerably from the United States average of 56%, the ratios for the New England States, California, the District of Columbia, and Nevada being around 40% and those for the Southern States around 75%. In 1930 there is much less fluctuation about the United States average of 46%, with only the ratios for California, the District of Columbia, and Nevada being below 35%, while those for the Southern States are around 60%. In 1960 there is still less variation from the United States average of 30%, with the lowest ratio being 24% for Oregon while the ratios of California, the District of Columbia, New Jersey, New York, and Washington are all 25%. New Mexico has by far the highest ratio (47%) although the Southern States are all above the United

Table II

CHILDREN AND AGED COMPARED TO PRODUCTIVE BY STATES, 1900, 1930, AND 1960[a]/

| State | Children as % of Productive | | | Aged as % of Productive | | | Dependent as % of Productive | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1900 | 1930 | 1960 | 1900 | 1930 | 1960 | 1900 | 1930 | 1960 |
| Alabama | 74% | 60% | 36% | 5% | 6% | 10% | 79% | 65% | 46% |
| Arizona | 52 | 52 | 42 | 4 | 6 | 12 | 56 | 58 | 54 |
| Arkansas | 75 | 58 | 35 | 4 | 7 | 12 | 79 | 65 | 47 |
| California | 39 | 33 | 25 | 8 | 9 | 19 | 47 | 42 | 44 |
| Colorado | 46 | 45 | 31 | 4 | 9 | 15 | 50 | 54 | 46 |
| Connecticut | 42 | 42 | 27 | 8 | 9 | 15 | 50 | 51 | 42 |
| Delaware | 49 | 41 | 28 | 7 | 10 | 15 | 56 | 51 | 43 |
| District of Columbia | 35 | 28 | 25 | 6 | 8 | 15 | 41 | 36 | 40 |
| Florida | 66 | 46 | 29 | 4 | 8 | 14 | 70 | 54 | 43 |
| Georgia | 75 | 57 | 35 | 5 | 6 | 10 | 80 | 63 | 45 |
| Idaho | 60 | 53 | 34 | 4 | 8 | 15 | 64 | 61 | 49 |
| Illinois | 53 | 38 | 25 | 6 | 8 | 15 | 59 | 46 | 40 |
| Indiana | 52 | 43 | 29 | 7 | 11 | 15 | 59 | 54 | 44 |
| Iowa | 56 | 45 | 30 | 8 | 12 | 18 | 64 | 57 | 48 |
| Kansas | 57 | 45 | 30 | 7 | 11 | 17 | 64 | 56 | 47 |
| Kentucky | 64 | 57 | 37 | 6 | 9 | 12 | 70 | 66 | 49 |
| Louisiana | 72 | 54 | 34 | 5 | 6 | 10 | 77 | 60 | 44 |
| Maine | 42 | 46 | 35 | 12 | 14 | 15 | 54 | 60 | 50 |
| Maryland | 53 | 43 | 29 | 7 | 9 | 14 | 60 | 52 | 43 |
| Massachusetts | 41 | 40 | 26 | 8 | 10 | 17 | 49 | 50 | 43 |
| Michigan | 51 | 45 | 30 | 8 | 8 | 13 | 59 | 53 | 43 |
| Minnesota | 61 | 45 | 29 | 6 | 10 | 17 | 67 | 55 | 46 |
| Mississippi | 76 | 59 | 38 | 5 | 6 | 10 | 81 | 65 | 48 |
| Missouri | 57 | 41 | 27 | 6 | 10 | 17 | 63 | 51 | 44 |
| Montana | 43 | 46 | 30 | 3 | 7 | 17 | 46 | 53 | 47 |
| Nebraska | 61 | 47 | 29 | 5 | 10 | 16 | 66 | 57 | 45 |
| Nevada | 37 | 34 | 28 | 8 | 8 | 11 | 45 | 42 | 39 |
| New Hampshire | 39 | 43 | 30 | 12 | 14 | 17 | 51 | 57 | 47 |
| New Jersey | 47 | 40 | 25 | 6 | 7 | 15 | 53 | 47 | 40 |
| New Mexico | 67 | 62 | 47 | 5 | 7 | 10 | 72 | 69 | 57 |
| New York | 44 | 36 | 25 | 7 | 8 | 14 | 51 | 44 | 39 |
| North Carolina | 75 | 66 | 39 | 6 | 6 | 8 | 81 | 72 | 47 |
| North Dakota | 67 | 57 | 35 | 4 | 7 | 14 | 71 | 64 | 49 |
| Ohio | 48 | 42 | 28 | 8 | 9 | 15 | 56 | 51 | 43 |
| Oklahoma | 73 | 55 | 35 | 3 | 7 | 13 | 76 | 62 | 48 |
| Oregon | 47 | 36 | 24 | 6 | 10 | 20 | 53 | 46 | 44 |
| Pennsylvania | 51 | 47 | 28 | 7 | 8 | 13 | 58 | 55 | 41 |
| Rhode Island | 42 | 43 | 27 | 7 | 9 | 15 | 49 | 52 | 42 |
| South Carolina | 79 | 67 | 39 | 6 | 6 | 9 | 85 | 73 | 48 |
| South Dakota | 66 | 53 | 34 | 5 | 8 | 15 | 71 | 61 | 49 |
| Tennessee | 67 | 54 | 35 | 6 | 7 | 11 | 73 | 61 | 46 |
| Texas | 75 | 51 | 32 | 4 | 6 | 12 | 79 | 57 | 44 |
| Utah | 74 | 60 | 38 | 7 | 8 | 11 | 81 | 68 | 49 |
| Vermont | 43 | 46 | 33 | 13 | 14 | 15 | 56 | 60 | 48 |
| Virginia | 67 | 56 | 34 | 7 | 8 | 11 | 74 | 64 | 45 |
| Washington | 46 | 37 | 25 | 4 | 9 | 18 | 50 | 46 | 43 |
| West Virginia | 66 | 61 | 38 | 6 | 7 | 11 | 72 | 68 | 49 |
| Wisconsin | 61 | 45 | 31 | 8 | 10 | 15 | 69 | 55 | 46 |
| Wyoming | 45 | 47 | 34 | 2 | 5 | 12 | 47 | 52 | 46 |
| U. S. Total | 56 | 46 | 30 | 7 | 8 | 14 | 63 | 54 | 44 |

a/ Data for 1900 from Census. Data for 1930 and 1960 from "Estimates of Future
Population by States" by Thompson and Whelpton, using the figures based on
internal migration like 1920-30. The 1930 figures differ slightly from the
Census due to an adjustment for the underenumeration of infants in the
Census.

Children are aged 0 - 14, Productive are 15 - 64, and Aged are 65 and over.

States average. It is interesting to note that the New England
States show little change between 1900 and 1930 but from 1930 to
1960 their decrease is about the same as the decrease for the
United States as a whole. For 1900 to 1930 this can be explained
by the relative maturity of this section, while the decrease after
1930 is due to improved mortality (this will be discussed further in
Section E). Most of the other States show continuous declines from
1900 to 1960 with that in the Southern States being greatest (the
1960 figure is usually about half of the 1900 one). From 1900 to 1930
the dependency ratio for children declines in about forty States,
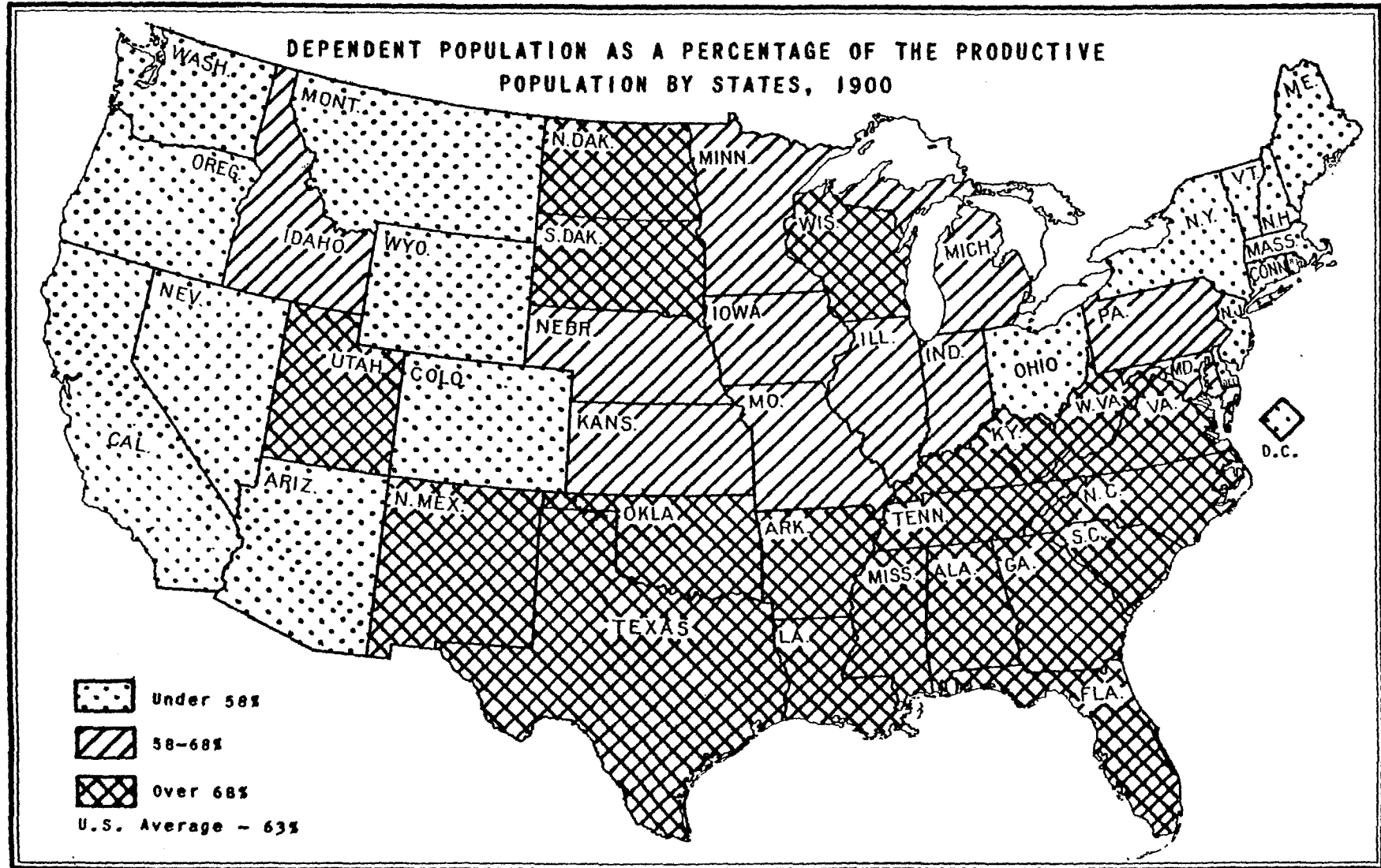while from 1930 to 1960 there is a decline for all States.

The dependency ratios for the aged in 1900 did not vary greatly
from the United States average of 7%. The highest ratios were about
12% for Maine, New Hampshire, and Vermont, with no other State ratio
having been over 8%, while the lowest were 2% for Wyoming and 3% for
Montana and Oklahoma. In general, the Southern States and the young
Western States were below the average. In 1930 the above three New
England States still had the highest ratios, although a number of
other States were close to them. Wyoming was still the lowest State
with 5%, although eight States had ratios of 6%. In 1930 the Southern
States seemed to fall farther below the United States average than in
1900. This was probably due to the slower development of this sec-
tion, particularly in regard to immigration. In 1960 the highest
ratios are for the Pacific Coast States, while the New England States
are very close to the average. The lowest ratios in 1960 are for the

Carolinas, with those for the other Southern States also being quite low. From 1900 to 1960 there is a continuous increase in the dependency ratio of the aged for all States. For all periods it is to be expected that the dependency ratio for the aged will be lowest in the Southern States because of the greater proportion of colored persons. This class has a higher mortality than white persons and thus not as large a proportion reach old age.

A more significant ratio is the total dependency ratio, the sum of the ratios for the children and the aged. In order to get a complete picture of changes in this ratio, Maps 1, 2, and 3 have been prepared for the years 1900, 1930, and 1960, respectively. On these maps the States are shown according to whether their dependency ratio was above, below, or approximated to the ratio for the entire country. It was decided that all States having a ratio within the approximate range of $\pm 7\frac{1}{2}\%$ of the United States average would be in one class while all others would fall into the two extreme classes. This was done to make suitable allowance for the progressive decrease in these ratios over the United States from 1900 to 1960. Thus, in 1900 when the United States ratio was 63%, the range was from 58-68% (both end figures included), while in 1930 for 54% the range was 50-58%, and in 1960 for 44% the range was 41-47%.
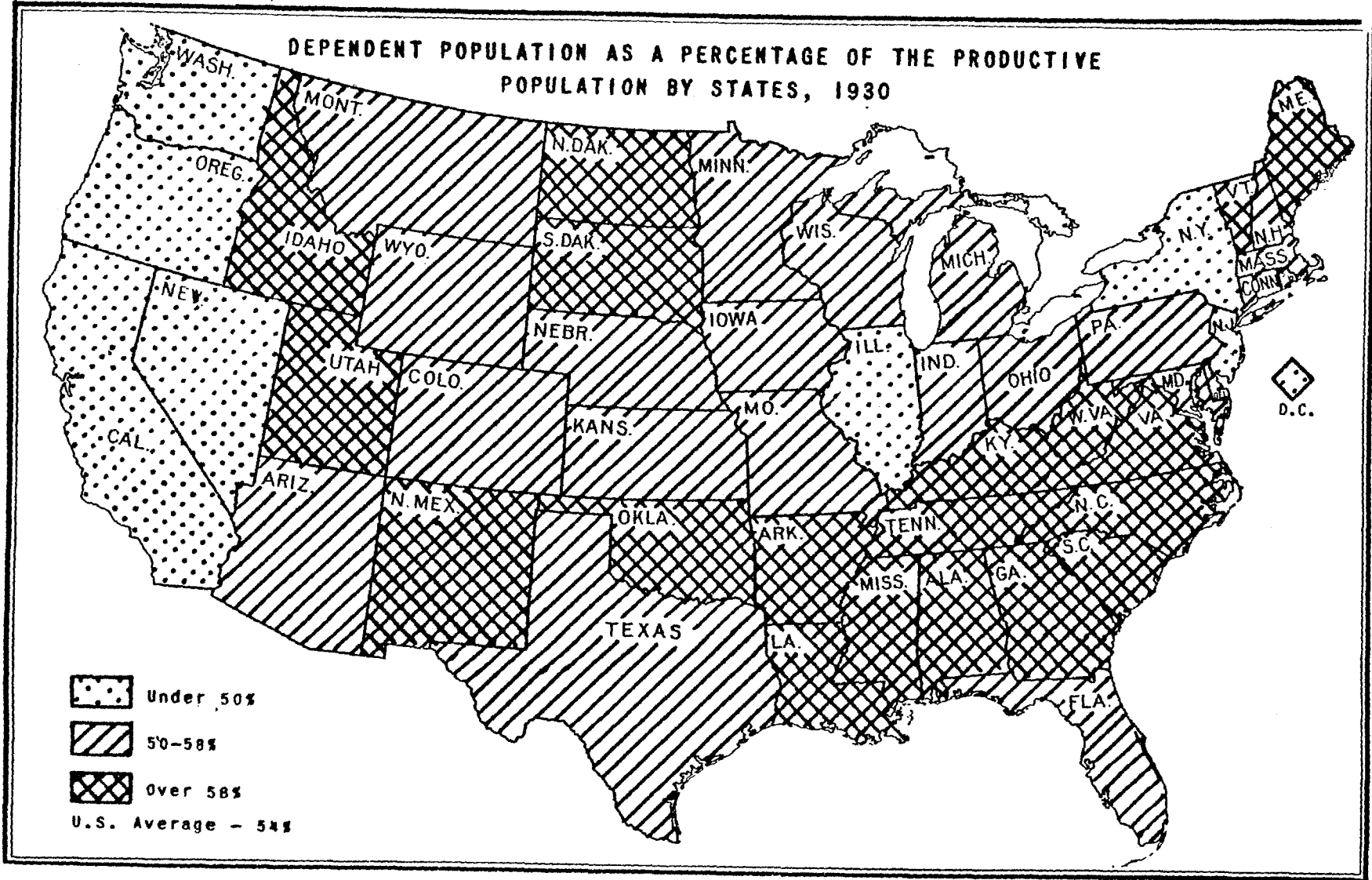
From Map 1 it can be seen that the total dependency ratio for the Southern States in 1900 was greater than the United States average in all cases, while the Northeastern and Pacific Coast States had a lower-than-average ratio. In 1930 (Map 2) a few of the Southern
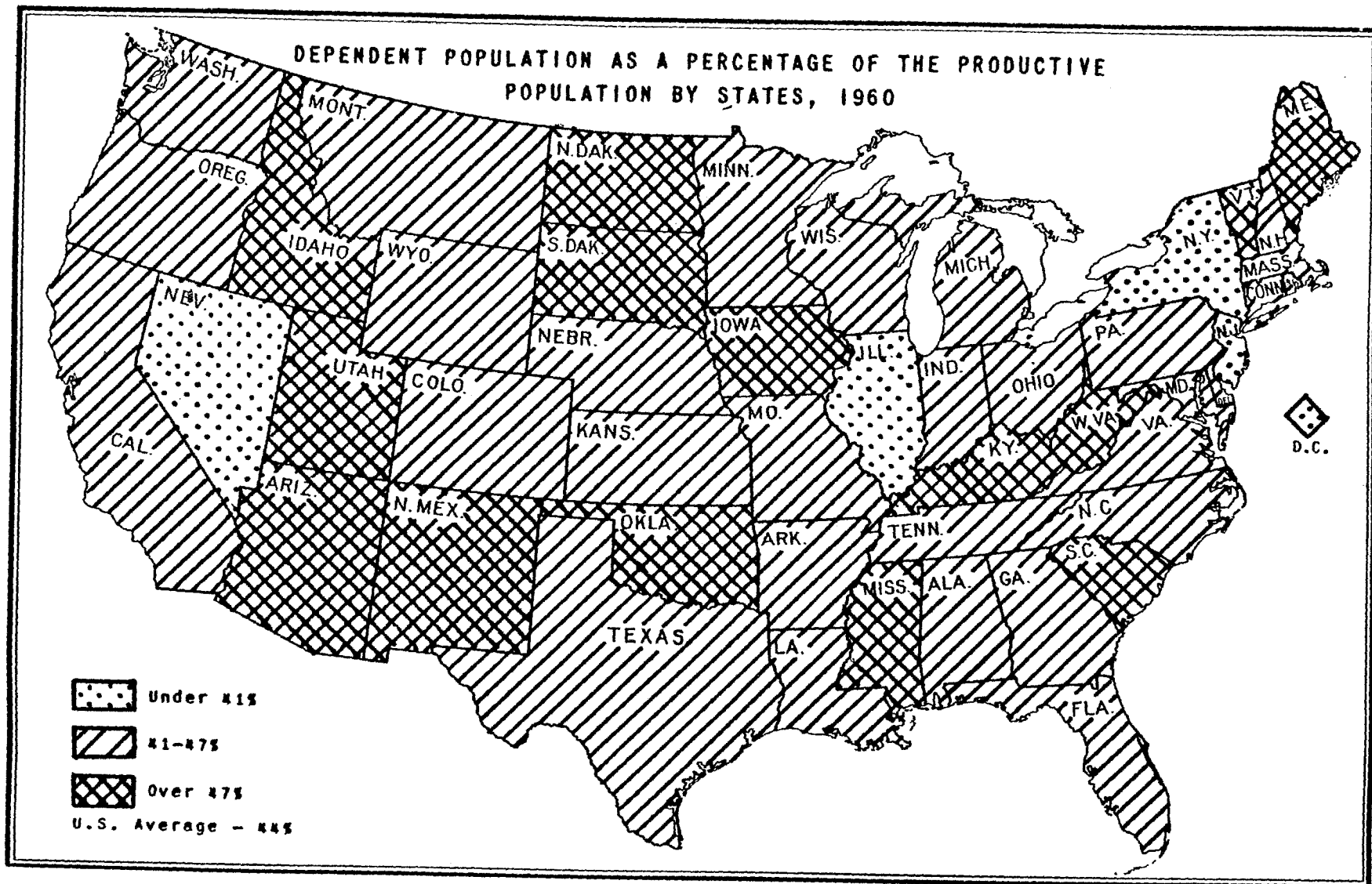
MAP I

DEPENDENT POPULATION AS A PERCENTAGE OF THE PRODUCTIVE
POPULATION BY STATES, 1900

Legend:
- Under 58%
- 58-68%
- Over 68%

U.S. Average – 63%

MAP 2



DEPENDENT POPULATION AS A PERCENTAGE OF THE PRODUCTIVE
POPULATION BY STATES, 1930

Under 50%

50-58%

Over 58%

U.S. Average - 54%

MAP 3

DEPENDENT POPULATION AS A PERCENTAGE OF THE PRODUCTIVE
POPULATION BY STATES, 1960



Under ×1%

×1-×7%

Over ×7%

U.S. Average - ××%

States had joined the "average" group, while the Northeastern States were no longer predominately in the "under-average" group. The Pacific Coast States remained in the "over-average" group in 1930. In 1960 (Map 3) most of the Southern States are in the "average" group, as are also the Pacific Coast States. In all three periods the Dakotas are "over-average" due to the proportionately large number of children as is also the case for Idaho, New Mexico, and Utah in 1930 and 1960. Maine and Vermont are "over-average" in 1930 and 1960 due to the high dependency ratio of the aged.

It is interesting to note from these maps that more States fall in the "average" group as time goes by. Thus, there were only 12 States in this group in 1900, while there were 21 in 1930, and 31 in 1960 - as the well-known saying so aptly puts it, "Time, the Great Equalizer"!

In conclusion, these results seem to indicate that at present the South has a considerable dependency problem due to children, but that this will be alleviated with time so that this section will be better able to support Social Security programs.

## D. Dependency in Foreign Countries

In Table III is shown a breakdown of the populations of various foreign countries into three age groups. It is necessary to redefine the dependent and productive groups as follows: children are 0-19 years, productive are 20-59, and aged are 60 and over. This is done because the source of the data did not give the proper subdivisions.

The data can roughly be divided into three groups of countries. Group 1 includes Austria, Belgium, England, France, Germany, Sweden, and Switzerland. Group 2 includes Australia, Canada, Czechoslovakia, Denmark, Greece, Hungary, Italy, Netherlands, New Zealand, Norway, Portugal, Spain, and the United States. Group 3 includes Brazil, Chile, Egypt, India, Japan, Mexico, and Russia. This subdividing by groups is, of course, none too accurate for border-line cases but gives a fairly good picture. It is interesting to note that Group 1 includes the middle and western European countries. Group 2 includes the southern European countries as well as several of the Scandinavian countries and also the English-speaking countries outside of Europe. Group 3 includes the more backward and undeveloped countries.

In Group 1 the children are about 30% of the total, while in Group 2 they are about 40% and in Group 3 about 50%. In Group 1 the productive are about 58% of the total, in Group 2 about 52%, and in Group 3 about 45%. In Group 1 the aged are about 12% of the total, in Group 2 about 9%, and in Group 3 about 5%.

In considering the dependency ratio of children to productive, there are wide ranges. In general this ratio is about 55% for Group

Table III

SUMMARY OF CHILDREN, PRODUCTIVE, AND AGED[a]
FOR VARIOUS COUNTRIES[b]

| Country | Percentage Distribution of Population | | | As Percent of Productive | | |
|---|---|---|---|---|---|---|
| | Children | Productive | Aged | Children | Aged | Dependent |
| Australia | 36.8 | 53.3 | 9.9 | 69% | 19 | 88 |
| Austria | 29.5 | 58.3 | 12.2 | 51 | 21 | 72 |
| Belgium | 30.9 | 57.3 | 11.8 | 54 | 21 | 75 |
| Brazil | 56.7 | 39.3 | 4.0 | 144 | 10 | 154 |
| Canada | 41.7 | 49.9 | 8.4 | 84 | 17 | 101 |
| Chile | 48.2 | 46.1 | 5.7 | 105 | 12 | 117 |
| Czechoslovakia | 35.6 | 54.2 | 10.2 | 66 | 19 | 85 |
| Denmark | 36.7 | 52.5 | 10.8 | 70 | 21 | 91 |
| Egypt | 47.8 | 45.6 | 6.6 | 105 | 14 | 119 |
| England and Wales | 32.4 | 56.0 | 11.6 | 58 | 21 | 79 |
| France | 30.4 | 55.6 | 14.0 | 55 | 25 | 80 |
| Germany | 30.4 | 58.5 | 11.1 | 52 | 19 | 71 |
| Greece | 43.4 | 47.7 | 8.9 | 91 | 19 | 110 |
| Hungary | 37.1 | 53.2 | 9.7 | 70 | 18 | 88 |
| India | 49.0 | 46.9 | 4.1 | 104 | 9 | 113 |
| Italy | 39.5 | 49.7 | 10.8 | 79 | 22 | 101 |
| Japan | 46.5 | 46.1 | 7.4 | 101 | 16 | 117 |
| Mexico | 49.4 | 45.3 | 5.3 | 109 | 12 | 121 |
| Netherlands | 40.0 | 50.6 | 9.4 | 79 | 19 | 98 |
| New Zealand | 34.8 | 55.4 | 9.8 | 63 | 18 | 81 |
| Norway | 38.1 | 50.3 | 11.6 | 76 | 23 | 99 |
| Portugal | 42.0 | 48.4 | 9.6 | 87 | 20 | 107 |
| Russia | 48.7 | 44.6 | 6.7 | 109 | 15 | 124 |
| Scotland | 36.0 | 52.7 | 11.3 | 68 | 21 | 89 |
| Spain | 42.0 | 48.5 | 9.5 | 87 | 20 | 107 |
| Sweden | 33.9 | 53.3 | 12.8 | 64 | 24 | 88 |
| Switzerland | 33.5 | 55.8 | 10.7 | 60 | 19 | 79 |
| United States (1930) | 38.8 | 52.7 | 8.5 | 74 | 16 | 90 |
| United States (1955) | 30.0 | 56.5 | 13.5 | 53 | 24 | 77 |
| United States (1980) | 28.2 | 54.8 | 17.0 | 51 | 31 | 82 |

a/ Children are aged 0-19, productive are 20-59, and aged are 60 and over.

b/ Computed from data in Statistical Year-Book of the League of Nations, 1935-36
The data in most cases applies to censuses in 1930 or 1931.

1, 80% for Group 2, and 110% for Group 3. On the other hand, the ratio of the aged to productive decreases from Group 1 to Group 3, being 21% for Group 1, 17% for Group 2, and 11% for Group 3. The ratio of total dependent to productive shows a rather wide range, being 75% for Group 1, 95% for Group 2, and 120% for Group 3.

It is particularly interesting to examine Brazil separately. Brazil has about 57% children, only 39% productive, and 4% aged. Its ratio of dependent to productive is 154%, which is by far the largest ratio. On the other hand, Austria, Belgium, France and Germany have extremely low percentages of children and high percentages of aged. However, since children are the more important factor in dependency ratios, these countries have the lowest of all dependency ratios, being about 70%.

In general, the results are as would be expected since in the older and more highly developed countries the children are a smaller proportion of the population, while the aged and productive are a greater proportion. Thus, due to the weight of the children, the dependency ratio is much larger for the less industrialized countries. However, this heavy burden is usually made up by pushing the children into the productive group at an early age rather than continuing their education.

The question arises as to whether the United States, which falls in Group 2, is fundamentally different from the older European countries, such as England, France, and Germany, which are in Group 1, or whether the difference is attributable entirely to relative maturity of growth. In order to determine this, the data for the United

States for twenty-five and fifty years hence (1955 and 1980) has been set down in Table III. These figures were obtained from the population estimates of the Committee on Economic Security, taking account of the revised age grouping of this section.

In 1955 the proportion of children will have dropped to 30% with the productive being 57% and the aged being 13%. These percentages would clearly place the United States in Group 1, which has percentages of 30%, 58%, and 12%, respectively. Thus, in twenty-five years the age distribution in the United States will be the same as that in the major European countries at present. The rather interesting inference might be drawn that this country has been about twenty-five years behind these European countries in social insurance legislation because of this twenty-five year lag in population distribution.

From 1955 to 1980 there is a small decrease in the proportion of children and productive with a resulting increase in the proportion of the aged (from $13\frac{1}{2}$% in 1955 to 17% in 1980). The dependency ratio for children and aged combined decreases from 90% in 1930 to 77% in 1955 and then increases to 82% in 1980.

In conclusion, it appears that the age distribution characteristics of the United States twenty-five years hence will be similar to those of the major European countries at present. However, in the future these countries will probably show some shift in the direction of a greater proportion of aged. This trend will be matched in the United States by 1980.

E.  Dependency According to Various Mortality Tables

This section deals with dependency data as shown by various mortality tables.  A mortality table can be considered as showing the age distribution of a stable population; that is, a population in which there is no immigration or emigration, the death rates by individual ages remain fixed, and the number of births equals the number of deaths.  Thus, the conclusions that may be drawn from this section might be said to apply to ultimate conditions in this country if the rates of mortality as shown in the particular table did not change in the future and if there were no future immigration of emigration.

Two groups of mortality tables were used, United States life tables and tables based on insurance company experience.  It should be remembered that the United States life tables for a given year do not apply to the population as of that time but only to the theoretical population which would eventually develop some 100 years hence if the mortality rates for the year of compilation continued into the future without change, and births achieved a disconcerting uniformity.

From Table IV it can be seen that for both white males and white females there are about 23% children, 66% productive, and 11% aged.  The tables based on the 1933 data show slightly fewer children and more aged than the earlier tables with the productive group being constant.  For the female tables there are slightly fewer children and productive and more aged than for males due to the

Table IV


SUMMARY OF CHILDREN, PRODUCTIVE, AND AGED a/
ACCORDING TO VARIOUS MORTALITY TABLES

| Mortality Table | Percentage Distribution of Population | | | As Percent of Productive | | |
|---|---|---|---|---|---|---|
| | Children | Productive | Aged | Children | Aged | Dependent |
| White Males 1910 | 24.8% | 66.0% | 9.2% | 38% | 14% | 52% |
| White Males 1920-29 | 23.4 | 66.0 | 10.6 | 35 | 16 | 51 |
| White Males 1933 | 22.9 | 66.2 | 10.9 | 35 | 16 | 51 |
| White Females 1910 | 23.9 | 65.6 | 10.5 | 36 | 16 | 52 |
| White Females 1920-29 | 22.7 | 65.4 | 11.9 | 35 | 18 | 53 |
| White Females 1933 | 21.9 | 65.2 | · 12.9 | 34 | 20 | 54 |
| Colored Males 1933 | 26.4 | 65.3 | 8.3 | 40 | 13 | 53 |
| Colored Females 1933 | 25.7 | 65.4 | 8.9 | 39 | 14 | 53 |
| Total Population 1933 | 22.8 | 65.7 | 11.5 | 35 | 18 | 53 |
| American Experience | 26.5 | 64.3 | 9.2 | 41 | 14 | 55 |
| American Men Ultimate | 23.5 | 66.2 | 10.3 | 35 | 16 | 51 |
| Combined Annuity (Male) | 22.2 | 65.7 | 12.1 | 34 | 18 | 52 |
| Hypothetical (Dublin) | 20.7 | 63.6 | 15.7 | 33 | 25 | 58 |

a/  Children are aged 0-14, productive are 15-64, and aged are 65 and over.

superior mortality of the females at the higher ages. The total dependency ratio for females is about 53% and about 52% for males.

For colored lives there are about 26% children, 65% productive, and 9% aged. As between males and females there are the same characteristics as in the case of whites. As between white and colored lives the productive group is about the same size, but the percentage of children is greater and the percentage of aged is lower for the colored tables. Since the productive group is the same size for white and colored lives the total dependency ratio is also about the same for both (53%), the excess of colored children being made up by the deficiency in the colored aged group.

Some interesting conclusions may be drawn from the Total Population 1933 Life Table, which combines the different effects of white and colored and male and female mortality. For this table there are 23% children, 66% productive, and 11% aged. This would represent the ultimate condition in the United States if mortality remained the same, if there were no immigration or emigration, and if annual births were constant. By reference to Table I it can be seen that in 1980 the distribution will be 21%, 68%, and 11%, respectively. There is a smaller proportion of children and a larger proportion of productive in 1980 as compared to the theoretical life table because the population estimates assumed some immigration which would chiefly affect the productive group. The total dependency ratio for this life table is 53% as compared to 48% for the estimated population in 1980. Thus, immigration tends at first to reduce the total dependency ratio.

However, if immigrants have a higher birth-rate, this trend may later be reversed. It is interesting to note that the total dependency ratio for the Total Population 1933 table is the same as that for the 1930 population according to the Census although the actual distribution is entirely different since there are more children and fewer aged in the actual 1930 population than according to the life table.

The American Experience table (1860) shows a greater percentage of children and a smaller percentage of productive and aged than any of the population tables due to the higher mortality rates in 1860. The American Men Ultimate table (1915) shows almost exactly the same characteristics as the U. S. White Males 1920-29 table, and the Combined Annuity (Male) table (1928) is similar to the U. S. White Females 1920-29 table.

The so-called Hypothetical table was prepared by Dublin and Lotka to show the best ultimate mortality that could be expected in this country. The distribution between the three groups is materially different for this table, there being fewer children and productive and far more aged. The total dependency ratio is the highest of all the mortality tables (58%) due to the large proportion of aged.

## F. Conclusions

From the previous discussion it may be seen that, with the continuation of improvement in mortality rates and reduction in the birth-rate which has been going on for the last seventy years, there will be a smaller percentage of children and productive and a larger percentage of aged. It should be remembered that the discussion in Table I is based on the assumption that there would be no improvement in mortality rates over those shown for 1920-29. However, the Thompson and Whelpton estimates used for Table II assumed further improvement in mortality. Thus, this table showed a smaller proportion of children and a larger proportion of aged for 1960 than did Table I, as mentioned on page 7. In considering the dependency estimates as shown in Table I, it should be remembered that if mortality rates continue to improve and the birth-rate does not advance, the proportion of children and productive will be smaller than shown and vice versa for the aged group. Similarly, more immigration than was estimated would have the effect of decreasing the proportion of children and increasing the proportion of aged and productive. Taking into account immigration and the continuation of mortality improvement, it would appear that the most reasonable estimate of the ultimate distribution of population in the United States is 20% children, 65% productive, and 15% aged. For this distribution the total dependency ratio is 54%, which is approximately the same as that for 1930. However, for a number of years the dependency ratio will decrease prior to rising to this ultimate figure. This will be due to the interplay between the decreasing children group and the increasing aged group, while the productive

group remains almost constant.

Throughout this entire report, no recognition has been given to the changes in definition of youth and old age which have occurred from time to time in this country in the past. Similarly, in the future such changes in definition are apt to occur. Thus, in the early years of this country the generally accepted boundary between childhood and productive ages was below age 10. As the country matured and as educational opportunities were made more widely available, this boundary shifted upward until it is now as high as age 18 in some regions. In the future this trend will probably continue so that the productive group may ohly include those over 20. Similarly, the definition of when old age begins is liable to vary. Before the industrialization of this country, there was little need of defining the aged group since most persons over 65 could still perform many of the small manual tasks around the home or farm. At present, with a more mechanized and industrialized civilization, there is less opportunity for the aged person to perform useful work. Similarly, in the future when there are a great many persons over 65, most of the able-bodied individuals will and should continue working to age 70 or 75 if their services seem needed.

The convenience of numerical uniformity in a statistical inquiry such as this accounts for the rigid limits actually used, but the flexibility of changing conditions will determine the real boundaries.

Another more important limitation must also be recognized.

Our current mortality rates are a function of past conditions. Our death rate at age 20 today is effective among the survivors of the sanitary conditions of the last twenty years. The death rate at age 40 is applied to those who have been conditioned by the cruder health situations dating from 1897. We do not really expect the death rates of 1960 for ages 20 and 40 to be the same as today because we hope that greatly superior health conditions lie ahead. This study should help us to acquire perspective in showing the relative magnitudes of old age and childhood and the apparent balance between diminishing child dependence and growing old-age dependence.