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Projections of the Regional Distribution of the Population of the United States to 1975

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There has been an increasing interest over the last several years among agricultural economists and statisticians in population projections, including regional trends and their probable effect upon geographic shifts or regional rates of increase in farm production. In this article, Jacob S. Siegel of the Bureau of the Census joins with Margaret Jarman Hagood of the Bureau of Agricultural Economics in developing population projections to 1975 for each of the major geographic regions of the United States, consistent with the Census Bureau's recent population projections to 1960 for the United States and unofficial extensions of these projections to 1975. This cooperative effort represents a further contribution by Dr. Hagood to a field to which she has contributed during recent years and a beginning of work on regional projections by the Bureau of the Census.—O. V. Wells

THE RAPID GROWTH of the population of the United States during the last decade, together with the wider use of statistics relating to the future, have brought about an increase of interest in population projections. Among agricultural economists, such interest stems primarily from their concern over future demands for products from farms. Size of population is only one of the factors affecting this demand; but it is of great importance, especially in appraising the increases in demand that are likely to take place in the next decade. Although no major area in the United States is self-contained with respect to production and consumption of agricultural products, nevertheless, the volume of production of certain types of agricultural commodities is affected by the size, growth, and composition of the population within the area. The purpose of this article is to review the background of regional population projections in the United States, to describe in some detail a relatively simple method of projecting the regional distribution of the population by age and sex, and to prepare by this method projections of the popu-

lation of the nine major geographic divisions to the year 1975, and projections of the age-sex distribution of the population of the four major geographic regions to 1960.

Background of Projections

In spite of the increased interest in the future population, no official attempt has been made to publish periodically a systematic set of projections for the major geographic subdivisions of the United States. The difficulties in the way of developing a method having high reliability explain, in part, the reluctance of the Bureau of the Census to undertake the publication of such projections.

Official projections for the United States as a whole, however, have been published at frequent intervals for the last two decades, each later series being based on more current data and superseding the projections published earlier. At first, these series were published by the National Resources Planning Board; more recently the Bureau of the Census has sponsored the work. The many series published by the National Resources Planning

Board were prepared by Warren S. Thompson and P. K. Whelpton of the Scripps Foundation for Research in Population Problems, and Whelpton was the senior author of the recent Census Bureau monograph on *Forecasts of the Population of the United States, 1945-1975* (25). Since the appearance of this volume, two shorter reports on the future population of the United States, presenting projections to 1960, have been published by the Bureau of the Census (19; 15). These several series of projections were developed by the "cohort-survival" method, which, essentially, involves carrying forward the population as enumerated at the last census or as estimated for a current date, by age and sex, to a future date by use of projected birth rates, death rates, and migration (24; 15). Several series are usually computed to allow for the probable range. *Current Population Reports*, Series P-25, No. 43, the most recent report of the Census Bureau presenting projections, contains three series of projections to 1960—a low, medium, and high series, each based on a different set of assumptions as to the future course of fertility, mortality, and immigration.

The first systematic attempt to prepare projections of the population of all the major geographic subdivisions of the United States appears to have been made by Thompson and Whelpton in 1934, when the National Resources Board published their *Estimates of Future Population by States* (17). This report presents projections to 1960 for States, by residence areas (urban, rural-nonfarm, and rural-farm), prepared by the cohort-survival method.

Although, so far as the present authors know, this is the only instance in which this method has been used in preparing a comprehensive set of projections for subdivisions of the country, there are several examples of projections for specific geographic subdivisions. Shryock and Siegel prepared projections by this method for the State of Texas; Moore and Staehle for Oregon; Schmid, Miller, and Mooney for Washington State; and Hawley for Michigan (14; 12, pp. 21-37; 13, pp. 7-19; 9). Thompson's work on Cincinnati, Kuznets' work on Philadelphia, and the work of the Greensboro Department of Planning illustrate the application of the cohort-survival method to the projection of the population of a geographic area smaller than a State (18; 10; 6).

In contrast to its relatively small importance in determining national changes in population at the present time, migration is an important component of change in the population of geographic subdivisions of the Nation. Careful consideration must be given to it, therefore, when regional projections are prepared, if the projections are to be realistic. The National Resources Board published two series of projections for each area, in its 1934 report—one with no allowance for migration and a second with a constant decennial allowance for migration equal to the volume of net migration that occurred in the period 1920 to 1930 (17). Here the volume of migration in some recent period was used to allow for migration in future years. Shryock and Siegel prepared two series of projections to 1975 for the State of Texas by the cohort-survival method—one assuming no net migration and the other assuming net migration as in the period 1935-40 (14). The use of a constant arbitrary amount in round numbers (for example, 10,000 per year), a constant arbitrary rate (for example, one percent per year), or changing amounts or rates representing extrapolations of the amounts or rates prevailing in past decades are possible alternative approaches to the allowance for migration in future years. Moore and Staehle assumed constant annual arbitrary rates of migration in preparing their three projections of the population of Oregon for 1960 by the cohort-survival method (12). Schmid and his associates assumed constant annual amounts in round numbers, based on an analysis of past trends in migration, in preparing their three projections for 1960 for the State of Washington (13).

Although the projection of birth and death rates presents difficult problems in the preparation of population projections for subdivisions of the United States, they are less difficult to handle than is the migration component. The problem of projecting them can be simplified by relating them to corresponding rates for the United States for past and future years. This procedure was used by Shryock and Siegel and by Schmid, Miller, and Mooney in the articles cited previously.

Projections have been made by use of components without working with age groups as the cohort-survival method requires. Stanbery and Spurr have each prepared projections for California for 1960, by making separate allowances for

total natural increase on the basis of past trends in the State and prospective national trends and for total migration on the basis of past trends, expected economic expansion in the State, and trends in national income (2, pp. 39-55; 16).

Numerous agencies, both public and private, have prepared and published projections for certain subdivisions of the United States. For the most part, they have not attempted to work with components of population change such as births, deaths, and migration, but have simply extrapolated the total population (or the net change in the total population) directly. A wide variety of extrapolation techniques have been used, the most frequent being freehand graph, arithmetic, geometric, and logistic. The Consolidated Edison Company used logistic extrapolation, among other methods, in its work on New York City (4). The article by Spurr (16) is of particular interest because it applies several such methods, as well as the component method mentioned earlier and the "ratio-to-United States" method described and illustrated below. The Federal Power Commission has made extensive use of a method based on assessment of future economic expansion and ratio of labor force to total population (23, pp. 19-20).

We have already suggested the possibility of trying in local or regional projections with available projections for some broader area, such as the country as a whole, in connection with the projection of birth or death rates in the application of the component-factor method. Several estimators have used the approach of projecting the total population of an area as a proportion of the total for a larger area, usually the United States, and of applying the projected proportions to available totals for the broader area for future years. In November 1949 the Bureau of Agricultural Economics published a set of projections for the geographic divisions to 1975, developed by projecting each division's share of the national total and applying the projected proportions to the estimated future population of the United States (as projected by the Bureau of the Census and the Scripps Foundation in *Forecasts of the Population of the United States, 1945-1975* (7)). In general, the proportion of the United States population in each geographic division was assumed to change in the next several years to come at roughly the same rate as in some specified recent span of years, but

to approach constancy by some distant date. This method is described more extensively and illustrated later.

Just as for projections developed by extrapolation of the absolute total population of an area, so also in the application of the ratio-to-United States method a wide variety of extrapolation techniques may be used. In their projections of the urban population to the year 2000 by the ratio method, Hauser and Eldridge used the rate of change in the depression decade of the 1930's to represent slow growth, the rate of change in the prosperous 1920's to represent rapid growth, and the rate of change for the combined period to represent medium growth; and then assumed these rates of change to remain constant (8, pp. 159-173). In their application of the ratio method to Texas, Shryock and Siegel fitted a logarithmic curve to the ratios for past years; Spurr projected California's percentage to 1960 "at a declining rate of growth" (14; 16).

The preceding pages have been primarily concerned with projections of the total population of an area. Projections of the age-sex distribution of an area's population are also of considerable interest. Because projecting the population by age and sex is an essential part of the cohort-survival method, many of the studies mentioned above furnish illustrations of the estimation of the future age-sex composition of geographic and residence areas. Most of these studies had as their main objective the derivation of projections of the total population, and so projections for all age-sex groups were obtained. Occasionally a special age group is sought, as in the work of the Pacific Coast Committee of the American Council on Education in projecting to 1964 the college-age population in several Western States, or in the work of the California Teachers Association in projecting to 1960 the number of children of school age in California, by the cohort-survival method (1; 3).

The application of this method requires lengthy computations and the availability of a considerable volume of data, so that several short-cut procedures have been used. For example, the percentage distribution by age and sex of an area's population as enumerated or as estimated for a recent date, or as extrapolated to a future date, can be applied to the future total for the area, if such a figure is available. Projections of the age-sex composition

TABLE 1.—Trends in the percentage distribution of the population of the United States by geographic divisions, 1870 to 1950, with projections to 1975

Year	United States	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Census										
1870	100.00	9.05	22.85	23.67	10.00	15.18	11.42	5.26	0.82	1.75
1880	100.00	8.00	20.93	22.34	12.28	15.15	11.13	6.65	1.30	2.22
1890	100.00	7.47	20.19	21.41	14.19	14.07	10.21	7.53	1.93	3.00
1900	100.00	7.36	20.34	21.03	13.62	13.74	9.93	8.60	2.20	3.18
1910	100.00	7.13	21.00	19.84	12.65	13.26	9.15	9.55	2.86	4.56
1920	100.00	7.00	21.06	20.31	11.87	13.23	8.41	9.69	3.16	5.27
1930	100.00	6.65	21.39	20.61	10.83	12.86	8.05	9.92	3.02	6.67
1940	100.00	6.41	20.91	20.22	10.27	13.54	8.19	9.92	3.15	7.39
1950	100.00	6.18	20.01	20.17	9.33	14.06	7.62	9.65	3.37	9.61
Projections										
1955	100.00	6.02	19.57	20.17	8.98	14.24	7.62	9.65	3.43	10.32
1960	100.00	5.89	19.22	20.17	8.70	14.38	7.62	9.65	3.47	10.90
1975	100.00	5.71	18.72	20.17	8.33	14.54	7.62	9.65	3.53	11.73
(211,799) in 1975		5.75	17.60	19.33	7.88	15.29	6.38	9.85	4.54	12.77

Source: Underlying population data through 1950 are from decennial censuses conducted by the Bureau of the Census. Census figures for 1870-1940 are shown in table 3, and census figures for 1950 appear in *1950 Census of Population, Advance Reports*, Series PC-9, No. 1 (21). (See source note to table 3.) For assumptions and bases of projections, see text and table 2.

of the population of the Pacific and Mountain States for 1975 were prepared some years ago by one of the present writers by a variation of the ratio method. Here the ratio of the proportion of the total population of each geographic division in each age-sex group to the corresponding proportion for the whole country was projected to 1975, and was used in connection with available national projections by age and sex and projections of the total population of each division developed by the ratio method.¹ This method is described in further detail and illustrated later.

Method Used Here for Projecting Regional Totals

The general method used in this article to project regional totals is the ratio method already mentioned. The past trends in the share each major geographic division has of the total population of the United States are examined, the shares are projected into the future, and the projected percentages are applied to the low, medium, and high population projections for the United States as a whole that have been developed by the Bureau of the Census. Table 1 and figure 1 show the percentage share of the national population in each geographic division for each decennial year since 1870. Over this 80-year period, the Pacific Division is the only one of the nine divisions that has manifested

an uninterrupted increase in its share, and the New England is the only one that has manifested an uninterrupted decrease. The other divisions present varying patterns that combine periods of increase, decrease, and approximate constancy in the proportions they have of the total population, although the general trend in each case is rather regular.

In the projection of the regional percentages beyond 1950, reliance was placed on the persistence of differential factors, both demographic and economic, that tend to make the population of a division grow more or less rapidly than the country as a whole. For each division the "trend" in its percentage was calculated by computing the annual average rate of change in the percentage over several decades—in most cases since 1920. Table 2 summarizes the periods on which the projected rates of change for each division were based and the resulting rates of change. These are the rates of change in the percentages for each division assumed to take place in the year following July 1, 1950.

The record of the past provides only a partial and imperfect guide for projecting future developments. In the present problem, the farther we go into the future, the less reliance we can place on the past as a guide. Therefore, an assumption was introduced to modify the assumption as to persistence of the operation of factors producing differ-

¹ This general procedure represents a variation and extension of a procedure suggested by Frank Lorimer (11).

Figure I.--PERCENT OF THE TOTAL POPULATION OF THE UNITED STATES IN EACH GEOGRAPHIC DIVISION, 1870-1950, AND PROJECTIONS TO 1975

SOURCE: TABLE I.

PERCENT

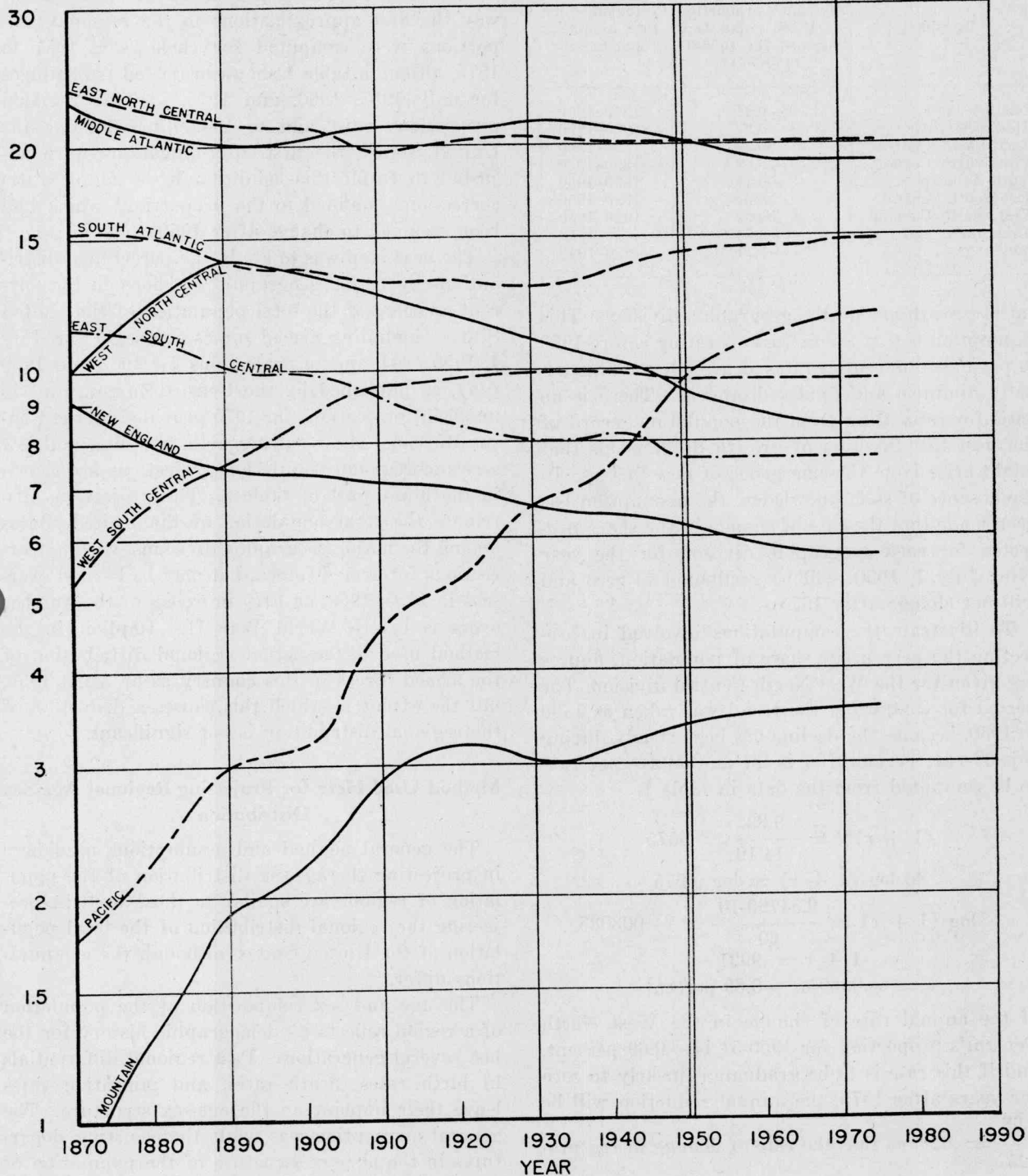


TABLE 2.—Bases of projection of the distribution of the population of the United States by geographic divisions

(See text for detailed explanation and method of application)

Division	Rate of change in division's proportion of U. S. population assumed for 1950-51 (Percent)	Period on which rate assumed was based
New England	-0.41	1920-1950
Middle Atlantic	-0.33	1930-1950
East North Central	None	1920-1950
West North Central	-0.69	1890-1950
South Atlantic	+0.45	1930-1950
East South Central	None	1920-1950
West South Central	None	1920-1950
Mountain	+0.54	1930-1950
Pacific	+1.71	1920-1940

ential growth among the geographic divisions. This assumption is that the factors operating before 1950 to produce differential rates of growth would gradually diminish and finally disappear. There is no basis for estimating from the population record of the past the direction of growth differentials that might arise from the emergence of new factors. In the absence of such knowledge, the assumption has been made that the rate of change in the share projected for each geographic division for the year after July 1, 1950, will be graduated to zero and will not change after 1975.

To illustrate the computations involved in projecting the percentage share of population, figures are given for the West North Central division. The period for computing the trend was taken as 1890 to 1950, because the decline has been steady during this 60-year period. If r is the annual average rate to be computed from the data in table 1,

$$(1 + r)^{60} = \frac{9.33}{14.19} = .6575$$

$$60 \log (1 + r) = \log .6575$$

$$\log (1 + r) = \frac{9.81790-10}{60} = -.003035$$

$$1 + r = .9931$$

$$r = -.0069 \text{ or } -0.69 \text{ percent}$$

If the annual rate of change in the West North Central's proportion for 1950-51 is -0.69 percent, and if this rate is to be graduated linearly to zero for years after 1975, the annual reduction will be

$$\frac{0.69}{25} = .028, \text{ so that the rate of change in the pro-}$$

portion for 1951-52 will be $-0.690 + .028 = -0.662$ percent. As the West North Central's proportion for 1950 was 9.33 percent, a reduction of 0.69 percent in this would mean a 1951 percentage of 9.27, and a reduction of 0.662 percent in the latter would mean a 1952 percentage of 9.20. In this way the first approximations to the regional proportions were computed for each year, 1951 to 1975, although table 1 shows projected percentages for only 1955, 1960, and 1975. As the regional proportions must add to 100.00 percent for the United States, the first approximations were adjusted to fulfill this condition by a simple ratio correction (confined to the proportions which had been assumed to change after 1950).

The next step was to apply the percentage distributions by major geographic divisions to the current estimate of the total population of the United States (including armed forces overseas) for July 1, 1950 (20), and to projections for 1955 and 1960 (15), as published by the Census Bureau, and to unofficial projections for 1975 provided by the Census Bureau. The resulting high, medium, and low series of regional population projections are shown in the lower part of table 3. The projections distribute the total population of the United States among the major geographic divisions, with no corrections for armed forces that may be located overseas in 1955, 1960, or 1975 in excess of the number overseas before World War II. Implicit in the method used is the actual regional distribution of the armed forces in this country as of April 1950, but the extent to which this causes a distortion of the regional distribution is not significant.

Method Used Here for Projecting Regional Age-Sex Distribution

The general method and assumptions used here in projecting the age-sex distribution of the population of regions are similar to those used in projecting the regional distribution of the total population of the United States, although the computations differ.

The age and sex composition of the population of a region reflects its demographic history for the last several generations. Past regional differentials in birth rates, death rates, and migration rates leave their imprint on the age-sex structure. The general assumption was made that existing departures in the age-sex structure of the population of

TABLE 3.—Population of geographic divisions of the United States, 1870 to 1950, with projections to 1975
(Census figures exclude the small number of armed forces overseas. Current estimates and projections include armed forces overseas before World War II. Figures are shown in thousands)

Year	United States	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
<i>Census</i>										
1870	38,558	3,488	8,811	9,124	3,857	5,854	4,404	2,030	315	675
1880	50,156	4,011	10,497	11,207	6,157	7,597	5,585	3,334	653	1,115
1890	62,948	4,701	12,706	13,478	8,932	8,858	6,429	4,741	1,214	1,889
1900	75,995	5,592	15,455	15,986	10,347	10,443	7,548	6,532	1,675	2,417
1910	91,972	6,553	19,316	18,251	11,638	12,195	8,410	8,784	2,633	4,192
1920	105,711	7,401	22,261	21,476	12,544	13,990	8,894	10,242	3,336	5,567
1930	122,775	8,166	26,261	25,297	13,297	15,794	9,887	12,177	3,702	8,194
1940	131,669	8,437	27,540	26,626	13,517	17,823	10,778	13,065	4,150	9,733
<i>Current estimates</i>										
1950	151,772	9,381	30,379	30,616	14,162	21,333	11,559	14,641	5,111	14,590
<i>Projections</i>										
<i>Low Series</i>										
1950	158,176	9,522	30,955	31,905	14,204	22,524	12,053	15,264	5,425	16,324
1960	161,679	9,523	31,075	32,611	14,066	23,249	12,320	15,602	5,610	17,623
1975	165,616	9,457	31,003	33,404	13,796	24,081	12,620	15,982	5,846	19,427
<i>Medium Series</i>										
1955	161,748	9,737	31,654	32,625	14,525	23,033	12,325	15,609	5,548	16,692
1960	169,371	9,976	32,553	34,163	14,735	24,356	12,906	16,344	5,877	18,461
1975	190,101	10,855	35,587	38,342	15,835	27,641	14,486	18,345	6,711	22,299
<i>High Series</i>										
1955	166,179	10,004	32,521	33,518	14,923	23,664	12,663	16,036	5,700	17,150
1960	180,276	10,618	34,649	36,361	15,684	25,924	13,737	17,397	6,256	19,650
1975	225,310	12,865	42,178	45,446	18,768	32,760	17,169	21,742	7,953	26,429

Source: Data for 1870-1940 from decennial censuses conducted by the Bureau of the Census. July 1950 estimate of total population of United States from Bureau of the Census, *Current Population Reports*, Series P-25, No. 45 (20); for divisions this total has been distributed according to the distribution of the population shown by the 1950 Census of Population. Projections of the total population of the United States for 1955 and 1960 from Bureau of the Census, *Current Population Reports*, Series P-25, No. 43, p. 7 (15). Projections of total population of United States for 1975 are unofficial projections furnished by the Bureau of the Census, representing extensions of the projections for 1955 and 1960 on the basis of roughly similar assumptions. Distribution by divisions for future dates derived by use of projected percentages shown in Table 1.

a region from that of the Nation would gradually diminish. The projections of age-sex structure are limited to four major regions that are combinations of the nine major geographic divisions,² and to the medium series. The computational methods will be illustrated for the projection of the age-sex distribution of the population of the South.

The departure from 1.000 of the ratios shown in column 3 of table 5 indicates the deviation of the South from the United States in age-sex structure, as of April 1950. The assumption was made that the direction of this departure would be maintained for 50 years, but that regional differentials would gradually diminish and would disappear by the year 2000. For example, the ratio in column 3 for males under 15 years of age, for April 1950, is

² The limitation is due to the lack of data for geographic divisions for a current date at the time of writing. The data on the age-sex composition of the population of regions are based on preliminary sample tabulations of the 1950 Census.

1.135. If this ratio is to be 1.000 by the year 2000, the reduction to take place by July 1955 is

$$\frac{.135}{50} \times 5.25 = .014$$

and the ratio is 1.135 - .014 = 1.121.

This ratio and the results of similar computations for the other age-sex groups, entered in column 4 of table 5, were applied to the United States percentages by age derived from the 1955 medium projections of the Census Bureau (shown in column 5) to obtain the first approximations to the percentages for the South, shown in column 6. The entries in column 6 do not sum exactly to 100; therefore, an adjustment ratio (100.00 divided by the total of column 6) was applied to these items to obtain the second approximations, shown in column 7. If the South had been the only region for which projections of the population by age and sex were being prepared, the entries in column 7 could have been considered the final projections of the percentage distribution by age and sex for 1955. How-

ever, when these results and the results of similar computations for the other three regions were applied to the medium projections of the total population of the regions, the resulting figures for each age-sex group did not sum to the United States medium total for that group. The final figures for the population of each region in each age-sex group were obtained by an iterative adjustment process (5, pp. 115-121).

The process as used here consisted essentially of first adjusting the four regional figures for each age-sex group to sum to the United States age-sex totals, then adjusting the resulting ten figures for each region to sum to the regional totals, and repeating the process until all the rows and columns summed to their pre-established totals. The final percentages for the South, shown in column 8 of table 5, were computed from the adjusted population figures. It may be noted that the final percentages differ only slightly from the second approximations in column 7. Percentages for the other regions and for 1950 and 1960 were also obtained by the procedure described above and are shown in table 6.

TABLE 4.—Percent increase, 1950 to 1960, projected for the total population of the United States and geographic divisions

(A minus (—) sign denotes decrease)

Area	Low series	Medium series	High series
United States	6.5	11.6	18.8
New England	1.5	6.3	13.2
Middle Atlantic	2.3	7.2	14.1
East North Central	6.5	11.6	18.8
West North Central	-0.7	4.1	10.7
South Atlantic	9.0	14.2	21.5
East South Central	6.6	11.7	18.8
West South Central	6.6	11.6	18.8
Mountain	9.8	15.0	22.4
Pacific	20.8	26.5	34.7

Source: Data in table 3.

Prospective Changes in Regional Population

Under the medium and high projections, each of the nine major geographic divisions is expected to have a population increase in the decades immediately following (table 4). All except the West North Central would gain even under the low projections. However, the rate of population increase is not expected to be equal among the divisions.

TABLE 5.—Basis for projection of medium age-sex distribution of the population of the South in 1955

Sex and Age	Percentage distribution, 1950 ¹		Ratio, South to U. S.		Percentage distribution, 1955			
	United States (1)	South (2)	1950 (2)÷(1)= (3)	1955 ² (4)	United States ³ (5)	South		
						First approximation (4)×(5)= (6)	Second approximation ⁴ (7)	Final ⁵ (8)
Total, all ages	100.00	100.00	-----	-----	100.00	100.01	100.00	100.00
Males under 15 years	13.81	15.68	1.135	1.121	14.63	16.40	16.39	16.38
Males 15 to 24 years	7.14	7.60	1.064	1.058	6.90	7.30	7.30	7.29
Males 25 to 44 years	14.71	14.51	.986	.988	14.07	13.90	13.90	13.89
Males 45 to 64 years	10.08	8.73	.866	.880	10.06	8.85	8.85	8.86
Males 65 and over	3.79	3.17	.836	.854	3.86	3.29	3.29	3.29
Females under 15 years	13.35	15.10	1.131	1.117	14.01	15.65	15.65	15.64
Females 15 to 24 years	7.50	8.22	1.096	1.086	6.75	7.33	7.33	7.33
Females 25 to 44 years	15.12	14.53	.961	.965	14.61	14.10	14.10	14.11
Females 45 to 64 years	10.12	8.87	.876	.890	10.61	9.44	9.44	9.45
Females 65 and over	4.39	3.59	.818	.837	4.48	3.75	3.75	3.76

¹ Based on data in: Bureau of the Census, *1950 Census of Population, Preliminary Reports*, Series PC-7, No. 3 (22).

² Computed on assumption that ratio shown in col. (3) will be graduated to 1.000 by the year 2000.

³ Based on medium projections of U. S. population, by age and sex, published in Bureau of the Census, *Current Population Reports*, Series P-25, No. 43 (15). An allowance for armed forces overseas in excess of the number overseas before World War II has been included.

⁴ Col. (6) adjusted to 100.00.

⁵ Adjusted to tie in with regional totals and U. S. distribution by age and sex.

TABLE 6.—Percentage distribution by age and sex of the population of the United States and geographic regions: Current estimates, July 1, 1950, and medium projections, July 1, 1955 and 1960

Percents based on figures which include United States armed forces overseas in excess of the number overseas before World War II. Underlying population data not shown in this article but may be obtained approximately by applying the percentages shown in this table to the current estimates for 1950 and to the medium projections for 1955 and 1960 shown in table 3. Totals may differ slightly from the sum of their parts because of rounding.)

Age and area	1950			1955			1960		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
United States ¹	100.0	49.7	50.3	100.0	49.6	50.5	100.0	49.4	50.6
Under 15 years	27.6	14.1	13.5	28.6	14.6	14.0	27.4	14.0	13.4
15 to 24 years	14.7	7.4	7.3	13.7	6.9	6.8	15.0	7.6	7.4
25 to 44 years	29.5	14.4	15.1	28.7	14.1	14.6	27.3	13.5	13.8
45 to 64 years	20.6	10.2	10.4	20.7	10.1	10.6	21.2	10.2	11.0
65 years and over	7.6	3.6	4.0	8.4	3.9	4.5	9.1	4.1	5.0
Northeast ²	100.0	49.3	50.8	100.0	49.0	50.9	100.0	48.8	51.1
Under 15 years	24.4	12.5	11.9	25.6	13.1	12.5	24.6	12.6	12.0
15 to 24 years	14.2	7.2	7.0	13.1	6.7	6.4	14.5	7.4	7.1
25 to 44 years	30.7	14.8	15.9	29.8	14.4	15.3	28.1	13.7	14.4
45 to 64 years	22.5	11.1	11.4	22.5	10.9	11.6	22.9	10.9	12.0
65 years and over	8.2	3.7	4.6	8.9	3.9	5.0	9.8	4.2	5.6
North Central ²	100.0	49.6	50.3	100.0	49.6	50.6	100.0	49.2	50.8
Under 15 years	26.8	13.6	13.2	27.9	14.2	13.7	26.6	13.5	13.1
15 to 24 years	14.3	7.2	7.1	13.3	6.7	6.6	14.6	7.4	7.2
25 to 44 years	28.8	14.0	14.8	28.0	13.7	14.4	26.8	13.1	13.7
45 to 64 years	21.5	10.7	10.8	21.6	10.6	11.0	22.0	10.6	11.4
65 years and over	8.5	4.1	4.4	9.3	4.4	4.9	10.0	4.6	5.4
The South ²	100.0	49.8	50.1	100.0	49.8	50.2	100.0	49.5	50.4
Under 15 years	31.1	15.9	15.2	32.0	16.4	15.6	30.2	15.5	14.7
15 to 24 years	15.9	7.9	8.0	14.6	7.3	7.3	16.0	8.0	8.0
25 to 44 years	28.7	14.2	14.5	28.0	13.9	14.1	26.7	13.3	13.4
45 to 64 years	17.9	8.8	9.1	18.3	8.9	9.4	19.1	9.1	10.0
65 years and over	6.3	3.0	3.3	7.1	3.3	3.8	7.9	3.6	4.3
The West ²	100.0	50.2	49.8	100.0	50.0	50.0	100.0	49.8	50.3
Under 15 years	27.1	13.8	13.3	28.2	14.4	13.8	27.0	13.8	13.2
15 to 25 years	14.1	7.2	6.9	13.1	6.7	6.4	14.4	7.4	7.0
25 to 44 years	30.5	15.2	15.3	29.6	14.8	14.8	28.2	14.1	14.1
45 to 64 years	20.7	10.3	10.4	20.9	10.2	10.7	21.4	10.3	11.1
65 years and over	7.6	3.7	3.9	8.2	3.9	4.3	9.1	4.2	4.9

¹ Percents for July 1, 1950, based on unpublished estimates provided by the Bureau of the Census. Percents for 1955 and 1960 based on data in Bureau of the Census, *Current Population Reports*, Series P-25, No. 43 (15). Figures given in that report have been adjusted to include armed forces overseas in excess of the number overseas before World War II.

² Method of derivation illustrated in table 5 and explained in the text.

The Pacific division will exceed all others in rate of population growth unless new factors affecting the distribution of the population within the United States should become so important as to break the continuity with the past.

For several decades, the five geographic divisions on the eastern seaboard and in the east central part of the country have experienced somewhat similar rates of change in their populations. When their percentage shares of the total population are plotted on a logarithmic scale, the courses for these five divisions are roughly parallel, showing a gradual downward trend since 1870 (fig. 1). The four

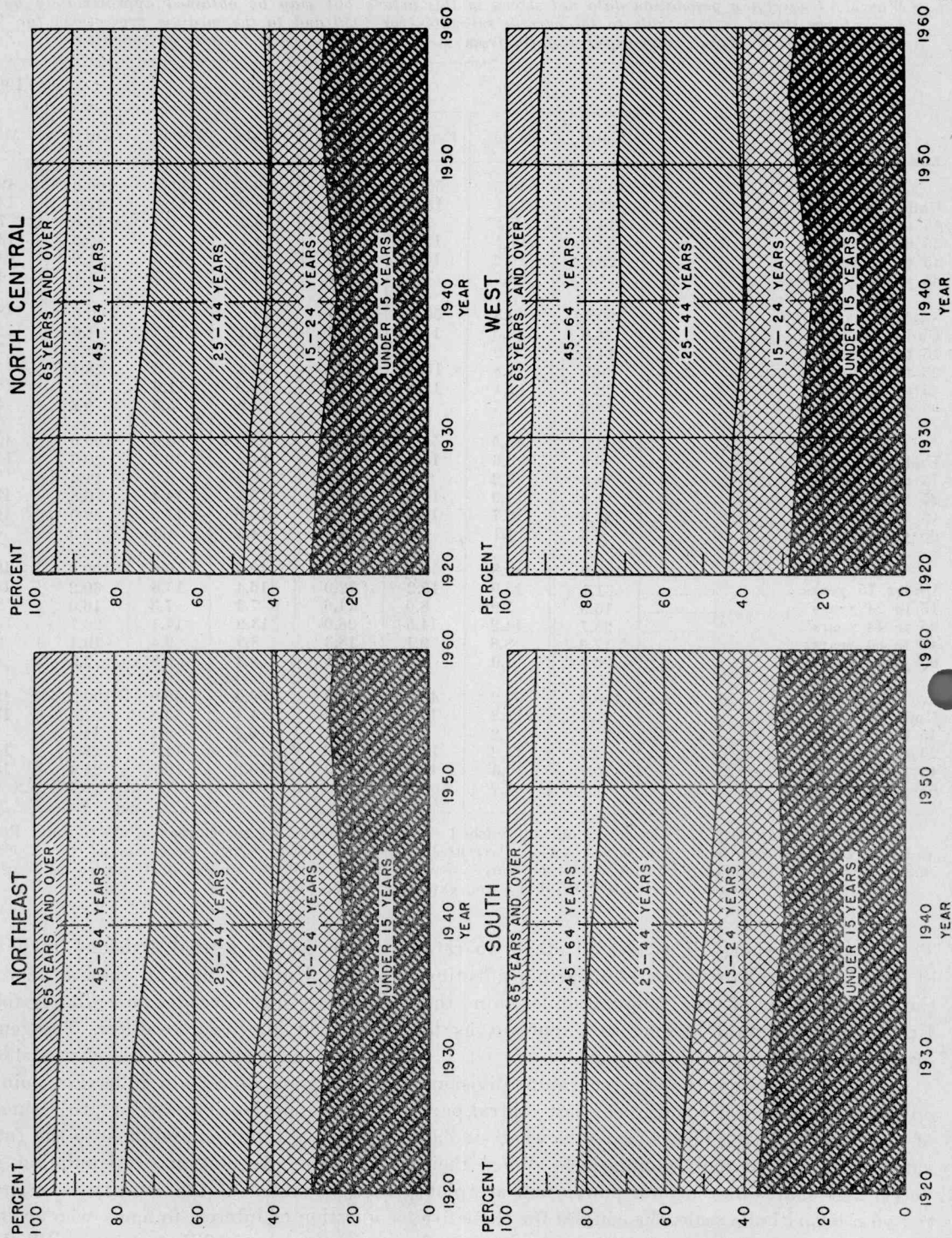
more recently settled divisions in the western half of the United States all show a very rapid initial increase in the decades immediately following 1870, but their later courses differ. The general regularity in past patterns of the curves shown in figure 1—in spite of certain inflection points—underlies the assumptions chosen for projecting the regional shares of total population into the future.

If the expectation of population gain in each major region of the country is granted, the next question of interest to many who are trying to look to the future is, What changes will there be in the age-sex composition of the population of the major

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Figure 2.— PERCENT DISTRIBUTION OF THE POPULATION BY AGE, 1920 TO 1950, AND PROJECTIONS TO 1960, FOR GEOGRAPHIC REGIONS

SOURCE: TABLE 6.



regions? In the main, the regions are expected to follow the general pattern of the Nation's population in the alterations of their age-sex structures between 1950 and 1960. Every region is expected to have a sex balance numerically in favor of females by 1960. This was not true of the West in 1950.

Every region is expected to have significant increases in the number and proportion of older persons during the next decade (fig. 2). The rate of increase in the proportion of persons 65 years of age and over is expected to be highest in the South, the region that had the lowest proportion of older people in 1950. The North Central region, however, is expected to retain its first place among regions in the proportion of older persons in its population, followed in order by the Northeast, the West, and the South.

At the other end of the age range, the proportion of children under 15 years of age is expected to rise between 1950 and 1955 and then to drop in the next 5 years, so that the 1960 proportion will not differ greatly from that for 1950. This pattern of change is expected to be manifested in each of the major regions. In contrast, the next older group—youths between the ages of 15 and 24 years—is expected to decline, relative to total population, from 1950 to 1955, and then to rise by 1960 to approximately the same percentage as in 1950. For the two younger age groups combined, the South is expected to have the highest proportion in 1960, as it did in 1950. Under the medium projections computed, about 46 percent of the population in the South will be under 25 years of age in 1960, contrasted with 39 percent in the Northeast and 41 percent in the North Central region and the West.

Limitations and Applications of Method Used

The method described here for projecting the geographic distribution of the population of a country is relatively simple and is applicable to many other problems. Whether it represents the best approach to such problems is by no means clear.

In projecting the total population of a country that is not undergoing a period of extensive foreign immigration or emigration, the two crucial components of change to be estimated for the future are births and deaths. As suggested earlier, in projecting the population of a subdivision of a

nation that has few impediments to internal migration and that has a very mobile population, the component of internal migration also has to be projected either implicitly or explicitly. The projection of fertility and mortality presents difficult problems, and the record of accuracy in making such projections has been exposed to both justified and unjustified criticism; nevertheless, fertility and mortality occur with more statistical regularity than does migration, and to the extent that they do they are more predictable. Because of this, it seems reasonable to conclude that projections of the total population of the United States can be made with more accuracy than projections for geographic subdivisions of the country.

When faced with the problem of projecting the population of some geographic area within the United States, one has, generally speaking, two alternatives (and intermixtures thereof) in choosing from methods already used. The first is to project the components of population change for the area through use of available data on current population, fertility, mortality, and migration. The other is to project the total population rather than components. The second alternative is illustrated by the method used in this article. This alternative assumes that the total effect of all the components of population change in the area is predictable from the record of the past and from more elaborately developed projections for the United States as a whole.

The authors wish to point out that they are not suggesting preferability of the method used over the more elaborate methods. Its chief advantage lies in its simplicity and in the fact that it can be applied in cases in which the detailed data are not available for the other methods. It is our hope that projects can be developed or expanded in governmental and other agencies to appraise, from data now available, the degree of success that would have been achieved by alternative approaches in projecting the regional or State distribution of the present population of the United States.

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