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ESTIMATES OF THE POPULATION OF STATES: JULY 1, 1951 AND 1950

(The estimates for July 1, 1950, given in this report supersede the corresponding estimates published in Current Population Reports, Series P-25, No. 50. The estimates for both 1950 and 1951 are comparable to the estimates for midyear 1940 to 1949, given in Current Population Reports, Series P-25, No. 47, and to those for 1910 to 1939, given in Population - Special Reports, Series P-45, No. 9)

The West continued to lead the other regions in rate of population growth during the 1½-year period between April 1, 1950, the date of the last census, and July 1, 1951, according to estimates of State population for July 1, 1951, announced today by Roy V. Peel, Director, Bureau of the Census, Department of Commerce. The West increased by about 3.5 percent, or nearly twice the national average of about 1.8 percent. The South, however, outstripped the other regions in absolute gain with an increase of about 867,000 for the 1½-year period. Of the four regions, the Northeast, with an increase of about 444,000, or 1.1 percent, had both the smallest absolute and relative gain.

The four geographic divisions of the United States with greater rates of population increase between April 1, 1950, and July 1, 1951, than the national average were located in the West and South; namely, the Pacific Division, 3.6 percent; the Mountain, 3.2 percent; the West South Central, 2.7 percent; and the South Atlantic 2.3 percent. Of the remaining five divisions, the four in the Northeastern and North Central Regions increased in population at a rate either equal to or somewhat less than that of the Nation. The population of the East South Central Division remained virtually unchanged.

Except for Kansas and the District of Columbia, these estimates were prepared in the following manner. First, estimates of the civilian population of each State were prepared by

two methods; the results were then averaged to obtain the final estimates of civilian population; and, finally, estimates of armed forces stationed in each State were added to obtain estimates of total population. The two methods used were the "migration-and-natural-increase method" and the "vital rates method" as described below.

The migration-and-natural-increase method as applied here consists of adding to the civilian population on April 1, 1950, an estimate of births, adding or subtracting an estimate of net civilian migration, and subtracting estimates of civilian deaths and of the net movement of civilians into the armed forces, for the period between the census and the estimate date. The estimated net movement of civilians into the armed forces for each State represents the difference between the number of persons from the State serving in the armed forces on the estimate date and the number from the State serving in the armed forces on April 1, 1950, adjusted to include an allowance for former residents of the State who died during this period while serving in the armed forces. Net civilian migration was estimated in the following manner. First, net migration rates for children of school age were developed on the basis of data from the 1950 Census and statistics on school enrollment in the elementary grades. These rates were then assumed to represent the migration rates for persons of all ages and applied to the population of all ages in each State in 1950 to

obtain tentative estimates of net migration for each State for the period since the 1950 Census. Finally, these estimates of net migration were adjusted by a ratio method to add algebraically to the national estimate of net immigration for the same period. This general method has been described as "Method II" in Population - Special Reports, Series P-47, No. 4, and illustrated in Current Population Reports, Series P-25, No. 20.

The particular procedure used in preparing the second estimate was the "vital rates method."¹ The steps in computing the estimates by the "vital rates method" for July 1, 1951, are as follows:

1. Compute the crude birth rate for the United States and for each State using birth statistics for the 12-month period centering on April 1, 1950, and population on April 1, 1950, as shown by the decennial census. Births classified by residence and corrected for under-registration were used in these computations.

2. Compute the crude birth rate for the United States using birth statistics for the calendar year 1951 and the estimated total population on July 1, 1951, derived from statistics on births, deaths, and migration since April 1, 1950.

3. Prepare an estimate of the crude birth rate for each State for 1951 on the assumption that the change in the rate for each State from the 1949-1950 period was the same as for the United States as a whole.

4. Compute the estimated population of each State on July 1, 1951, from the crude birth rates, as obtained above, and preliminary figures on the number of births in 1951.

5. Adjust these estimated State population figures to total to the figure for the United States as a whole.

6. Compute a corresponding set of State estimates based on statistics of deaths and crude death rates.

7. Compute a composite estimated population figure for each State by averaging the separate figures based on births and deaths. "Vital rates" estimates for July 1, 1950, were developed by a similar procedure.

The estimates based on vital rates were averaged in turn with the estimates based on school data to yield the estimates for the States

¹ Donald J. Bogue, "A Vital Statistics Technique for Making Postcensal Population Estimates," Journal of the American Statistical Association 45(250): 149-163, June, 1950.

published in this report. The estimates for Washington, D. C., represent a further average with another estimate involving use of public utility data and 1950 Census data on persons per household. The estimates for Kansas represent interpolations and adjustments of the results of the Kansas State Censuses taken each year as of March 31.

The particular method used in preparing these estimates was selected on the basis of several tests, conducted by the Bureau of the Census, on the relative reliability of various methods of estimating State population. The most recent of these involved a comparison with the 1950 Census counts of estimates of the population of States prepared by the particular variation of the migration-and-natural-increase method used here, the vital rates method, and several other methods, for April 1, 1950.² These tests indicated that the average error of the estimates prepared by the migration-and-natural-increase method (Method III) was lower than that of the estimates prepared by the other methods and that the vital rates method appeared next best. Furthermore, the average error of the estimates representing an average of the results of these two methods was lower than the average error of either set of estimates considered separately. There is now considerable empirical justification for the procedure of averaging two or more estimates, each based on fairly reliable and appreciably independent procedures.³

The birth and death statistics obtained from the National Office of Vital Statistics for preparing these estimates were provisional figures classified on an occurrence basis. For the present purpose they were adjusted to a residence basis and corrected for underregistration. The factors used in correcting the births for underregistration were based on preliminary results of the 1950 Birth Registration Test conducted in conjunction with the 1950 Census of Population. The adjustment of the death

² A discussion of the results of this test is given in: Henry S. Shryock, Jr., and Jacob S. Siegel, "Accuracy of Postcensal Estimates of Net Migration and of Population," a paper presented at the third annual meeting of the Public Health Conference on Records and Statistics, Washington, D. C., April 23, 1951. At present, a limited supply of dittoed copies of this paper is available on request. For an earlier test, see: Henry S. Shryock, Jr., and Norman Lawrence, "The Current Status of State and Local Population Estimates in the Census Bureau," Journal of the American Statistical Association 44(246): 157-173, June 1949.

³ See, for example, Bogue, op. cit., and Robert C. Schmitt, "Short-cut Methods of Estimating County Population," Journal of the American Statistical Association 47(258): 232-238, June 1952.

statistics for underregistration was confined to infants under one year of age. It is expected that the final figures on births and deaths will differ only slightly from those used.

In addition to the vital statistics provided by the National Office of Vital Statistics, United States Public Health Service, other basic data used in preparing the population estimates given in this report were obtained from various other agencies, both Federal and State. The statistics on immigration and emigration were obtained from the Immigration and Naturalization Service, Department of Justice; the figures relating to the armed forces were provided by the Department of Defense; and the data on school enrollment used in developing the estimates of net internal migration were obtained from State and Diocesan Departments of Education throughout the country.

As has been indicated, total population change between the census date and a given estimate date consists of the net contribution of births, deaths, net movement into the armed forces, and net civilian migration. The estimates of net migration implied in the population estimates shown in this report are subject to considerably greater percentage error than the other components of population change. Since net migration is frequently an important component of change, the estimates of total population change between April 1, 1950, and July 1, 1950 and 1951, shown in this report are also subject to substantial error, and small changes should be regarded with particular care. Although the estimates of total population change and the population estimates themselves have the same absolute errors, percentagewise the errors in the population estimates are considerably smaller than those in the estimates of total population change.

ESTIMATES OF THE TOTAL AND CIVILIAN POPULATION OF REGIONS, DIVISIONS, AND STATES: JULY 1, 1951 AND 1950

(Total population figures include persons in the armed forces stationed in each State and exclude members of the armed forces overseas. Each population estimate has been independently rounded to the nearest thousand from figures computed to the last digit; hence, the sums of parts shown may differ slightly from the totals shown. Amounts and percentages of change are based on the unrounded numbers)

Region, division, and State	Total population					Civilian population				
	July 1, 1951	July 1, 1950	April 1, 1950 (census)	Increase (+) or decrease (-), April 1, 1950, to July 1, 1951		July 1, 1951	July 1, 1950	April 1, 1950	Increase (+) or decrease (-), April 1, 1950, to July 1, 1951	
				Amount	Per-cent				Amount	Per-cent
United States.....	153,383,000	151,228,000	150,697,361	+2,686,000	+1.8	151,082,000	150,196,000	149,634,000	+1,448,000	+1.0
REGIONS:										
Northeast.....	39,922,000	39,595,000	39,477,986	+444,000	+1.1	39,636,000	39,470,000	39,344,000	+292,000	+0.7
North Central.....	45,152,000	44,681,000	44,460,762	+692,000	+1.6	44,900,000	44,587,000	44,369,000	+531,000	+1.2
South.....	48,064,000	47,362,000	47,197,088	+867,000	+1.8	46,872,000	46,838,000	46,653,000	+220,000	+0.5
West.....	20,245,000	19,590,000	19,561,525	+684,000	+3.5	19,674,000	19,301,000	19,269,000	+405,000	+2.1
NORTHEAST:										
New England.....	9,363,000	9,325,000	9,314,453	+48,000	+0.5	9,253,000	9,278,000	9,261,000	-8,000	-0.1
Middle Atlantic.....	30,559,000	30,271,000	30,163,533	+395,000	+1.3	30,383,000	30,191,000	30,083,000	+300,000	+1.0
NORTH CENTRAL:										
East North Central.....	30,940,000	30,597,000	30,399,368	+541,000	+1.8	30,771,000	30,492,000	30,337,000	+435,000	+1.4
West North Central.....	14,212,000	14,124,000	14,061,394	+151,000	+1.1	14,128,000	14,095,000	14,032,000	+96,000	+0.7
SOUTH:										
South Atlantic.....	21,667,000	21,259,000	21,182,335	+484,000	+2.3	20,991,000	20,956,000	20,860,000	+131,000	+0.6
East South Central.....	11,473,000	11,484,000	11,477,181	-4,000	(3)	11,287,000	11,415,000	11,412,000	-125,000	-1.1
West South Central.....	14,924,000	14,619,000	14,537,572	+387,000	+2.7	14,594,000	14,467,000	14,380,000	+213,000	+1.5
WEST:										
Mountain.....	5,238,000	5,093,000	5,074,998	+164,000	+3.2	5,133,000	5,038,000	5,021,000	+112,000	+2.2
Pacific.....	15,007,000	14,497,000	14,486,527	+520,000	+3.6	14,542,000	14,264,000	14,248,000	+294,000	+2.1
NEW ENGLAND:										
Maine.....	892,000	910,000	913,774	-22,000	-2.4	885,000	908,000	912,000	-27,000	-2.9
New Hampshire.....	534,000	532,000	533,242	+1,000	+0.1	531,000	530,000	531,000	-1,000	-0.1
Vermont.....	373,000	377,000	377,747	-4,000	-1.2	372,000	377,000	378,000	-5,000	-1.4
Massachusetts.....	4,732,000	4,704,000	4,690,514	+42,000	+0.9	4,671,000	4,665,000	4,665,000	+6,000	+0.1
Rhode Island.....	793,000	791,000	791,896	+2,000	+0.2	767,000	777,000	774,000	-7,000	-0.9
Connecticut.....	2,038,000	2,011,000	2,007,280	+30,000	+1.5	2,026,000	2,006,000	2,001,000	+25,000	+1.3
MIDDLE ATLANTIC:										
New York.....	15,026,000	14,882,000	14,830,192	+195,000	+1.3	14,964,000	14,853,000	14,801,000	+163,000	+1.1
New Jersey.....	4,974,000	4,854,000	4,835,329	+139,000	+2.9	4,901,000	4,818,000	4,802,000	+99,000	+2.1
Pennsylvania.....	10,559,000	10,535,000	10,498,012	+61,000	+0.6	10,518,000	10,520,000	10,480,000	+38,000	+0.4
EAST NORTH CENTRAL:										
Ohio.....	8,063,000	7,966,000	7,946,627	+117,000	+1.5	8,047,000	7,958,000	7,938,000	+109,000	+1.4
Indiana.....	4,036,000	3,963,000	3,934,224	+102,000	+2.6	4,000,000	3,961,000	3,932,000	+68,000	+1.7
Illinois.....	8,820,000	8,768,000	8,712,176	+108,000	+2.2	8,747,000	8,724,000	8,672,000	+75,000	+0.9
Michigan.....	6,545,000	6,418,000	6,371,766	+174,000	+2.7	6,524,000	6,408,000	6,361,000	+164,000	5
Wisconsin.....	3,475,000	3,442,000	3,434,575	+41,000	+1.2	3,452,000	3,441,000	3,433,000	+19,000	5
WEST NORTH CENTRAL:										
Minnesota.....	2,994,000	2,976,000	2,982,483	+12,000	+0.4	2,990,000	2,975,000	2,981,000	+9,000	+0.3
Iowa.....	2,625,000	2,628,000	2,621,073	+4,000	+0.1	2,624,000	2,637,000	2,621,000	+3,000	+0.1
Missouri.....	4,043,000	3,994,000	3,954,633	+88,000	+2.2	4,005,000	3,991,000	3,952,000	+53,000	+1.3
North Dakota.....	605,000	619,000	619,636	-14,000	-2.3	604,000	619,000	620,000	-15,000	-2.4
South Dakota.....	647,000	655,000	652,740	-6,000	-0.9	641,000	651,000	650,000	-9,000	-1.4
Nebraska.....	1,348,000	1,332,000	1,325,910	+22,000	+1.7	1,342,000	1,328,000	1,322,000	+20,000	+1.5
Kansas.....	1,950,000	1,910,000	1,905,299	+45,000	+2.3	1,922,000	1,893,000	1,887,000	+34,000	+1.8
SOUTH ATLANTIC:										
Delaware.....	329,000	321,000	318,085	+11,000	+3.5	325,000	321,000	318,000	+7,000	+2.3
Maryland.....	2,441,000	2,360,000	2,343,001	+98,000	+4.2	2,361,000	2,324,000	2,306,000	+55,000	+2.4
District of Columbia.....	811,000	807,000	802,178	+8,000	+1.1	771,000	774,000	769,000	+2,000	+0.3
Virginia.....	3,385,000	3,314,000	3,318,680	+66,000	+2.0	3,182,000	3,226,000	3,220,000	-38,000	-1.2
West Virginia.....	1,995,000	2,014,000	2,005,552	-11,000	-0.5	1,994,000	2,013,000	2,005,000	-11,000	-0.5
North Carolina.....	4,125,000	4,068,000	4,061,929	+73,000	+1.8	4,035,000	4,021,000	4,014,000	+20,000	+0.5
South Carolina.....	2,125,000	2,096,000	2,117,027	+8,000	+0.4	2,045,000	2,081,000	2,096,000	-50,000	-2.4
Georgia.....	3,485,000	3,453,000	3,444,578	+40,000	+1.2	3,399,000	3,413,000	3,402,000	-3,000	-0.1
Florida.....	2,961,000	2,826,000	2,771,305	+189,000	+6.8	2,878,000	2,784,000	2,729,000	+149,000	+5.5
EAST SOUTH CENTRAL:										
Kentucky.....	2,922,000	2,945,000	2,944,806	-23,000	-0.8	2,833,000	2,911,000	2,913,000	-81,000	-2.8
Tennessee.....	3,318,000	3,314,000	3,291,718	+26,000	+0.8	3,297,000	3,303,000	3,281,000	+16,000	+0.5
Alabama.....	3,042,000	3,051,000	3,061,743	-20,000	-0.7	2,993,000	3,043,000	3,053,000	-60,000	-2.0
Mississippi.....	2,192,000	2,174,000	2,178,914	+13,000	+0.6	2,164,000	2,159,000	2,164,000	(4)	(3)
WEST SOUTH CENTRAL:										
Arkansas.....	1,910,000	1,923,000	1,909,511	+1,000	(3)	1,893,000	1,921,000	1,908,000	-15,000	-0.8
Louisiana.....	2,757,000	2,720,000	2,683,516	+73,000	+2.7	2,721,000	2,707,000	2,670,000	+51,000	+1.9
Oklahoma.....	2,266,000	2,236,000	2,233,351	+33,000	+1.5	2,229,000	2,222,000	2,218,000	+11,000	+0.5
Texas.....	7,991,000	7,740,000	7,711,194	+280,000	+3.6	7,750,000	7,616,000	7,584,000	+166,000	+2.2
MOUNTAIN:										
Montana.....	589,000	592,000	591,024	-2,000	-0.3	584,000	590,000	589,000	-5,000	-0.8
Idaho.....	590,000	589,000	588,637	+2,000	+0.3	583,000	589,000	588,000	(4)	(3)
Wyoming.....	295,000	291,000	290,529	+4,000	+1.5	285,000	284,000	282,000	+3,000	+0.9
Colorado.....	1,376,000	1,329,000	1,325,089	+51,000	+3.9	1,334,000	1,310,000	1,307,000	+27,000	+2.0
New Mexico.....	704,000	684,000	681,187	+23,000	+3.4	683,000	672,000	668,000	+15,000	+2.3
Arizona.....	805,000	755,000	749,587	+55,000	+7.3	789,000	747,000	742,000	+47,000	+6.3
Utah.....	709,000	692,000	688,862	+20,000	+2.9	703,000	689,000	687,000	+16,000	+2.3
Nevada.....	171,000	161,000	160,083	+11,000	+6.7	166,000	158,000	157,000	+9,000	+5.8
PACIFIC:										
Washington.....	2,425,000	2,383,000	2,378,963	+46,000	+1.9	2,343,000	2,324,000	2,317,000	+26,000	+1.1
Oregon.....	1,558,000	1,530,000	1,521,341	+36,000	+2.4	1,551,000	1,527,000	1,519,000	+32,000	+2.1
California.....	11,024,000	10,584,000	10,586,223	+438,000	+4.1	10,648,000	10,413,000	10,413,000	+235,000	+2.3

1 Estimated total population of the United States including armed forces overseas, for July 1, 1951, is 154,360,000.
 2 Estimated total population of the United States including armed forces overseas, for July 1, 1950, is 151,677,000.
 3 Less than 0.1.
 4 Less than 1,000.