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ILLUSTRATIVE PROJECTIONS OF THE POPULATION OF THE UNITED STATES, BY AGE AND SEX: 1955 TO 1975*

Many persons need some indications of the approximate size of the population of the United States, by age and sex, at given future dates. The projections of population offered here are intended primarily to facilitate planning by indicating the size of population which would result if assumed levels of births, deaths, and immigration are actually realized. It is felt that all of the projections shown are reasonably possible, and no series is selected at this time as most likely. Furthermore, the highest and lowest projections shown here are not intended to define the range of reasonable possibility.

In order to meet urgent requests for new population projections, it was necessary to follow methodology used in earlier projections, to use short-cuts and approximations, and to adapt material already available. Plans for later projections, however, include an intensive study of the fertility history of the different cohorts (birth years) of women, which, it is hoped, will lead to improved methodology.

Meanwhile, it should be emphasized that by far the most important area of uncertainty in the forecasting of population lies in the forecasting of fertility. This fact is reflected in the format of the table showing the projections, where the projections of cohorts yet to be born are set off as a group. The accuracies of these two kinds of projections are fundamentally different. The projections shown here are based on

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the assumption that there will be no disastrous wars, major economic depressions, epidemics, or natural catastrophes.

The projections pertain to the total population of the United States, excluding Territories and possessions, but including armed forces stationed in the Territories and possessions and elsewhere outside the United States. Four series of projections are given, which differ only in the projections of persons born after April 1, 1953. All four series include the same set of projections of the number born before April 1953, since the possible range of variation in the number of deaths and migrants for this group is small compared to the possible range of variation in the number of births after April 1953. Series A involves the assumption that present age-specific fertility rates will continue to 1975; Series B, that present age-specific rates will continue to 1965 and then decline linearly to roughly the 1940 levels by 1975; Series C, that present age-specific rates will decline linearly from the present to roughly the 1940 levels by 1975; Series D, that present age-specific rates will decline linearly from the present to roughly the 1940 level by 1960 and then continue at that level to 1975. The four series of projections for total population, and the common projection for the persons born before 1950,¹ are as follows.

¹ Since the projections were prepared by 5-year age groups, it is more convenient to show the projections separately for those born before July 1, 1950, than for those born before April 1, 1953, though the latter date was actually the point of division in the computations.

Date	Series A	Series B	Series C	Series D	Persons born before 1950
	In millions				
July 1, 1950 ¹	151.7
July 1, 1955.....	164.8	164.8	164.6	164.4	146.1
July 1, 1960.....	177.4	177.4	176.1	173.8	139.9
July 1, 1965.....	189.9	189.9	186.1	180.9	132.7
July 1, 1970.....	204.2	202.4	196.3	189.1	124.9
July 1, 1975.....	221.0	213.6	206.6	198.6	116.3

¹ Estimated population, see Current Population Reports, Series P-25, No. 73.

In 1975, roughly 50 to 60 percent of the population will be comprised of those born before 1950, or those 25 years old and over. The 22 million difference between the totals for Series A and D in 1975 reflects entirely the difference in fertility assumptions, since the 116.3 million projection for the population 25 years old and over in 1975 is the same for all series. The projections by age and sex are shown in tables 1 to 3.

METHODS AND ASSUMPTIONS

Mortality.--One series of age-sex specific mortality rates was used for all four series of population projections. For the period from April 1, 1953, to July 1, 1960, age-sex specific rates of mortality developed and used in the preparation of the medium series of projections for the 1950-55 period and the 1955-60 period given in Current Population Reports, Series P-25, No. 43 (August 1950), were employed. These rates imply in general a continuation of the decreases observed during the 1940's. (See pages 3 and 4 of Series P-25, No. 43, for a more exact specification of the derivation of the rates.) For the quinquennial periods after 1960, the mortality rates were held constant at the 1955-60 level.

More intensive study of mortality trends may well result in some changes from the set that was used here. The rates of decrease in age-specific mortality rates during the 1940-50 decade were so considerable that the assumption of a continuation of the rates of decrease to 1960 may have led to an unduly low set of mortality rates for the period 1950-60. Some overstatement of the number of survivors at the extreme ages, under 5 years and 65 years and over, where mortality rates are high, may result. In addition, the rates of decrease in mortality rates for females during the 1940's were greater than for males. The assumptions of

a continuation of this divergence up to 1960 and of a continuation of the 1960 differences thereafter may lead to some overstatement of the number of females as compared with males. Some may hold that it is more reasonable to assume that male and female mortality rates in time will converge, rather than follow the course assumed here. An indication of the effects of different assumptions as to the future course of rates of mortality may be gained from suitable manipulation and comparison of the high and low series of projections shown in Series P-25, No. 43.

Net immigration.--One set of age-sex specific allowances for net civilian immigration was used for all four series of population projections. For the period from April 1, 1953, to July 1, 1955, the allowance amounted to 0.6 million. From July 1955 to July 1960, the amount was 1.4 million. Thereafter, the amount was approximately 1.2 million per quinquennium. The allowances up to 1960 represent an increase over that assumed in Series P-25, No. 43 (200,000 net immigration per year for the 1950-60 period), in order to take into account the trend of net movement of citizens and aliens that has occurred since 1950. The allowances for the period 1960-75 are close to those of the medium assumptions of Series P-25, No. 43.² The implied age-sex distribution of the net immigrants is about the same as that shown on page 6 of Series P-25, No. 43. Recent experience suggests that the allowances for net immigration are conservative, though again it is difficult to predict what the future will hold, since the volume of migration is so sensitive to governmental policy and economic conditions.

Fertility.--Two sets of age-specific annual fertility rates (births during a year per thousand females in a given age group at the middle of the year) provide the upper and lower limits for the age-specific fertility rate patterns which characterize the four series of population projections. The first set represents the 1948-50 average age-specific fertility rates adjusted to equal the total number of births occurring between July 1950 and April 1953. (Births by age of mother for years after 1950 are not yet available.) The second set is the 1959-60 medium series of fertility rates given in Series P-25, No. 43 (weighted average of the white and nonwhite rates shown in table 2, page 5), which

² To simplify the computations, migration rates rather than absolute numbers of migrants were adapted from this release and thus the actual amounts of migration implied for each year in the 1960-75 period were somewhat greater than 200,000 per year.

is similar to the actual level of fertility of 1939-40. The rates used, with those for 1939-40 for comparison, are as follows:

Age of female	Estimated 1950-53 average	1959-60 medium series from P-25, No. 43	1939-40 average
15 to 19 years ¹	87.9	61.2	53.3
20 to 24 years.....	213.4	152.3	132.8
25 to 29 years.....	176.0	135.4	121.1
30 to 34 years.....	109.5	81.1	82.0
35 to 39 years.....	56.2	38.8	45.4
40 to 44 years ²	17.1	11.4	16.6
Sum.....	660.1	480.2	451.2

¹ Rates include births to females under 15 years of age.
² Rates include births to females over 44 years of age.

All rates have been adjusted for incomplete registration of births. Births for which age of mother was not reported were distributed proportionately.

The sums of the rates shown in the last row of the table above indicate that our choices for the upper and lower limits of rates of fertility for the next 25 years differ on the average by

almost 40 percent and that the lower limit is on the average only 6 percent above the 1939-40 level.

The four series of population projections involve the following combinations of fertility rates:

Series A: 1950-53 rates remain constant through 1975.

Series B: 1950-53 rates remain constant to 1965, then drop linearly to the 1959-60 medium series rates by 1975.

Series C: 1950-53 rates decline linearly from 1953 to the 1959-60 medium series rates by 1975.

Series D: 1950-53 rates decline linearly from 1953 to the 1959-60 medium series rates by 1960, then remain constant at the latter level to 1975.

The four series imply projections of the total number of births and of crude birth rates as follows:

Period	Births in millions				Average annual rate per 1,000 of the midperiod population			
	Series A	Series B	Series C	Series D	Series A	Series B	Series C	Series D
July 1950-55.....	19.2	19.2	19.0	18.8	24.2	24.2	24.1	23.8
April 1953 to July 1955.....	8.6	8.6	8.4	8.2	23.6	23.6	23.2	22.5
July 1955-60.....	19.1	19.1	17.9	15.8	22.3	22.3	21.0	18.7
July 1960-65.....	20.1	20.1	17.6	14.6	21.9	21.9	19.4	16.4
July 1965-70.....	22.6	20.7	18.4	16.4	23.0	21.1	19.2	17.7
July 1970-75.....	25.8	20.1	19.2	18.4	24.3	19.4	19.1	19.0

The upturn in Series A and D in the number of births after 1965 despite constant fertility rates from 1960 on reflects the entrance into the childbearing ages of the large number of females born in the late 1940's and early 1950's. Series D implies crude birth rates as low as those of the 1930's. Series A implies a continuation of about the present level of crude birth rates, except for a dip in the period 1955 to 1965 reflecting the entrance into the major childbearing ages of the smaller number of females born during the 1930's, the Depression Years.

For purposes of comparison, figures on total births and crude rates since 1910 are given as follows.

Period	Number of births ¹ (in millions)	Crude birth rate	Period	Number of births ¹ (in millions)	Crude birth rate
1950-53 ² ..	10.6	24.8	1925-29...	13.8	23.2
1945-49...	17.4	24.1	1920-24...	14.8	26.8
1940-44...	14.3	21.2	1915-19...	14.6	28.4
1935-39...	12.1	18.8	1910-14...	14.3	29.8
1930-34...	12.3	19.7			

¹ Adjusted for underregistration and for incompleteness of the Birth Registration Area.

² July 1950 to April 1953.

Source: Figures to 1940 adapted from: National Office of Vital Statistics, "Births and Birth Rates in the Entire United States, 1909-1948," Vital Statistics Reports--Special Reports, Volume 33, No. 8 (September 29, 1950). Figures after 1940 adapted from published and unpublished figures supplied by the National Office of Vital Statistics.

The above table indicates that, at least with respect to past crude birth rates, the four series of projections imply rather conservative future trends in fertility. The high set, Series A, implies the maintenance of about the 1925-29, or predepression, level of fertility. If, however, it is assumed that a substantial part of the high level of recent fertility is a consequence of war and partial mobilization, the lower series of projections can be regarded as implying somewhat lower levels of economic activity under peacetime conditions to 1975, but not a severe depression.

In this connection, it is of interest to compare past rates of population growth with future rates implied by the four series of projections:

Period	Average annual percent rate of growth of the United States population
1800 to 1850.....	2.96
1850 to 1900.....	2.37
1900 to 1950.....	1.38
1950 to 1975:	
Series A.....	1.51
Series B.....	1.37
Series C.....	1.24
Series D.....	1.08

There has been a sharp downward trend in past rates of population growth, arising from declines in fertility and cessation of immigration, which cannot be ignored in considering the prospects for future growth.

The four series of population projections given here offer the user a fairly wide choice of assumptions as to the course of future fertility. They are not intended, however, to encompass the reasonably possible range of variation in future fertility. For example, a severe economic depression could lead to fertility rates at or below the levels of the middle 1930's. Projections on such an assumption have not been included here, however. In view of the unknowns involved, the Bureau of the Census does not recommend any one series as the "best" series.

Base population.--The projections take into account the 1950 Census age-sex distribution adjusted to include an estimate of armed forces overseas derived from data supplied by the

Department of Defense. Though the method of preparing the projections involved projection by quinquennial periods from July 1, 1950, on, the projections take into account current data on births, deaths, and net immigration to April 1, 1953, and, hence, are consistent with current estimates of total population published in Current Population Reports, Series P-25, No. 74 (June 26, 1953), and with estimates by age and sex for July 1, 1950, 1951, and 1952, published in Series P-25, No. 73.

The projections for the age group under 5 years, in all four series, were derived by estimating survivors of births for the preceding five years and adding an allowance for net immigration. Then, in order to permit comparison with the 1950 Census count of children under 5 years, 802,000 (male, 436,000; female, 366,000) was subtracted, representing an allowance for net undercount. Thus, the projections are consistent with the 1950 Census count of total population.

General.--The method of preparing the projections involved for each quinquennium the application of a 5-year survival rate to the population of a given age group at the beginning of the period with the addition of an allowance for net immigration. The success of this method depends not only on the accuracy of the 5-year survival rates and migration allowances, but also on the accuracy of the 1950 Census count for a given age group, or on the accuracy of the forecast of births for a given period, as the case may be. Conversely, the measure of accuracy of the projection for a given age group for, say, 1970, will involve the 1970 Census count for that age group, which may reflect an error peculiar to the age group. Aside from that for young children, the most notable inconsistency in recent censuses involves persons in the age range 55 to 74. The number 65 to 74 has been reported as appreciably higher than the number expected on the basis of persons reported as 55 to 64 in the preceding census. No allowance has been made for the possible repetition of this tendency in 1960 and later census years, however.

Projections for dates or for age groups other than those shown may be obtained by linear interpolation. A more comprehensive discussion of general methodology and assumptions relating to fertility, mortality, and migration appears in Series P-25, No. 43.

Table 1.--PROJECTIONS OF THE TOTAL POPULATION OF THE UNITED STATES, INCLUDING ARMED FORCES OVERSEAS, BY AGE, JULY 1, 1955 TO 1975, WITH FIGURES FOR JULY 1, 1950

(In thousands. Series A, B, C, and D imply the following assumptions as to fertility: A.--1950-53 level continues to 1975; B.--1950-53 level continues to 1965, then declines to about the 1940 level by 1975; C.--1950-53 level declines from 1953 to about the 1940 level by 1975; D.--1950-53 level declines from 1953 to about the 1940 level by 1960 and continues at that level to 1975. Figures below the braces relate to persons born before July 1, 1950)

Age	1950	1955			1960			1965			1970				1975			
		A and B	C	D	A and B	C	D	A and B	C	D	A	B	C	D	A	B	C	D
All ages.....	151,677	164,782	164,644	164,403	177,426	176,126	173,847	189,916	186,146	180,927	204,222	202,359	196,269	189,110	220,982	213,538	206,615	198,632
Under 5 years.....	16,312	17,917	17,779	17,538	17,928	16,766	14,729	18,884	16,415	13,474	21,351	19,488	17,170	15,230	24,452	18,901	18,041	17,218
5 to 9 years.....	13,300		17,145		18,762	18,624	18,382	18,732	17,569	15,533	19,688	19,688	17,218	14,277	22,155	20,292	17,973	16,034
10 to 14 years.....	11,144		13,342			17,183		18,762	18,624	18,382	18,732	18,732	17,568	15,533	19,688	19,688	17,217	14,277
15 to 19 years.....	10,680		11,190			13,383			17,197		18,777	18,777	18,639	18,396	18,747	18,747	17,582	15,546
20 to 24 years.....	11,621		10,775			11,282			13,463			17,299			18,888	18,888	18,750	18,505
25 to 29 years.....	12,314		11,713			10,875			11,361			13,558				17,421		
30 to 34 years.....	11,612		12,367			11,775			10,908			11,396				13,599		
35 to 39 years.....	11,298		11,618			12,379			11,761			10,895				11,382		
40 to 44 years.....	10,271		11,236			11,569			12,300			11,685				10,825		
45 to 49 years.....	9,115		10,118			11,083			11,386			12,105				11,500		
50 to 54 years.....	8,298		8,830			9,825			10,741			11,034				11,732		
55 to 59 years.....	7,266		7,873			8,402			9,331			10,203				10,482		
60 to 64 years.....	6,082		6,685			7,279			7,754			8,614				9,422		
65 to 69 years.....	5,025		5,315			5,867			6,381			6,801				7,558		
70 to 74 years.....	3,447		4,092			4,356			4,807			5,236				5,584		
75 years and over.....	3,892		4,566			5,478			6,148			6,848				7,547		

Table 2.--PROJECTIONS OF THE MALE POPULATION OF THE UNITED STATES, INCLUDING ARMED FORCES OVERSEAS, BY AGE, JULY 1, 1955 TO 1975, WITH FIGURES FOR JULY 1, 1950

(See headnote, table 1)

Age	1950	1955			1960			1965			1970				1975			
		A and B	C	D	A and B	C	D	A and B	C	D	A	B	C	D	A	B	C	D
All ages.....	75,526	81,754	81,683	81,560	87,741	87,076	85,911	93,702	91,773	89,104	100,630	99,677	96,562	92,902	108,865	105,071	101,517	97,439
Under 5 years.....	8,312	9,135	9,064	8,941	9,147	8,553	7,511	9,637	8,373	6,868	10,899	9,946	8,760	7,767	12,486	9,645	9,205	8,784
5 to 9 years.....	6,768		8,760		9,589	9,518	9,395	9,580	8,986	7,945	10,070	10,070	8,806	7,302	11,332	10,379	9,193	8,201
10 to 14 years.....	5,671		6,786			8,776		9,585	9,514	9,391	9,576	9,576	8,982	7,942	10,066	10,066	8,802	7,299
15 to 19 years.....	5,387		5,684			6,796			8,769		9,577	9,577	9,506	9,383	9,568	9,568	8,975	7,936
20 to 24 years.....	5,768		5,402			5,697			6,796			8,769			9,577	9,577	9,506	9,383
25 to 29 years.....	6,045		5,787			5,426			5,710			6,812				8,789		
30 to 34 years.....	5,701		6,059			5,806			5,431			5,716				6,819		
35 to 39 years.....	5,555		5,695			6,055			5,790			5,416				5,700		
40 to 44 years.....	5,106		5,508			5,655			5,999			5,736				5,366		
45 to 49 years.....	4,549		5,001			5,401			5,533			5,869				5,612		
50 to 54 years.....	4,139		4,357			4,797			5,170			5,296				5,618		
55 to 59 years.....	3,641		3,852			4,061			4,462			4,809				4,926		
60 to 64 years.....	3,047		3,259			3,456			3,636			3,995				4,305		
65 to 69 years.....	2,435		2,565			2,743			2,903			3,054				3,356		
70 to 74 years.....	1,643		1,889			1,994			2,127			2,252				2,369		
75 years and over.....	1,759		2,015			2,342			2,574			2,784				2,976		

Table 3.--PROJECTIONS OF THE FEMALE POPULATION OF THE UNITED STATES, INCLUDING ARMED FORCES OVERSEAS, BY AGE, JULY 1, 1955, TO 1975, WITH FIGURES FOR JULY 1, 1950

(See headnote, table 1)

Age	1950	1955			1960			1965			1970				1975			
		A and B	C	D	A and B	C	D	A and B	C	D	A	B	C	D	A	B	C	D
All ages.....	76,151	83,028	82,961	82,843	89,685	89,050	87,936	96,214	94,373	91,823	103,592	102,682	99,707	96,208	112,117	108,497	105,098	101,193
Under 5 years.....	8,000	8,782	8,715	8,597	8,781	8,213	7,218	9,247	8,042	6,606	10,452	9,542	8,410	7,463	11,966	9,256	8,836	8,434
5 to 9 years.....	6,552	8,385			9,173	9,106	8,987	9,152	8,583	7,588	9,618	9,618	8,412	6,975	10,823	9,913	8,780	7,833
10 to 14 years.....	5,473	6,556			8,407			9,177	9,110	8,991	9,156	9,156	8,586	7,591	9,622	9,622	8,415	6,978
15 to 19 years.....	5,293	5,506			6,587			8,428			9,200	9,200	9,133	9,013	9,179	9,179	8,607	7,610
20 to 24 years.....	5,853	5,373			5,585			6,667			8,530				9,311	9,311	9,244	9,122
25 to 29 years.....	6,269	5,926			5,449			5,651			6,746				8,632			
30 to 34 years.....	5,911	6,308			5,969			5,477			5,680				6,780			
35 to 39 years.....	5,743	5,923			6,324			5,971			5,479				5,682			
40 to 44 years.....	5,165	5,728			5,914			6,301			5,949				5,459			
45 to 49 years.....	4,566	5,117			5,682			5,953			6,236				5,888			
50 to 54 years.....	4,159	4,473			5,028			5,571			5,738				6,114			
55 to 59 years.....	3,625	4,021			4,341			4,869			5,394				5,556			
60 to 64 years.....	3,035	3,426			3,823			4,118			4,619				5,117			
65 to 69 years.....	2,590	2,750			3,124			3,478			3,747				4,202			
70 to 74 years.....	1,804	2,203			2,362			2,680			2,984				3,215			
75 years and over.....	2,133	2,551			3,136			3,574			4,064				4,571			