40. For example, the estimate of 114,154 male births in 1955-1960 is multiplied by P_b for 1955-1960 (0.8877) to obtain the estimated number of males aged 0-4 in 1960 (101,335). By applying the appropriate survival ratios for successive time periods, the estimates of survivors for all age groups above the solid line in table 40 can now be computed, except the group 0-4 years old in 1975.

323. The estimate of female survivors aged 15-19 years in 1975 so obtained is now entered in table 41, and the calculations of births are completed for the 1970-1975 period, so that the estimates of survivors aged 0-4 in 1975 can be entered in table 40, completing the projection.

B. Estimates on alternative fertility assumptions

324. In addition to the "medium" fertility assumption, projections are desired, in accordance with the last section of chapter V, on the "high" assumption of a constant sex-age adjusted birth rate of 50 per 1,000 and on the "low" assumption of a continuous decline from the rate of 44.93 per 1,000. These alternative assumptions affect only the numbers of survivors from births occurring after 1955.

325. The alternative estimates of births are obtained by a modification of table 41, as shown in table 42. The weighted sums of women of childbearing age remain unchanged whatever fertility is assumed, up to the period 1970-1975, when new weighted sums must be calculated to take account of the larger or smaller estimates of female births in 1955-1960, 15-19 years old in 1975.

326. The estimated future number of births from table 42 are multiplied by the P_b ratios and the results inserted in table 43 in order to compute the corresponding numbers of survivors at ages 0-4 in 1960, 0-9 in 1965, 0-14 in 1970, and 0-19 in 1975. Table 43 represents a substitute for that segment of table 40 which is above the solid line.

327. The survivors from the population born before 1955, obtained in table 40, are unaffected by the alternative assumptions of future fertility. Thus, the future total population figures under each of the two alternative assumptions are obtained by addition of survivors born before 1955 to the alternate estimates of survivors from future births. On the "medium" assumption, the projection yields a total population of about 1,850,000 by 1975. The results of the "high" and "low" assumptions imply that the 1975 figure might exceed 1,900,000 or fall somewhat below 1,800,000. It seems unlikely, unless unforeseeable events should occur, that the population would be either more than, say, 1,950,000 or less than 1,750,000.

VII. MIGRATION

328. Many population projections are computed with reference only to the factors of fertility and mortality and without regard to any changes which may be brought about by immigration or emigration. Such projections are adequate where there is little reason for expecting migration to play an important part during the period covered by the projection. International migration has in fact had relatively little influence on the trends of population in the majority of countries during recent times, and in most cases it may be plausible to assume that its effect will continue to be minor. However, where such an assumption does not appear to be realistic, it is important so far as possible to introduce the factor of migration into the calculations. It should be considered that where the volume of migration seems unlikely to be great enough to have much influence on the size of the future population, it may nevertheless have a disproportionately large effect on the numbers in certain sex-age groups, owing to the peculiar sex-age composition of the migrant population.

329. As a rule, the future course of migration is more difficult to predict with any assurance than that of either fertility or mortality. Migration is very sensitive to changing economic conditions, not only within the country for which projections are to be made, but also in other countries from which it may draw immigrants or to which it may send emigrants. Changing legal and administrative regulations and changing public sentiments may also have a great effect. Furthermore, in very many countries it is not even possible to get a satisfactory measure of the past trends of immigration and emigra-

tion. The statistics on this subject are often very faulty, and their coverage and definitions are often not adequate for the purpose of measuring those inward and outward movements which have a lasting influence on the population of the country.[48] For these reasons, calculations relating to the possible effects of migration are commonly carried out separately from those relating to births and deaths, and the results are presented separately so that different estimates can readily be derived on various assumptions as to future amounts of immigration and emigration. It is in this manner that the factor of migration was treated in the population projections prepared by the United Nations staff.

A. The model of recent overseas movements of European origin

330. The United Nations projections for Latin American countries were accompanied by a model which could be used to estimate the effects of any given annual amounts of immigration and emigration upon the population figures for various sex-age groups, computed without regard to migration, for various countries in the region.[49] This model is reproduced in tables 47 to 50, inclusive. It is based on the statistics of postwar immigration and emigration for Argentina, and is relevant to recent migration from Europe to countries overseas and to the return movements of previous migrants,

[48] United Nations, *Problems of Migration Statistics*, Population Studies, ST/SOA/Ser. A., No. 5.
[49] *The population of South America, 1950-1980*, Annex C.

or of the descendants of earlier migrant generations. The model obtained from these data cannot be applied without reservations to international movements occurring under different conditions, but other models, suited to various circumstances, can be constructed by the same methods.

331. The model presents the effects of immigration at the rate of 100,000 a year and emigration at 25,000 a year, leaving an annual net immigration of 75,000. This ratio of immigrants to emigrants corresponds roughly to recent Argentine experience. Emigration from Argentina, as from most countries which have received large numbers of European immigrants over a long period of time, now consists mainly of former immigrants returning to their native countries.

332. The calculations relating to the effects of the immigration and of the emigration are presented separately in this model, so that they can be adapted to any desired assumption as to the relative numbers of immigrants and emigrants. Separate treatment of immigrants and emigrants is necessary because of differences in their sex-age composition. Young adults, particularly young men, are most numerous among the immigrants. Where emigrants are mostly former immigrants returning to their countries of origin, somewhat older ages are more heavily represented among them because of time-lags between immigration and return migration. The sex-age distributions of immigrants and emigrants were derived, by means of interpolation, from Argentinian statistics for the years 1948-1952.[50] These data were found comparable with similar statistics for Brazil, Canada and Australia and are probably fairly representative of the structure of recent trans-oceanic movements originating in Europe.

B. Projection of the migrant population

333. The statistics of migrants are classified by their ages at the moment of arrival in (or departure from) the country of immigration. At the end of a five-year period, most of those migrants who entered (or left) the country toward the end of the period would still be in the same five-year age group, while most of those who arrived (or departed) at the beginning of the period would be in the next older five-year group. In order to calculate their effect on the number of persons within each age group at the end of the period, it is necessary to estimate the distribution of all migrants arriving (or departing) throughout a period of five years by age either at the beginning or the end of the period. An estimate of this age distribution at the beginning is obtained by averaging numbers of migrants of given ages at the moment when the movement occurs with numbers of migrants aged five years less, and multiplying the results by five. This process leaves a residual figure for children born during the five-year period under consideration (born abroad in the case of immigrants, born in the country *and emigrated* during the period, in the case of emigrants.)

334. During the five-year period in which their movement took place, migrants (whether immigrants or emi-

grants) can be presumed to have resided in the country, on an average, for 2½ years. Their risk of death, from the moment of their arrival (or departure) to the end of the period, is therefore roughly equal to one-half of the risk of death of a cohort of corresponding age during a five-year period. Hence, in computing the model sex-age groups of migrants were projected for the five-year period of their movement by the equivalent of one-half the mortality, i.e., by $\frac{1}{2}(1+P_x)$, of the non-migrant population. For subsequent periods, the numbers of survivors of the migrants were computed by applying the same survival ratios used for the non-migrant population.

335. The survival ratios used were those constructed for the projection of the population of Argentina in the period 1960-65.[51] Argentinian mortality is fairly low and comparable with that of the European countries where most of the migrants originated. European immigrants to Argentina or other countries are likely to establish themselves, for the most part, in an environment in which similar rates of mortality can be maintained, even though these rates may be lower than those experienced by the native population in some countries of immigration.

336. In order to preserve the flexibility intended for this model, constant mortality at the projected 1960-1965 level was assumed throughout a 30-year period. This was done at the expense of a slight inconsistency with population projections in which mortality is assumed to be declining. The device, however, has the advantage that the calculation of the demographic effect of, say, 100,000 annual immigrants during 1950-1955 upon the population in the year 1955 or 1960 is identical with that of 100,000 annual immigrants during 1965-1970 on the population of 1970 or 1975. The model is thereby rendered independent of time-reference and can be utilized in various combinations.

337. A special problem attaches to the estimation of births to the migrants. Since migration requires a certain period of preparation and a period of adjustment after the move, and often involves separation of husbands and wives for more or less long periods, the fertility of migrants is likely to be relatively low before the move and for some time afterward. Furthermore, migrants are not representative of the general population; couples with large families are less likely to migrate than single persons and childless couples.

338. It has already been mentioned that a residual figure of children born prior to arrival (or departure) of the migrants is obtained in the process of adjusting the age data of migrants to a given time-reference. On the average, these children would have been born during one-half of a five-year period. The ratio of the number of these children to the number of women of child-bearing ages among the migrants yields an estimate of the sex-age adjusted birth rate of the migrants during a period up to five years prior to their migration. In the case of immigrants to Argentina, fertility so estimated was found to be abnormally low and, in the case of emigrants, even lower.

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[50] The interpolated figures are those of Pan, Chia-lin, in "Effects of recent and possible future migration on the population of Argentina, Brazil, Italy and India" (paper submitted at the World Population Conference, Rome, 31 Aug.-10 Sept., 1954), United Nations, E/Conf.13/325.

[51] Argentinian mortality was projected in accordance with an earlier scheme of model life tables on the basis of official vital statistics for the years 1946-1948. See United Nations, *The Population of South America 1950-1980*, ST/SOA/Ser. A. Population Studies No. 21. New York, 1955, p. 41.

339. After an initial period of adjustment, the fertility of migrants may possibly surpass that of the non-migrant population, as the single migrants marry and begin to raise children while migrant couples who had previously postponed births make up for the postponement. On the other hand, it is also possible that the migrants' fertility will remain low even after a long period of adjustment. In the absence of specific information, a wide variety of hypotheses can be made.

340. The fertility assumption selected for the present purpose, though lacking any very substantial basis in facts, appears realistic enough without being too complicated. It was assumed that during a period of 2½ years after the time of migration the fertility of the migrants would rise from the estimated low level prior to migration to equal that of the non-migrant population of Argentina;[52] thereafter, it would remain at that level. Since the migrants during a five-year period arrive at various times throughout the period, the fertility of the entire migrant groups—in periods preceding and following their movements as well as the period of movement itself—was estimated by averaging the results for migrants moving near the beginning and near the end of the period.

C. Calculation of the cumulative and net effects of migration

341. By the methods described so far, it is possible to calculate separately the effects of an annual movement of 100,000 immigrants and 25,000 emigrants (chiefly "return migrants"), which continues during one five-year period only. The future effects of such a movement are projected by survival ratios and sex-age adjusted birth rates. If the movements were to occur only during 1950-1955 and then to stop abruptly, the effects would be those shown in tables 47 and 48, for immigrants and emigrants, respectively. The net effect, obtained by subtracting that of emigration from that of immigration, is indicated in table 49.

342. Actual conditions in a particular case will require various modifications of these assumptions. If the assumed annual numbers of immigrants and emigrants are different from 100,000 and 25,000, respectively, it is only necessary to multiply the figures by appropriate coefficients. For example, assuming an annual immigration of 200,000 persons and an annual emigration of 50,000 persons, one would multiply each figure in tables 47, 48, and 49 by two. If 100,000 annual immigrants and 50,000 annual emigrants are assumed, table 49 cannot be utilized directly but the required figures are obtained by subtracting double the figures of table 48 from the figures of table 47. In similar fashion, any other combination of assumptions as regards the volume of immigration and emigration can be applied to tables 47 and 48.

[52] The fertility of the non-migrants was taken as the sex-age adjusted birth rate estimated on the basis of official statistics for the years 1948-1952 (see The Population of South America, 1950-1980, p. 41) and assumed to remain constant on the "medium" assumption for the Argentinian population. The Argentine birth rate is comparable to that of other overseas countries of European immigration and to the fertility levels which prevailed recently in parts of Southern Europe where many of the migrants originate. It has, moreover, been practically constant for a period of more than twenty years (see also chapter V, part C).

343. The time-reference can be varied quite freely. One may assume that no migration occurs until a certain year in the future, when a five-year period of movements begins. The effects will be those presented in the tables, except that they will occur at later dates.

344. A movement lasting for five years only, however, is not likely to occur except under special conditions, such as the transfer of a group of refugees. Normal migratory movements usually continue over much longer periods, although the annual volume of migration varies in the course of time.

345. The purpose of table 50 is to show the effects of immigration and emigration of the given annual volume which continues throughout a thirty-year period. Though such a constant volume of migration is hardly to be expected, the model affords a simple means of evaluating the approximate effect of a movement varying from one period to another about an average of the magnitude indicated. The figures are obtained by successive addition, column after column, of the numbers shown on each line of table 49. Thus, the figures in the 1955 column of table 49 give the results of migration during the five years immediately preceding the given date; the figures in the 1960 column show the effect of a movement which occurred five to ten years prior to the given date; the sums of these two sets of figures which appear in the 1960 column of table 50 represent the cumulative effect of a movement which continued uniformly during the ten-year period preceding the given date.

346. The assumption of a constant and uniform movement, implied in table 50 can be varied. For example, if the annual volume of both immigration and return migration is expected to increase (or diminish) in the course of time, the figures of table 49 can be cumulated after they have been multiplied by various constants assumed to be appropriate for the various time periods. If the trend of immigration is expected to differ from that of emigration, the cumulative effects of immigration and emigration will first have to be calculated separately from tables 47 and 48 and the net cumulative effect obtained by subtracting the cumulative results of emigration from those of immigration.

D. Application of the model to a population projection

347. The figures shown in table 50 or some appropriate multiple or modification of them, can be added directly to a population projection made on the basis of assumptions with respect to fertility and mortality. This separate treatment of the migration factor is appropriate, both because of the great uncertainty of predictions concerning migration and because of the interest which attaches to the effects of migration as distinct from natural increase. Of all the assumptions, that pertaining to migration is mostly likely to require early revision. Revisions can be readily made by adding different multiples of the migration model.

348. It is well to emphasize that, unless the movements are unusually large, the demographic effects of international migration will be surprisingly small. Under the assumptions stated in the report on future populations of South America, Argentina's population would in-

TABLE 44. MIGRATION MODEL BASED ON STATISTICS OF BULGARIA, 1935–38: COMPUTATION OF DISTRIBUTION OF IMMIGRANTS AND EMIGRANTS DURING A FIVE-YEAR PERIOD BY SEX AND AGE AT THE BEGINNING OF THE PERIOD

Emigrants and immigrants

Age in years	Distribution of recorded migrants by age at time of migration [a]		Recorded distribution prorated to 20,000 emigrants and 2,000 immigrants		Estimated distribution of 20,000 annual immigrants and 2,000 annual emigrants during a 5-year period by age at beginning of period	
	Males	Females	Males	Females	Males	Females
Emigrants						
TOTAL	55,271	36,523	12,044	7,958	60,221 [b]	39,794 [b]
0– 4	5,504	5,153	1,199	1,123	5,825	5,425
5– 9	5,192	4,805	1,131	1,047	5,795	4,940
10–14	5,447	4,263	1,187	929	5,255	3,798
15–19	4,200	2,707	915	590	4,608	3,078
20–24	4,258	2,941	928	641	6,088	3,348
25–29	6,918	3,205	1,507	698	7,022	3,318
30–34	5,977	2,886	1,302	629	5,922	2,868
35–39	4,895	2,377	1,067	518	4,692	2,250
40–44	3,718	1,752	810	382	3,605	1,762
45–49	2,900	1,482	632	323	2,778	1,488
50–54	2,200 [c]	1,250 [c]	479	272	2,070	1,280
55–59	1,600 [c]	1,100 [c]	349	240	1,472	1,090
60–64	1,100 [c]	900 [c]	240	196	982	898
65–69	700 [c]	750 [c]	153	163	600	680
70–74	400 [c]	500 [c]	87	109	328	435
75–79	200 [c]	300 [c]	44	65	138	228
80–84	50 [c]	120 [c]	11	26	35	82
85 and over	12 [c]	32 [c]	3	7	8	18
Immigrants						
TOTAL	4,391	1,996	1,377	625	6,881 [d]	3,125 [d]
0– 4	67	75	21	23	182	158
5– 9	165	127	52	40	312	222
10–14	233	156	73	49	440	312
15–19	328	242	103	76	492	505
20–24	299	403	94	126	732	572
25–29	635	329	199	103	982	422
30–34	618	211	194	66	922	298
35–39	558	169	175	53	808	215
40–44	473	105	148	33	650	132
45–49	357	64	112	20	475	85
50–54	250 [c]	45 [c]	78	14	335	58
55–59	180 [c]	30 [c]	56	9	235	38
60–64	120 [c]	20 [c]	38	6	142	25
65–69	60 [c]	12 [c]	19	4	70	15
70–74	30 [c]	5 [c]	9	2	35	8
75–79	15 [c]	2 [c]	5	1	15	2
80–84	2 [c]	1 [c]	1	0	2	0
85 and over	1 [c]	0 [c]	0	0	0	0

[a] Sums of figures for the four years 1935–38 from United Nations, *Sex and Age of International Migrants: Statistics for 1918–1947* (ST/SOA/Series A/No. 11), pp. 156–157.

[b] Rough estimates. Data for five-year age groups above age 50 were not given in the source.

[c] Totals for the two sexes include residual estimates of 2,998 male and 2,808 female emigrants born during the five-year period.

[d] Totals for the two sexes include residual estimates of 52 male and 58 female immigrants born during the five-year period.

crease from about 17 million in 1950 to about 26 million in 1980 without migration (medium fertility assumption). Continuous migration on the scale of the model, i.e., 100,000 annual immigrants and 25,000 annual emigrants, would raise the population total in 1980 by about 3 million, but it is doubtful whether such a volume of migration would be maintained throughout the period. The rejuvenating effect of this movement on Argentina's population would be very slight.

349. The case is entirely different with internal migration. Population growth and structure in parts of a country, such as its cities, provinces and districts, are often very substantially affected as a result of internal movements. Projections of populations for segments of a country, by the cohort-survival method, cannot be made realistically unless the effects of internal movements can be included in the calculations. The requisite statistics, however, are not available in a majority of situations.

E. ALTERNATIVE MODELS FOR THE PROJECTION OF MIGRATION

350. The model based on data for Argentina that is presented in tables 47 to 50 may be applied, with suitable modifications, in other situations where migration can be presumed to be of a similar type. If important movements of a different type are anticipated, a different model will be required, based on the most pertinent statistics that can be found. For illustrative purposes, an example is given below of the construction of such a model on the basis of statistics for Bulgaria in the period 1935-1938. These data are not necessarily relevant to any existing situation. They have been chosen merely for an illustration of methods.

F. SEX-AGE DISTRIBUTION OF MIGRANTS

351. In Bulgaria during 1935-1938, 91,794 emigrants and 6,387 immigrants of known ages were recorded.[53] Most of these movements occurred between Bulgaria and other countries of Europe. A model of annual migration of the order of 20,000 emigrants and 2,000 immigrants can be derived from these figures.

352. The derivation of the age distribution of migrants at the beginning of a five-year period is shown in table 44. The Bulgarian statistics do not show age groupings above the age of 50; hence, five-year age groups were estimated very roughly in accordance with the characteristic patterns found in other countries possessing sufficiently detailed statistics. The numbers were pro-rated to 20,000 immigrants and 2,000 emigrants, as assumed in the model. The cohorts were estimated by averaging successive age groups and multiplying by five. This procedure yields a residual estimate of the number of migrant children, aged 0-4 years at the time of migration but not yet born at the beginning of the period, which will be used in estimating the fertility of the migrants.

G. MORTALITY

353. For the sake of this example, it is assumed that the migrants are subject to the mortality of model

[53] United Nations. Sex and Age of International Migrants: Statistics for 1918-1947. ST/SOA/Ser.A/ No. 11. New York, 1953, pp. 156-157.

life table 60, where the expectation of life at birth is of the order of 50 years. To preserve flexibility of the model, mortality is assumed to be constant. For periods subsequent to the five-year period of movement, the survival ratios for entire five-year periods apply. For the period during which the movements occur, the survival ratios are determined by the formula $\frac{1}{2}(1 + P_x)$, except for the survival ratios of migrant children born during the period. Mortality of children is greatest immediately after birth, but children do not necessarily migrate very shortly after birth. The survival ratio for the migrant children born during the period is therefore estimated at $\frac{1}{3}(1 + 2 P_b)$. The survival ratios are tabulated in table 45.

TABLE 45. MODEL BASED ON STATISTICS OF BULGARIA, 1935–38: SURVIVAL RATIOS OF MIGRANTS FOR THE PERIOD WHEN MIGRATION OCCURS AND FOR SUBSEQUENT PERIODS

Age in years X	Survival ratio (P_x) for period of migration		Survival ratio (P_x) for subsequent periods	
	Males	Females	Males	Females
	($P_b=0.8937$)	($P_b=0.9063$)	($P_b=0.8406$)	($P_b=0.8594$)
0–4.........	0.9722	0.9732	0.9445	0.9463
5–9.........	0.9917	0.9914	0.9834	0.9828
10–14.......	0.9914	0.9910	0.9827	0.9819
15–19.......	0.9870	0.9872	0.9741	0.9745
20–24.......	0.9844	0.9847	0.9688	0.9694
25–29.......	0.9836	0.9837	0.9673	0.9674
30–34.......	0.9822	0.9827	0.9644	0.9654
35–39.......	0.9790	0.9811	0.9580	0.9622
40–44.......	0.9734	0.9778	0.9467	0.9556
45–49.......	0.9647	0.9718	0.9294	0.9437
50–54.......	0.9522	0.9626	0.9045	0.9252
55–59.......	0.9339	0.9474	0.8678	0.8949
60–64.......	0.9070	0.9230	0.8141	0.8459
65–69.......	0.8684	0.8855	0.7367	0.7710
70–74.......	0.8167	0.8331	0.6334	0.6662
75–79.......	0.7524	0.7684	0.5049	0.5369
(80 and over).	(0.6494)	(0.6606)	(0.2988)	(0.3211)

H. FERTILITY

354. The fertility of migrants prior to their movement is not necessarily similar to their fertility after migration; but nevertheless the birth performance of women prior to migration is worth examining. If it is assumed that children aged less than five years always migrate with their mothers, the relation of the number of children of this age to women of childbearing ages among the recorded migrants provides an estimate of fertility. Dividing the recorded numbers of migrant children, after pro-rating, by the survival ratios, P_b, for the five-year period, and again by five, we obtain annual estimates of 285.3 male and 261.3 female births to emigrants, i.e., a total of 546.6 births; and 5.0 male and 5.4 female or 10.4 births of both sexes to immigrants. The corresponding mean weighted sum of women is calculated by averaging the numbers of women of each age group 15-44 with the numbers of women aged five years more and weighting the results. The calculation is shown in table 46.

TABLE 46. MIGRATION MODEL BASED ON STATISTICS OF BULGARIA, 1935–38:
COMPUTATION OF SEX-AGE ADJUSTED BIRTH RATES OF MIGRANTS
DURING THE FIVE-YEAR PERIOD PRECEDING MIGRATION

| Age in years | Female migrants[a] | | | Weight | Estimated annual number of births | Sex-age adjusted birth rate |
	Given ages	5 years older	Mean			
Emigrants						
15–19...............	590	641	616	1		
20–24...............	641	698	670	7		
25–29...............	698	629	664	7		
30–34...............	629	518	574	6		
35–39...............	518	382	450	4		
40–44...............	382	323	352	1		
TOTAL	...	...	...	...	546.6	35.15
WEIGHTED SUM	...	...	15,550			
Immigrants						
15–19...............	76	126	101	1		
20–24...............	126	103	114	7		
25–29...............	103	66	84	7		
30–34...............	66	53	60	6		
35–39...............	53	33	43	4		
40–44...............	33	20	26	1		
TOTAL	...	...	...	...	10.4	5.09
WEIGHTED SUM	...	...	2,045			

[a] From pro-rated distribution by age at time of migration, shown in table 44.

355. For emigrant women, the resulting estimate of fertility could plausibly represent normal conditions, but the estimated fertility of immigrant women, prior to migration, is extraordinarily low, possibly because many of them were single women. For the purpose of this illustrative example, it is assumed that the fertility of emigrant women remains constant but that the fertility of immigrant women remains at the estimated low level only until the end of the five-year period of migration; then it rises to equal that of emigrant women at the end of the next five-year period. The sex-age adjusted birth rate of immigrants, then, would amount to 5.09 per 1,000 during the period of migration, 20.12 per 1,000 in the next five-year period, and 35.15 per 1,000 in subsequent periods.

I. CALCULATION OF DEMOGRAPHIC EFFECTS

The reductions in various sex-age groups of the population at successive future dates which result from the assumed annual emigration of 20,000 persons during an initial five-year period are now computed by projecting the emigrant population shown in the last two columns of table 44. The additions resulting from the annual immigration of 2,000 are likewise computed by projecting the immigrant population in the last two columns of the table. The details of the computation are omitted here, since they follow precisely the pattern for a population projection shown in the worksheets of chapter VI. When the resulting model of the effects of emigration and immigration during a single five-year period has been obtained, it is used to calculate the model of cumulative effects of migration continuing at the same rate in future periods, in the manner explained above with reference to the model based on the statistics of Argentina.

TABLE 47. MIGRATION MODEL BASED ON STATISTICS OF ARGENTINA, 1948–52: DEMOGRAPHIC GAIN RESULTING FROM 100,000 ANNUAL IMMIGRANTS ARRIVING DURING 1950–55

Sex and age in years	Arrivals in any one year	Addition to the population					
		1955	1960	1965	1970	1975	1980
TOTAL, BOTH SEXES.	100,000	523,400	569,400	609,100	638,100	659,600	681,900
MALES, TOTAL	58,600	304,100	326,400	345,000	357,300	365,800	373,700
0–4	3,800	23,700	30,900	29,700	26,100	25,600	28,700
5–9	3,200	17,400	23,400	30,500	29,300	25,800	25,300
10–14	3,700	17,400	17,300	23,200	30,400	29,200	25,700
15–19	5,300	22,400	17,300	17,200	23,100	30,200	29,000
20–24	7,900	32,700	22,200	17,100	17,100	22,900	29,900
25–29	9,200	42,400	32,300	22,000	16,900	16,800	22,600
30–34	7,600	41,700	41,800	31,900	21,700	16,700	16,600
35–39	5,900	33,500	41,000	41,100	31,300	21,300	16,400
40–44	4,400	25,500	32,800	40,100	40,200	30,600	20,800
45–49	3,100	18,400	24,600	31,600	38,700	38,800	29,600
50–54	1,900	12,200	17,500	23,400	30,100	36,800	36,900
55–59	1,200	7,500	11,400	16,300	21,800	28,000	34,300
60–64	700	4,500	6,700	10,200	14,600	19,600	25,200
65–69	400	2,600	3,800	5,700	8,600	12,400	16,600
70–74	200	1,400	2,000	3,000	4,400	6,700	9,600
75–79	100	600	900	1,400	2,000	2,900	4,500
80–84	—	200	300	500	700	1,000	1,600
85+	—	—	100	200	300	400	600
FEMALES, TOTAL	41,400	219,300	243,000	264,100	280,800	293,800	308,200
0–4	3,300	22,700	29,700	28,500	25,100	24,600	27,500
5–9	3,000	15,500	22,500	29,300	28,200	24,800	24,300
10–14	3,100	15,200	15,400	22,400	29,200	28,100	24,700
15–19	3,700	17,000	15,100	15,400	22,200	29,100	27,900
20–24	4,800	21,300	16,900	15,000	15,200	22,000	28,800
25–29	5,600	26,000	21,000	16,700	14,800	15,000	21,800
30–34	4,600	25,600	25,700	20,700	16,500	14,600	14,800
35–39	3,500	20,300	25,200	25,300	20,500	16,200	14,400
40–44	2,800	15,700	20,000	24,800	24,900	20,100	16,000
45–49	2,200	12,400	15,400	19,500	24,200	24,300	19,600
50–54	1,700	9,500	12,000	14,800	18,800	23,400	23,500
55–59	1,200	6,900	9,000	11,400	14,100	17,900	22,200
60–64	800	4,800	6,400	8,300	10,500	13,000	16,500
65–69	500	3,200	4,200	5,600	7,300	9,200	11,500
70–74	300	1,900	2,600	3,400	4,600	6,000	7,500
75–79	200	1,000	1,400	1,800	2,400	3,300	4,300
80–84	—	300	600	800	1,100	1,400	1,900
85+	—	—	100	300	500	700	900

TABLE 48. MIGRATION MODEL BASED ON STATISTICS OF ARGENTINA, 1948–52: DEMOGRAPHIC LOSS RESULTING FROM 25,000 ANNUAL EMIGRANTS DURING 1950–1955

Sex and age in years	Departures in any one year	Subtraction from population					
		1955	1960	1965	1970	1975	1980
TOTAL, BOTH SEXES	25,000	127,020	126,800	123,700	117,800	110,700	104,200
MALES, TOTAL	16,800	84,500	82,800	79,400	74,400	68,600	63,100
0–4	200	3,200	3,800	3,200	2,500	2,500	3,100
5–9	200	1,100	3,200	3,800	3,100	2,500	2,400
10–14	300	1,300	1,100	3,200	3,700	3,100	2,400
15–19	500	1,900	1,300	1,100	3,100	3,700	3,100
20–24	1,100	3,800	1,900	1,300	1,100	3,100	3,700
25–29	1,700	6,900	3,800	1,900	1,200	1,100	3,100
30–34	1,900	8,900	6,800	3,700	1,800	1,200	1,100
35–39	2,000	9,600	8,800	6,700	3,700	1,800	1,200
40–44	2,100	10,100	9,400	8,600	6,500	3,600	1,800
45–49	2,000	10,100	9,700	9,100	8,300	6,300	3,500
50–54	1,600	9,000	9,600	9,300	8,600	7,900	6,000
55–59	1,200	6,900	8,400	9,000	8,600	8,000	7,300
60–64	900	5,000	6,200	7,500	8,100	7,700	7,200
65–69	600	3,400	4,200	5,300	6,400	6,800	6,600
70–74	300	2,000	2,700	3,300	4,100	4,900	5,300
75–79	100	900	1,400	1,800	2,200	2,700	3,300
80–84	—	300	500	700	900	1,200	1,400
85+	—	—	100	200	400	500	700
FEMALES, TOTAL	8,200	42,700	44,000	44,300	43,400	42,100	41,100
0–4	200	3,100	3,700	3,000	2,400	2,400	3,000
5–9	200	1,100	3,100	3,600	3,000	2,400	2,300
10–14	300	1,200	1,100	3,000	3,600	3,000	2,400
15–19	300	1,500	1,200	1,100	3,000	3,600	3,000
20–24	500	2,200	1,500	1,200	1,100	3,000	3,500
25–29	700	3,100	2,100	1,500	1,200	1,100	3,000
30–34	800	3,700	3,000	2,100	1,500	1,200	1,100
35–39	800	4,000	3,600	3,000	2,100	1,500	1,200
40–44	900	4,300	3,900	3,600	2,900	2,100	1,400
45–49	900	4,400	4,200	3,800	3,500	2,900	2,000
50–54	800	4,100	4,300	4,000	3,700	3,400	2,800
55–59	600	3,500	3,900	4,100	3,800	3,500	3,200
60–64	500	2,700	3,200	3,600	3,800	3,500	3,200
65–69	300	1,900	2,900	2,800	3,200	3,300	3,100
70–74	200	1,200	1,500	2,000	2,300	2,600	2,700
75–79	100	600	800	1,100	1,400	1,600	1,900
80–84	—	200	300	500	600	800	1,000
85+	—	—	100	200	300	400	500

TABLE 49. MIGRATION MODEL BASED ON STATISTICS OF ARGENTINA, 1948–52: NET DEMOGRAPHIC EFFECT OF 100,000 ANNUAL IMMIGRANTS AND 25,000 ANNUAL EMIGRANTS DURING 1950–55

Sex and age in years	Balance in any one year	1955	1960	1965	1970	1975	1980
TOTAL, BOTH SEXES	75,000	396,200	442,600	485,400	520,300	548,900	577,700
MALES, TOTAL	41,800	219,600	243,600	265,600	282,900	297,200	310,600
0–4	3,600	20,500	27,100	26,500	23,600	23,100	25,600
5–9	3,000	16,300	20,200	26,700	26,200	23,300	22,900
10–14	3,400	16,100	16,200	20,000	26,700	26,100	23,300
15–19	4,800	20,500	16,000	16,100	20,000	26,500	25,900
20–24	6,800	28,900	20,300	15,800	16,000	19,800	26,200
25–29	7,500	35,500	28,500	20,100	15,700	15,700	19,500
30–34	5,700	32,800	35,000	28,200	19,900	15,500	15,500
35–39	3,900	23,900	32,200	34,400	27,600	19,500	15,200
40–44	2,300	15,400	23,400	31,500	33,700	27,000	19,000
45–49	1,100	8,300	14,900	22,500	30,400	32,500	26,100
50–54	300	3,200	7,900	14,100	21,500	28,900	30,900
55–59	—	600	3,000	7,300	13,200	20,000	27,000
60–64	200	500	500	2,700	6,500	11,900	18,000
65–69	200	800	400	400	2,200	5,600	10,000
70–74	100	600	700	300	300	1,800	4,300
75–79	—	300	500	400	200	200	1,200
80–84	—	100	200	200	200	200	200
85+	—	—	—	—	100	100	100
FEMALES, TOTAL	33,200	176,600	199,000	219,800	237,400	251,700	267,100
0–4	3,100	19,600	26,000	25,500	22,700	22,200	24,500
5–9	2,800	14,400	19,400	25,700	25,200	22,400	22,000
10–14	2,800	14,000	14,300	19,400	25,600	25,100	22,300
15–19	3,400	15,500	13,900	14,300	19,200	25,500	24,900
20–24	4,300	19,100	15,400	13,800	14,100	19,000	25,300
25–29	4,900	22,900	18,900	15,200	13,600	13,900	18,800
30–34	3,800	21,900	22,700	18,600	15,000	13,400	13,700
35–39	2,700	16,300	21,600	22,300	18,400	14,700	13,200
40–44	1,900	11,400	16,100	21,200	22,000	18,000	14,600
45–49	1,300	8,000	11,200	15,700	20,700	21,400	17,600
50–54	900	5,400	7,700	10,800	15,100	20,000	20,700
55–59	600	3,400	5,100	7,300	10,300	14,400	19,000
60–64	300	2,100	3,200	4,700	6,700	9,500	13,300
65–69	200	1,300	1,800	2,800	4,100	5,900	8,400
70–74	100	700	1,100	1,400	2,300	3,400	4,800
75–79	100	400	600	700	1,000	1,700	2,400
80–84	—	100	300	300	500	600	900
85+	—	—	—	100	200	300	400

TABLE 50. MIGRATION MODEL BASED ON STATISTICS OF ARGENTINA, 1948–52: NET DEMOGRAPHIC EFFECT OF 100,000 ANNUAL IMMIGRANTS AND 25,000 ANNUAL EMIGRANTS ARRIVING AND DEPARTING THROUGHOUT THE PERIOD 1950–1980

Sex and age in years	Balance in any one year	1955	1960	1965	1970	1975	1980
TOTAL, BOTH SEXES	75,000	396,200	838,800	1,324,200	1,844,500	2,393,400	2,971,100
MALES, TOTAL	41,800	219,600	463,200	728,800	1,011,700	1,308,900	1,619,500
0–4	3,600	20,500	47,600	74,100	97,700	120.800	146,400
5–9	3,000	16,300	36,500	63,200	89,400	112,700	135,600
10–14	3,400	16,100	32,300	52,300	79,000	105,100	128,400
15–19	4,800	20,500	36,500	52,600	72,600	99,100	125,000
20–24	6,800	28,900	49,200	65,000	81,000	100,800	127,000
25–29	7,500	35,500	64,000	84,100	99,800	115,500	135,000
30–34	5,700	32,800	67,800	96,000	115,900	131,400	146,900
35–39	3,900	23,900	56,100	90,500	118,100	137,600	152,800
40–44	2,300	15,400	38,800	70,300	104,000	131,000	150,000
45–49	1,100	8,300	23,200	45,700	76,100	108,600	134,700
50–54	300	3,200	11,100	25,200	46,700	75,600	106,500
55–59	—	600	3,600	10,900	24,100	44,100	71,100
60–64	200	500	—	2,700	9,200	21,100	39,100
65–69	200	800	1,200	800	1,400	7,000	17,000
70–74	100	600	1,300	1,600	1,300	500	4,800
75–79	—	300	800	1,200	1,400	1,200	—
80–84	—	100	300	500	700	900	700
85+	—	—	—	—	100	200	300
FEMALES, TOTAL	33,200	176,600	375,600	595,400	832,800	1,084,500	1,351,600
0–4	3,100	19,600	45,600	71,100	93,800	116,000	140,500
5–9	2,800	14,400	33,800	59,500	84,700	107,100	129,100
10–14	2,800	14,000	28,300	47,700	73,300	98,400	120,700
15–19	3,400	15,500	29,400	43,700	62,900	88,400	113,300
20–24	4,300	19,100	34,500	48,300	62,400	81,400	106,700
25–29	4,900	22,900	41,800	57,000	70,600	84,500	103,300
30–34	3,800	21,900	44,600	63,200	78,200	91,600	105,300
35–39	2,700	16,300	37,900	60,200	78,600	93,300	106,500
40–44	1,900	11,400	27,500	48,700	70,700	88,700	103,300
45–49	1,300	8,000	19,200	34,900	55,600	77,000	94,600
50–54	900	5,400	13,100	23,900	39,000	59,000	79,700
55–59	600	3,400	8,500	15,800	26,100	40,500	59,500
60–64	300	2,100	5,300	10,000	16,700	26,200	39,500
65–69	200	1,300	3,100	5,900	10,000	15,900	24,300
70–74	100	700	1,800	3,200	5,500	8,900	13,700
75–79	100	400	1,000	1,700	2,700	4,400	6,800
80–84	—	100	400	700	1,200	1,800	2,700
85+	—	—	—	100	300	600	1,000

VIII. ADDITIONAL ESTIMATES DERIVED FROM POPULATION PROJECTIONS

A. POPULATION CHARACTERISTICS

356. Population projections by sex and age form a basis for the estimation of a variety of features of the future population, such as the size of the school population, the numbers of economically active persons, families, voters, persons eligible for old-age pensions, etc.

357. One method of deriving such estimates is to apply to the projected figures for each of the age groups, or sex-age groups, of the population an estimate of the proportion belonging to the category in question. The size of the economically active population can be estimated by applying to each sex-age group an estimated percentage of persons engaged in economic activities. The estimated number of married men (or women) can be obtained by applying to each age group the estimated future per-