

TECHNICAL NOTES

The 2000 Census-Based Population Projections basically utilizes the Cohort-component Method. This methodology relies on the fact that population change is the result of three demographic processes namely: fertility, mortality and migration. The last component, migration, is not considered at the national level of population projections since it is assumed that international migration has as yet very little effect on the national total population.

A. Base Population

The base population used in these projections was the population enumerated during the 2000 Census of Population and Housing (CPH). The final population count as of May 1, 2000 was 76,504,077 which was forward-survived to July 1, 2000 after evaluating the age-sex distribution using indexes in assessing the quality of age-sex data. These indexes include the UN Age-Sex Accuracy Index, Myer's Index, Whipple and Bachi indexes.

Although the indexes indicated minimal age heaping and digit preference, the proportion of population aged 0-4 years was smaller than the proportion of population aged 5-9 years in 58 out of 79 provinces. This is inconsistent with the still relatively high and slowly declining fertility observed at the national and regional levels based on the quinquennial National Demographic Surveys conducted from 1968 to 2003, implying a young population or specifically a larger population aged 0-4 compared to the population aged 5-9. A close examination of the census survival ratios for these age groups and fertility and migration rates revealed a likely larger population aged 0-4 than what was reported in the census for the same age group in accord with a relatively high fertility. The smaller population aged 0-4 compared to the population aged 5-9 for the 58 provinces in question implies under-enumeration of population aged 0-4 years. As observed in most countries, the population below age 1 is the most under-enumerated. The number of births at the national level based on estimates of total fertility

rates (TFRs) and age specific fertility rates (ASFRs) from the 1998 and 2003 National Demographic and Health Survey (NDHS). These births were forward-survived to age below 1 year by applying the 1995 Life Table Survival Rate, L_0/l_0 (the proportion of infants born in a year who will survive to the end of that year when the cohort is under 1 year of age).

The difference between the estimated P_0 and the enumerated P_0 in 2000 totaled 146,582. This number was added to the July 1, 2000 population aged 0 after extrapolating the enumerated May 1, 2000 population using the average annual population growth rate between May 1, 1990 and May 1, 2000. The 146,582 difference in P_0 was distributed to all provinces based on their population size, except for the NCR and ARMM provinces. The populations aged 0-4 and 5-9 for the NCR were not adjusted. However, a separate method was used to adjust the age distributions of the ARMM provinces as they greatly deviated from the general expectation of a pyramid-like age distribution.

B. Fertility

The national and regional age-specific fertility rates (ASFRs) and total fertility rates (TFRs) estimated from the 2003 NDHS, 2000 Census, the 2000 Family Planning Survey (FPS) and the 2000 Vital Registration System were examined to arrive at the most reasonable level and age pattern of fertility around 2000 as the base for projecting fertility. The estimates from FPS, Vital Registration, CPH and 2003 NDHS for the nation as a whole are shown in Table 1. It will be noted that the FPS and the vital registration system yielded almost identical ASFRs and TFR while the CPH showed much higher ASFRs at ages 30 and over; thus yielding the highest TFR. The 2003 NDHS revealed the highest ASFRs at the younger ages but the ASFRs at the older ages lie between those found in the other sources.

The 2003 NDHS national and regional estimates of the total fertility rate (TFR) and age-specific fertility rate (ASFR) were adopted as the corresponding base fertility estimates for the nation as a whole and for each of the regions. The

reasons are as follows: (1) the ASFRs at the younger ages are consistent with what has been observed with earlier NDHSs and with those of most developing countries; (2) the ASFRs at older ages and the TFR lie between estimates from the other sources implying that the true estimates may lie between the highest and the lowest estimates; and (3) the source of the estimates is a pregnancy history from which fertility can be estimated for various periods before the survey which may be more stable compared to the point estimate derived from the vital registration and abbreviated recent births from the FPS and the indirect estimates from the CPH. Estimates of TFR and ASFR from various sources, around the year 2000, are shown in Table 1. The 2003 NDHS estimates were adopted as the baseline values. Table 2 shows the national and regional baseline estimates of TFR.

Table 1. National ASFRs and TFRs by Data Source: Around 2000

Age Group	2000 FPS	2000 Vital Registration	2000 CPH	2003 NDHS
15-19	0.02	0.03	0.03	0.053
20-24	0.12	0.14	0.13	0.178
25-29	0.17	0.16	0.19	0.191
30-34	0.14	0.13	0.17	0.142
35-39	0.10	0.09	0.14	0.095
40-44	0.05	0.04	0.09	0.043
45-49	0.01	0.01	0.07	0.005
TFRs	3.04	3.00	4.07	3.54

Sources: NSO, 2000 Family Planning Survey

NSO, 2000 Vital Statistics Report

NSO, 2000 Census of Population and Housing

NSO, 2003 National Demographic and Health Survey

Table 2. Baseline Regional Total Fertility Rates: 2003 NDHS

Region	TFR
Philippines	3.4
National Capital Region	2.8
Cordillera Autonomous Region	3.8
I – Ilocos	3.8
II – Cagayan Valley	3.4
III – Central Luzon	3.1
IVA – CALABARZON	3.2
IVB - MIMAROPA	5.0
V – Bicol	4.3
VI – Western Visayas	4.0
VII – Central Visayas	3.6
VIII – Eastern Visayas	4.6
IX – Zamboanga Peninsula	4.2
X – Northern Mindanao	3.8
XI – Davao	3.1
XII – SOCCSKSARGEN	4.2
XIII – Caraga	4.1
ARMM	4.2

Source: NSO, 2003 National Demographic and Health Survey

For future trends of fertility for the country as a whole, three assumptions were made based on the time when replacement-level fertility, that is, NRR=1.0 will be attained. For the LOW series (rapid pace of fertility decline), NRR=1.0 was targeted for the year 2030. For the MEDIUM series (moderate pace of fertility decline), NRR=1 was targeted for the year 2040 and for the HIGH series (slow pace of fertility decline), NRR=1.0 by 2050. The TFRs in Table 3 were projected to follow an exponential growth curve to the year 2040. The 2003 NDHS age pattern of fertility was assumed to be the same up to the year 2040.

Table 3. Projected Total Fertility Rates for the National Population Under Varying Assumptions

Period	Low	Medium	High
2000-2005	3.37	3.41	3.44
2005-2010	3.07	3.18	3.25
2010-2015	2.79	2.96	3.07
2015-2020	2.54	2.76	2.90
2020-2025	2.31	2.57	2.74
2025-2030	2.10	2.39	2.58
2030-2035	1.91	2.23	2.44
2035-2040	1.73	2.07	2.31

Note: NRR=1.0 was targeted for the year 2030 for the low series, 2040 for the medium series and 2050 for the high series

In projecting the TFR estimates for each quinquennium from 2000 to 2040 at the regional level, only the Medium assumption on fertility was adopted. The end period TFR estimates (i.e. for year 2040) were computed by maintaining the ratio of the regional TFRs for the base period to the national base period estimate (See formula below). The ratio method ensured that the projected regional TFRs shown are consistent with the projected national TFRs. In short, the degree of relationship between a regional TFR and the national TFR as of the base year which is 2000 was maintained up to the end-year of the projection period under the medium series, that is, year 2040.

$$TFR_{\text{Regional, 2040}} = \frac{TFR_{\text{Regional, 2003 NDHS}}}{TFR_{\text{National, 2003 NDHS}}} * TFR_{\text{National, 2040}}$$

To ensure that the overall projected regional births per quinquennium of the projection period was consistent with the corresponding projected national births, the projected regional TFRs were adjusted. This was done after deriving the quinquennial births at the national and regional levels.

The baseline provincial estimates of TFR were derived using the following formula:

$$TFR_{\text{Provincial, 2000}} = \frac{TFR_{\text{Provincial, 1990 Palmore}}}{TFR_{\text{Regional, 1990 Palmore}}} * TFR_{\text{Regional, 2000}}$$

Where $TFR_{\text{Regional, 2000}} = TFR_{\text{Regional, 2003 NDHS}}$

Meanwhile, the end-year provincial estimates (i.e. for year 2040) of TFR were derived by the following formula:

$$TFR_{\text{Provincial, 2040}} = \frac{TFR_{\text{Provincial, 1990 Palmore}}}{TFR_{\text{Regional, 1990 Palmore}}} * TFR_{\text{Regional, 2040}}$$

The projected provincial TFR estimates for each quinquennium were calculated using the exponential growth curve equation in the PEOPLE Software, with the base period and end-period TFR estimates for the provinces as input. The results of this calculation are shown in Table 4. The age pattern of fertility (as measured by ASFR) of the region was adopted for its provinces.

**Table 4. Projected Total Fertility Rates by Region and by Province: 2000-2040
(Medium Assumption)**

Region	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
NCR	2.66	2.48	2.31	2.15	2.00	1.86	1.74	1.62
CAR	3.66	3.40	3.17	2.95	2.75	2.56	2.38	2.22
Abra	3.46	3.22	3.00	2.79	2.60	2.42	2.26	2.10
Apayao	3.94	3.67	3.42	3.18	2.96	2.76	2.57	2.39
Benguet	3.17	2.95	2.75	2.56	2.38	2.22	2.07	1.93
Ifugao	4.29	4.00	3.73	3.47	3.23	3.01	2.80	2.61
Kalinga	4.32	4.02	3.75	3.49	3.25	3.02	2.82	2.62
Mountain Province	4.24	3.94	3.67	3.42	3.18	2.96	2.76	2.57
Region 1	3.63	3.38	3.14	2.93	2.72	2.54	2.36	2.20
Ilocos Norte	3.17	2.95	2.75	2.56	2.38	2.22	2.07	1.93
Ilocos Sur	3.20	2.98	2.78	2.59	2.41	2.25	2.09	1.95
La Union	3.59	3.34	3.11	2.90	2.70	2.51	2.34	2.18
Pangasinan	3.87	3.60	3.36	3.13	2.91	2.71	2.53	2.35
Region 2	3.28	3.05	2.84	2.65	2.47	2.30	2.14	1.99
Batanes	3.36	3.13	2.91	2.71	2.53	2.35	2.19	2.04
Cagayan	3.46	3.23	3.00	2.80	2.61	2.43	2.26	2.10
Isabela	3.19	2.97	2.77	2.58	2.40	2.24	2.08	1.94
Nueva Vizcaya	3.28	3.05	2.84	2.65	2.47	2.30	2.14	1.99
Quirino	3.30	3.07	2.86	2.66	2.48	2.31	2.15	2.00
Region 3	3.01	2.81	2.61	2.43	2.27	2.11	1.97	1.83
Aurora	4.11	3.83	3.57	3.32	3.09	2.88	2.68	2.50
Bataan	2.83	2.63	2.45	2.29	2.13	1.98	1.85	1.72
Bulacan	2.95	2.75	2.56	2.38	2.22	2.07	1.93	1.79
Nueva Ecija	3.00	2.80	2.60	2.42	2.26	2.10	1.96	1.82
Pampanga	3.00	2.80	2.60	2.42	2.26	2.10	1.96	1.82
Tarlac	3.10	2.89	2.69	2.50	2.33	2.17	2.02	1.89
Zambales	3.06	2.85	2.65	2.47	2.30	2.14	1.99	1.86
Region 4A	3.04	2.83	2.64	2.45	2.28	2.13	1.98	1.84
Batangas	3.13	2.91	2.71	2.52	2.35	2.19	2.04	1.90
Cavite	2.79	2.60	2.42	2.26	2.10	1.96	1.82	1.70
Laguna	2.71	2.53	2.35	2.19	2.04	1.90	1.77	1.65
Rizal	3.66	3.40	3.17	2.95	2.75	2.56	2.38	2.22
Quezon	2.97	2.77	2.58	2.40	2.23	2.08	1.94	1.80
Region 4B	4.81	4.48	4.17	3.88	3.62	3.37	3.14	2.92
Marinduque	4.62	4.30	4.01	3.73	3.48	3.24	3.02	2.81
Occidental Mindoro	4.88	4.55	4.23	3.94	3.67	3.42	3.18	2.96

Table 4. Projected Total Fertility Rates by Region and by Province: 2000-2040 (con't.)

Region	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Oriental Mindoro	4.76	4.43	4.13	3.84	3.58	3.33	3.10	2.89
Palawan	5.09	4.74	4.41	4.11	3.82	3.56	3.32	3.09
Romblon	5.08	4.73	4.40	4.10	3.82	3.56	3.31	3.09
Region 5	4.20	3.91	3.64	3.39	3.16	2.94	2.74	2.55
Albay	3.76	3.51	3.27	3.04	2.83	2.64	2.46	2.29
Camarines Norte	4.04	3.77	3.51	3.27	3.04	2.83	2.64	2.46
Camarines Sur	4.05	3.78	3.52	3.28	3.05	2.84	2.65	2.47
Catanduanes	4.37	4.07	3.79	3.53	3.29	3.06	2.85	2.65
Masbate	4.98	4.64	4.32	4.02	3.75	3.49	3.25	3.03
Sorsogon	4.49	4.18	3.89	3.62	3.37	3.14	2.93	2.73
Region 6	3.86	3.59	3.35	3.12	2.90	2.70	2.52	2.34
Aklan	4.01	3.74	3.48	3.24	3.02	2.81	2.62	2.44
Antique	4.55	4.24	3.95	3.68	3.43	3.19	2.97	2.77
Capiz	3.88	3.61	3.36	3.13	2.91	2.71	2.53	2.35
Guimaras	3.70	3.44	3.21	2.99	2.78	2.59	2.41	2.25
Iloilo	3.51	3.27	3.05	2.84	2.64	2.46	2.29	2.13
Negros Occidental	3.83	3.57	3.32	3.10	2.88	2.69	2.50	2.33
Region 7	3.45	3.22	2.99	2.79	2.59	2.42	2.25	2.09
Bohol	3.56	3.32	3.09	2.88	2.68	2.50	2.33	2.17
Cebu	3.27	3.05	2.84	2.64	2.46	2.29	2.14	1.99
Negros Oriental	3.72	3.47	3.23	3.01	2.80	2.61	2.43	2.26
Siquijor	3.22	3.00	2.80	2.60	2.42	2.26	2.10	1.96
Region 8	4.39	4.09	3.81	3.54	3.30	3.07	2.86	2.66
Biliran	4.35	4.05	3.77	3.51	3.27	3.05	2.84	2.64
Eastern Samar	4.66	4.34	4.04	3.76	3.50	3.26	3.04	2.83
Northern Samar	5.20	4.84	4.51	4.20	3.91	3.64	3.39	3.16
Leyte	4.01	3.73	3.47	3.24	3.01	2.81	2.61	2.44
Southern Leyte	3.63	3.38	3.15	2.93	2.73	2.54	2.37	2.21
Western Samar	5.02	4.67	4.35	4.05	3.77	3.51	3.27	3.05
Region 9	4.03	3.76	3.50	3.26	3.03	2.82	2.63	2.45
Basilan	4.09	3.81	3.55	3.31	3.08	2.87	2.67	2.49
Zamboanga del Norte	4.16	3.87	3.61	3.36	3.13	2.91	2.71	2.53
Zamboanga del Sur	3.93	3.66	3.41	3.17	2.95	2.75	2.56	2.38
Region 10	3.65	3.40	3.16	2.95	2.74	2.56	2.38	2.22
Bukidnon	4.29	4.00	3.73	3.47	3.23	3.01	2.80	2.61
Camiguin	4.14	3.86	3.59	3.35	3.12	2.90	2.70	2.52

Table 4. Projected Total Fertility Rates by Region and by Province: 2000-2040 (con't.)

Region	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Lanao del Norte	3.49	3.25	3.03	2.82	2.63	2.45	2.28	2.12
Misamis Occidental	3.56	3.32	3.09	2.88	2.68	2.50	2.33	2.17
Misamis Occidental	3.56	3.32	3.09	2.88	2.68	2.50	2.33	2.17
Misamis Oriental	3.32	3.09	2.88	2.68	2.50	2.33	2.17	2.02
Region 11	3.04	2.83	2.64	2.45	2.28	2.13	1.98	1.84
Davao del Norte	3.17	2.96	2.75	2.56	2.39	2.22	2.07	1.93
Davao del Sur	2.83	2.63	2.45	2.29	2.13	1.98	1.85	1.72
Davao Oriental	3.64	3.39	3.15	2.94	2.73	2.55	2.37	2.21
Compostela Valley	3.17	2.96	2.75	2.56	2.39	2.22	2.07	1.93
Region 12	4.04	3.77	3.51	3.27	3.04	2.83	2.64	2.46
Cotabato City	2.90	2.70	2.52	2.34	2.18	2.03	1.89	1.76
North Cotabato	4.16	3.87	3.61	3.36	3.13	2.91	2.71	2.53
Sarangani	4.59	4.28	3.98	3.71	3.45	3.22	2.99	2.79
South Cotabato	3.74	3.49	3.25	3.03	2.82	2.63	2.45	2.28
Sultan Kudarat	4.21	3.92	3.65	3.40	3.17	2.95	2.75	2.56
ARMM	4.06	3.78	3.52	3.28	3.05	2.84	2.65	2.47
Lanao del Sur	4.87	4.54	4.23	3.94	3.67	3.42	3.18	2.96
Maguindanao	4.13	3.85	3.58	3.34	3.11	2.89	2.69	2.51
Sulu	3.12	2.90	2.70	2.52	2.35	2.19	2.04	1.90
Tawi-tawi	4.05	3.78	3.52	3.28	3.05	2.84	2.65	2.47
Caraga	3.96	3.68	3.43	3.20	2.98	2.77	2.58	2.40
Agusan del Norte	3.76	3.51	3.27	3.04	2.83	2.64	2.46	2.29
Agusan del Sur	4.29	4.00	3.73	3.47	3.23	3.01	2.80	2.61
Surigao del Norte	3.83	3.57	3.32	3.10	2.88	2.69	2.50	2.33
Surigao del Sur	4.12	3.84	3.58	3.33	3.10	2.89	2.69	2.51

C. Mortality

The life expectancy at birth (e_0) is the basic indicator used for both the base and the projected estimates of mortality. For the base period estimates, this indicator necessitated the construction of life tables separately for males and females for the year 2000. Given the incomplete registration of deaths in the Philippines, the death statistics by age and sex for ages 5 and over had to be corrected using the estimated level of completeness yielded by the Preston and Coale Method for the nation as a whole.

For ages 0 and 1-4, the resulting age-specific death rates for age group 5-9 separately for males and females using the deaths adjusted for incompleteness of registration were used to locate the model age –specific death rates at age 0 and 1-4 from the United Nations (UN) Model Life Tables. The UN General Life Tables were used for this purpose since the age-sex specific death rates calculated using 2000 data on registered death exhibited an age pattern of mortality closer to that of the UN General pattern than to UN Latin American pattern. The UN Latin American Pattern was used in the initial calculations because the UN Model Life Tables classified the Philippine mortality pattern as more akin with the UN Latin American pattern when they subjected Philippine mortality data in their iterative modeling and regressions.

Before the life tables were finally constructed, the resulting age-specific death rates from the 2000 registered deaths adjusted for incompleteness of registration for ages 55 years and over did not conform to the expected U-shaped graph of the death function. Hence, they had to be smoothed using the Gompertz model.

The resulting baseline estimate of e_0 for males is 63.11 and that for females is 69.14. The e_0 values for the projection periods (2005 -2040) were derived using the UN Working Model for quinquennial gains in life expectancy (Table 5) as a basis but adopting only the middle assumption. This assumption also implies that the present government health programs are continued and improved with an increase in resource allocation. For example, the estimated life expectancy for 2005 for males is 64.11. Since 64.11 is bracketed in the range of 62.5-65.0, the increase in life expectancy is 2 under the middle assumption and the resulting projected value for the 2000-2005 is 66.11. The projected values of e_0 's for the country are shown in Table 6.

**Table 5. Working Model for Mortality Improvement,
Quinquennial Gains (in years) in Life Expectancy at Birth (e^0_0)
According to Initial Level of Mortality**

Initial Mortality Level (e^0_0 , in years)	Fast		Middle		Slow	
	Male	Female	Male	Female	Male	Female
55.0-57.5	2.5	2.5	2.5	2.5	2.0	2.0
57.5-60.0	2.5	2.5	2.5	2.5	2.0	2.0
60.0-62.5	2.5	2.5	2.3	2.5	2.0	2.0
62.5-65.0	2.3	2.5	2.0	2.5	2.0	2.0
65.0-67.5	2.0	2.5	1.5	2.3	1.5	2.0
67.5-70.0	1.5	2.3	1.2	2.0	1.0	1.5
70.0-72.5	1.2	2.0	1.0	1.5	0.8	1.2
72.5-75.0	1.0	1.5	0.8	1.2	0.5	1.0
75.0-77.5	0.8	1.2	0.5	1.0	0.3	0.8
77.5-80.0	0.5	1.0	0.4	0.8	0.3	0.5
80.0-82.5	0.5	0.8	0.4	0.5	0.3	0.3
82.5-85.0	-	0.5	-	0.4	-	-
85.0-87.5	-	0.5	-	0.4	-	0.3

Note: Lower limit is inclusive of the value while upper limit is exclusive of the value.

E.g. the range 65.0-67.5 means from 65.0 to less than 67.5

Source: United Nations (1989), 1988 World Population Prospects, Table 1.4

Table 6. Projected Values of Life Expectancy at Birth by Sex, Philippines: 2000-2040

Period	Life Expectancy at Birth	
	Male	Female
2000-2005	64.11	70.14
2005-2010	66.11	71.64
2010-2015	67.61	73.14
2015-2020	68.81	74.34
2020-2025	70.01	75.54
2025-2030	71.01	76.54
2030-2035	72.01	77.54
2035-2040	73.01	78.34

Baseline Regional Life Expectancy at Birth

Regional registered deaths for ages 5 and over for the year 2000 (2000 Vital Statistics Report) were also corrected for under-registration using several techniques (Table 7). The same steps for generating the age-specific death rates for ages 0 and 1-4 using the UN General Pattern based on the adjusted age-specific death rate and of smoothing the age-specific death rates for ages 55

and over using the Gompertz model with the national life tables were followed. Table 7 lists the baseline life expectancy at birth for each region.

Table 7. Baseline Life Expectancy at Birth by Region with the Corresponding Method of Estimating Level of Death Registration by Sex

Region	Method of Estimating Level of Death Registration	Life Expectancy at Birth	
		Male	Female
NCR	Gray 2	65.36	72.55
CAR	Preston & Coale (cumulative)	62.86	68.23
Region 1	Brass	66.12	72.92
Region 2	Brass	63.80	68.72
Region 3	Gray 1	65.27	72.26
Region 4A	Gray 2	65.14	72.07
Region 4B	Preston & Coale (actual)	63.91	69.04
Region 5	Brass	63.11	68.09
Region 6	Brass	63.51	70.72
Region 7	Brass	64.91	70.44
Region 8	Preston & Coale (cumulative)	61.60	67.00
Region 9	Preston & Coale (cumulative)	61.46	67.03
Region 10	Preston & Coale (cumulative)	62.23	67.46
Region 11	Preston & Coale (cumulative)	62.47	66.76
Region 12	Preston & Coale (actual)	62.91	67.84
ARMM	Preston & Coale (actual)	55.69	56.68
Caraga	Brass	60.49	65.84

Baseline Provincial Life Expectancy at Birth

Baseline provincial estimates of life expectancy at birth for males and females were computed using the same procedure used for estimating the national and regional baseline figures. The average of the estimates for provinces in the same region was compared with the regional estimates. In general, these averages differ substantially from their corresponding baseline regional estimates. Thus, an alternative procedure was adopted. The provincial estimates of life expectancy at birth were derived using the baseline regional estimates of life expectancy and the 1990 and 1995 life table estimates for the regions and provinces by Flieger and Cabigon following this formula:

$$\text{Life Expectancy at Birth } (e_0^o)_{\text{Provincial, 2000}} = \left(\frac{e_0^o (\text{Provincial, 1990})}{e_0^o (\text{Regional, 1990})} \right) * e_0^o (\text{Regional, 2000})$$

$$\text{Life Expectancy at Birth } (e_0^o)_{\text{Provincial, 2000}} = \left(\frac{e_0^o (\text{Provincial, 1995})}{e_0^o (\text{Regional, 1995})} \right) * e_0^o (\text{Regional, 2000})$$

or

For provinces which were created after 1990.

Projected Regional and Provincial Life Expectancy at Birth

As stated earlier, only one assumption was used in projecting future changes in mortality for the national, regional and provincial aggregations with the life expectancy at birth as indicator. Tables 8 and 9 present the regional and provincial projected values of male and female life expectancy at birth for each of the five-year periods of the projection cycle.

An iterative adjustment procedure was employed to make the overall total of provincial deaths consistent with the total deaths of the region to which they belong and in the same manner make the overall deaths of the regions correspond to the total deaths for the entire country. The iterative adjustment procedure involves linking two software PEOPLE and MORTPAK. MORTPAK contains a MATCH computer program which generates the new life table from which the age-specific death rate for age group 5-9 (${}_5M_5$) was used as the basic reference in determining the final life table that would yield the expected deaths per province which when summed would be equal to the e_0 based on these final regional projected deaths. The final (${}_5M_5$) served as an input into PEOPLE to generate the final parameters needed for the projection cycle.

Table 8. Male Life Expectancy at Birth by Region and Province: 1995-2040

Region	1995-2000 (base)	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
NCR	65.36	66.11	67.61	68.81	70.01	71.01	72.01	73.01	73.81
CAR	62.86	63.86	65.86	67.36	68.86	70.06	71.06	72.06	73.06
Abra	62.54	63.54	65.54	67.04	68.54	69.74	70.94	71.94	72.94
Benguet	66.26	67.01	68.51	69.71	70.91	71.91	72.91	73.71	74.51
Ifugao	58.85	60.10	62.40	64.70	66.70	68.20	69.40	70.60	71.60
Kalinga	59.64	60.89	63.19	65.19	66.69	68.19	69.39	70.59	71.59
Mountain Province	59.80	61.05	63.35	65.35	66.85	68.35	69.55	70.75	71.75
Apayao	60.42	61.57	63.87	65.87	67.37	68.87	70.07	71.07	72.07
Region 1	66.12	66.87	68.37	69.57	70.77	71.77	72.77	73.57	74.37
Ilocos Norte	67.02	67.77	68.97	70.17	71.17	72.17	73.17	73.97	74.77
Ilocos Sur	62.96	63.96	65.96	67.46	68.96	70.16	71.16	72.16	73.16
La Union	66.87	67.62	68.82	70.02	71.02	72.02	73.02	73.82	74.62
Pangasinan	66.66	67.41	68.91	70.11	71.11	72.11	73.11	73.91	74.71
Region 2	63.81	64.81	66.81	68.31	69.51	70.71	71.71	72.71	73.51
Batanes	62.07	63.22	65.22	66.72	68.22	69.42	70.62	71.62	72.62
Cagayan	61.60	62.75	64.75	66.75	68.25	69.45	70.65	71.65	72.65
Isabela	64.34	65.34	66.84	68.34	69.54	70.74	71.74	72.74	73.54
Nueva Vizcaya	63.18	64.18	66.18	67.68	68.88	70.08	71.08	72.08	73.08
Quirino	62.16	63.31	65.31	66.81	68.31	69.51	70.71	71.71	72.71
Region 3	65.27	66.02	67.52	68.72	69.92	71.12	72.12	73.12	73.92
Aurora	59.89	61.14	63.44	65.44	66.94	68.44	69.64	70.84	71.84
Bataan	63.51	64.51	66.51	68.01	69.21	70.41	71.41	72.41	73.41
Bulacan	65.84	66.59	68.09	69.29	70.49	71.49	72.49	73.49	74.29
Nueva Ecija	65.12	65.87	67.37	68.87	70.07	71.07	72.07	73.07	73.87
Pampanga	67.16	67.91	69.11	70.31	71.31	72.31	73.31	74.11	74.91
Tarlac	64.46	65.46	66.96	68.46	69.66	70.86	71.86	72.86	73.66
Zambales	63.04	64.04	66.04	67.54	68.74	69.94	71.14	72.14	73.14
Region 4A	65.14	65.89	67.39	68.89	70.09	71.09	72.09	73.09	73.89
Batangas	67.13	67.88	69.08	70.28	71.28	72.28	73.28	74.08	74.88
Cavite	64.93	65.93	67.43	68.93	70.13	71.13	72.13	73.13	73.93
Laguna	64.22	65.22	66.72	68.22	69.42	70.62	71.62	72.62	73.42
Quezon	63.42	64.42	66.42	67.92	69.12	70.32	71.32	72.32	73.32
Rizal	66.14	66.89	68.39	69.59	70.79	71.79	72.79	73.59	74.39
Region 4B	63.91	64.91	66.91	68.41	69.61	70.81	71.81	72.81	73.61
Marinduque	64.44	65.44	66.94	68.44	69.64	70.84	71.84	72.84	73.64

Table 8. Male Life Expectancy at Birth by Region and Province: 1995-2040 (con't.)

Region	1995-2000 (base)	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Occidental Mindoro	63.75	64.75	66.75	68.25	69.45	70.65	71.65	72.65	73.45
Oriental Mindoro	65.10	65.85	67.35	68.85	70.05	71.05	72.05	73.05	73.85
Palawan	62.47	63.62	65.62	67.12	68.62	69.82	71.02	72.02	73.02
Romblon	63.07	64.07	66.07	67.57	68.77	69.97	71.17	72.17	73.17
Region 5	63.11	64.11	66.11	67.61	68.81	70.01	71.01	72.01	73.01
Albay	64.13	65.13	66.63	68.13	69.33	70.53	71.53	72.53	73.33
Camarines Norte	60.49	61.64	63.94	65.94	67.44	68.94	70.14	71.14	72.14
Camarines Sur	65.45	66.20	67.70	68.90	70.10	71.10	72.10	73.10	73.90
Catanduanes	61.44	62.59	64.59	66.59	68.09	69.29	70.49	71.49	72.49
Masbate	60.65	61.80	64.10	66.10	67.60	68.80	70.00	71.00	72.00
Sorsogon	63.30	64.30	66.30	67.80	69.00	70.20	71.20	72.20	73.20
Region 6	63.51	64.51	66.51	68.01	69.21	70.41	71.41	72.41	73.41
Aklan	60.55	61.70	64.00	66.00	67.50	68.70	69.90	71.10	72.10
Antique	59.79	61.04	63.34	65.34	66.84	68.34	69.54	70.74	71.74
Capiz	61.67	62.82	64.82	66.82	68.32	69.52	70.72	71.72	72.72
Guimaras	63.45	64.45	66.45	67.95	69.15	70.35	71.35	72.35	73.35
Iloilo	65.85	66.60	68.10	69.30	70.50	71.50	72.50	73.30	74.10
Negros Occidental	64.56	65.56	67.06	68.56	69.76	70.96	71.96	72.96	73.76
Region 7	64.91	65.91	67.41	68.91	70.11	71.11	72.11	73.11	73.91
Bohol	64.28	65.28	66.78	68.28	69.48	70.68	71.68	72.68	73.48
Cebu	67.24	67.99	69.19	70.39	71.39	72.39	73.39	74.19	74.99
Negros Oriental	61.85	63.00	65.00	66.50	68.00	69.20	70.40	71.40	72.40
Siquijor	60.48	61.63	63.93	65.93	67.43	68.93	70.13	71.13	72.13
Region 8	61.60	62.75	64.75	66.75	68.25	69.45	70.65	71.65	72.65
Biliran	63.73	64.73	66.73	68.23	69.43	70.63	71.63	72.63	73.43
Eastern Samar	59.13	60.38	62.68	64.68	66.68	68.18	69.38	70.58	71.58
Northern Samar	59.20	60.45	62.75	64.75	66.75	68.25	69.45	70.65	71.65
Leyte	63.73	64.73	66.73	68.23	69.43	70.63	71.63	72.63	73.43
Southern Leyte	62.76	63.76	65.76	67.26	68.76	69.96	71.16	72.16	73.16
Western Samar	58.91	60.16	62.46	64.76	66.76	68.26	69.46	70.66	71.66
Region 9	61.46	62.61	64.61	66.61	68.11	69.31	70.51	71.51	72.51
Basilan	58.05	59.30	61.80	64.10	66.10	67.60	68.80	70.00	71.00
Zamboanga del Norte	60.89	62.04	64.34	66.34	67.84	69.04	70.24	71.24	72.24
Zamboanga del Sur	62.36	63.51	65.51	67.01	68.51	69.71	70.91	71.91	72.91

Table 8. Male Life Expectancy at Birth by Region and Province: 1995-2040 (con't.)

Region	1995-2000 (base)	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Region 10	62.23	63.38	65.38	66.88	68.38	69.58	70.78	71.78	72.78
Bukidnon	62.90	63.90	65.90	67.40	68.90	70.10	71.10	72.10	73.10
Camiguin	60.95	62.10	64.40	66.40	67.90	69.10	70.30	71.30	72.30
Lanao del Norte	60.58	61.73	64.03	66.03	67.53	68.73	69.93	71.13	72.13
Misamis Occidental	62.02	63.17	65.17	66.67	68.17	69.37	70.57	71.57	72.57
Misamis Oriental	64.26	65.26	66.76	68.26	69.46	70.66	71.66	72.66	73.46
Region 11	62.47	63.62	65.62	67.12	68.62	69.82	71.02	72.02	73.02
Davao del Norte	59.91	61.16	63.46	65.46	66.96	68.46	69.66	70.86	71.86
Davao del Sur	64.93	65.93	67.43	68.93	70.13	71.13	72.13	73.13	73.93
Davao Oriental	61.82	62.97	64.97	66.97	68.47	69.67	70.87	71.87	72.87
Compostela Valley	59.91	61.16	63.46	65.46	66.96	68.46	69.66	70.86	71.86
Region 12	62.91	63.91	65.91	67.41	68.91	70.11	71.11	72.11	73.11
Cotabato City	63.23	64.23	66.23	67.73	68.93	70.13	71.13	72.13	73.13
North Cotabato	62.77	63.77	65.77	67.27	68.77	69.97	71.17	72.17	73.17
Sarangani	63.06	64.06	66.06	67.56	68.76	69.96	71.16	72.16	73.16
South Cotabato	64.01	65.01	66.51	68.01	69.21	70.41	71.41	72.41	73.41
Sultan Kudarat	61.00	62.15	64.45	66.45	67.95	69.15	70.35	71.35	72.35
ARMM	55.69	56.94	59.44	61.94	64.24	66.24	67.74	68.94	70.14
Lanao del Sur	58.12	59.37	61.87	64.17	66.17	67.67	68.87	70.07	71.07
Maguindanao	56.55	57.80	60.30	62.60	64.60	66.60	68.10	69.30	70.50
Sulu	53.22	54.47	56.97	59.47	61.97	64.27	66.27	67.77	68.97
Tawi-tawi	52.38	53.63	56.13	58.63	61.13	63.43	65.43	66.93	68.43
Caraga	60.49	61.64	63.94	65.94	67.44	68.94	70.14	71.14	72.14
Agusan del Norte	60.36	61.51	63.81	65.81	67.31	68.81	70.01	71.01	72.01
Agusan del Sur	58.64	59.89	62.39	64.69	66.69	68.19	69.39	70.59	71.59
Surigao del Norte	61.81	62.96	64.96	66.96	68.46	69.66	70.86	71.86	72.86
Surigao del Sur	58.81	60.06	62.36	64.66	66.66	68.16	69.36	70.56	71.56

Table 9. Female Life Expectancy at Birth by Region and Province: 1995-2040

Region	1995-2000 (base)	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
NCR	72.55	73.15	74.35	75.55	76.55	77.55	78.35	79.15	79.95
CAR	68.23	69.23	71.23	72.73	73.93	75.13	76.13	77.13	78.13
Abra	67.89	68.89	70.89	72.39	73.89	75.09	76.09	77.09	78.09
Benguet	71.92	72.67	73.87	75.07	76.07	77.07	78.07	78.87	79.67
Ifugao	63.87	65.12	67.42	69.72	71.72	73.22	74.42	75.62	76.62
Kalinga	64.73	65.98	68.28	70.28	71.78	73.28	74.48	75.68	76.68
Mountain Province	64.90	66.15	68.45	70.45	71.95	73.45	74.65	75.85	76.85
Apayao	65.58	66.73	69.03	71.03	72.53	73.73	74.93	76.13	77.13
Region 1	72.92	73.52	74.72	75.92	76.92	77.92	78.72	79.52	80.32
Ilocos Norte	74.15	74.75	75.95	76.95	77.95	78.75	79.55	80.35	80.85
Ilocos Sur	72.53	73.13	74.33	75.53	76.53	77.53	78.33	79.13	79.93
La Union	73.80	74.40	75.60	76.60	77.60	78.40	79.20	80.00	80.50
Pangasinan	73.34	73.94	75.14	76.14	77.14	78.14	78.94	79.74	80.54
Region 2	68.76	69.76	71.76	73.26	74.46	75.66	76.66	77.66	78.46
Batanes	66.84	67.99	69.99	71.99	73.49	74.69	75.89	76.89	77.89
Cagayan	69.44	70.44	71.94	73.44	74.64	75.84	76.84	77.84	78.64
Isabela	71.36	72.11	73.61	74.81	76.01	77.01	78.01	78.81	79.61
Nueva Vizcaya	68.05	69.05	71.05	72.55	73.75	74.95	76.15	77.15	78.15
Quirino	65.35	66.50	68.80	70.80	72.30	73.80	75.00	76.20	77.20
Region 3	72.26	73.01	74.21	75.41	76.41	77.41	78.41	79.21	80.01
Aurora	66.67	67.82	69.82	71.82	73.32	74.52	75.72	76.72	77.72
Bataan	69.86	70.86	72.36	73.86	75.06	76.06	77.06	78.06	78.86
Bulacan	72.78	73.38	74.58	75.78	76.78	77.78	78.58	79.38	80.18
Nueva Ecija	71.48	72.23	73.73	74.93	76.13	77.13	78.13	78.93	79.73
Pampanga	74.62	75.22	76.22	77.22	78.22	79.02	79.82	80.62	81.12
Tarlac	70.32	71.07	72.57	73.77	74.97	76.17	77.17	78.17	78.97
Zambales	68.62	69.62	71.62	73.12	74.32	75.52	76.52	77.52	78.32
Region 4A	72.07	72.82	74.02	75.22	76.22	77.22	78.22	79.02	79.82
Batangas	73.95	74.55	75.75	76.75	77.75	78.55	79.35	80.15	80.65
Cavite	73.18	73.78	74.98	76.18	77.18	78.18	78.98	79.78	80.58
Laguna	71.31	72.06	73.56	74.76	75.96	76.96	77.96	78.76	79.56
Quezon	69.23	70.23	71.73	73.23	74.43	75.63	76.63	77.63	78.43
Rizal	72.90	73.50	74.70	75.90	76.90	77.90	78.70	79.50	80.30
Region 4B	69.04	70.04	71.54	73.04	74.24	75.44	76.44	77.44	78.44
Marinduque	69.34	70.34	71.84	73.34	74.54	75.74	76.74	77.74	78.54
Occidental Mindoro	69.05	70.05	71.55	73.05	74.25	75.45	76.45	77.45	78.45
Oriental Mindoro	69.69	70.69	72.19	73.69	74.89	76.09	77.09	78.09	78.89

Table 9. Female Life Expectancy at Birth by Region and Province: 1995-2040 (con't.)

Region	1995-2000 (base)	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Palawan	67.91	68.91	70.91	72.41	73.91	75.11	76.11	77.11	78.11
Romblon	68.71	69.71	71.71	73.21	74.41	75.61	76.61	77.61	78.41
Region 5	68.09	69.09	71.09	72.59	73.79	74.99	76.19	77.19	78.19
Albay	70.12	70.87	72.37	73.87	75.07	76.07	77.07	78.07	78.87
Camarines Norte	64.63	65.88	68.18	70.18	71.68	73.18	74.38	75.58	76.58
Camarines Sur	71.20	71.95	73.45	74.65	75.85	76.85	77.85	78.65	79.45
Catanduanes	66.16	67.31	69.61	71.61	73.11	74.31	75.51	76.51	77.51
Masbate	65.12	66.27	68.57	70.57	72.07	73.57	74.77	75.97	76.97
Sorsogon	68.70	69.70	71.70	73.20	74.40	75.60	76.60	77.60	78.40
Region 6	70.72	71.47	72.97	74.17	75.37	76.37	77.37	78.37	79.17
Aklan	67.45	68.60	70.60	72.10	73.60	74.80	76.00	77.00	78.00
Antique	66.84	67.99	69.99	71.99	73.49	74.69	75.89	76.89	77.89
Capiz	68.35	69.35	71.35	72.85	74.05	75.25	76.25	77.25	78.25
Guimaras	70.17	70.92	72.42	73.92	75.12	76.12	77.12	78.12	78.92
Iloilo	73.08	73.68	74.88	76.08	77.08	78.08	78.88	79.68	80.48
Negros Occidental	72.14	72.89	74.09	75.29	76.29	77.29	78.29	79.09	79.89
Region 7	70.44	71.19	72.69	73.89	75.09	76.09	77.09	78.09	78.89
Bohol	70.28	71.03	72.53	73.73	74.93	76.13	77.13	78.13	78.93
Cebu	72.78	73.38	74.58	75.78	76.78	77.78	78.58	79.38	80.18
Negros Oriental	66.27	67.42	69.72	71.72	73.22	74.42	75.62	76.62	77.62
Siquijor	65.30	66.45	68.75	70.75	72.25	73.75	74.95	76.15	77.15
Region 8	67.00	68.15	70.15	71.65	73.15	74.35	75.55	76.55	77.55
Biliran	70.19	70.94	72.44	73.94	75.14	76.14	77.14	78.14	78.94
Eastern Samar	64.76	66.01	68.31	70.31	71.81	73.31	74.51	75.71	76.71
Northern Samar	65.60	66.75	69.05	71.05	72.55	73.75	74.95	76.15	77.15
Leyte	70.19	70.94	72.44	73.94	75.14	76.14	77.14	78.14	78.94
Southern Leyte	69.06	70.06	71.56	73.06	74.26	75.46	76.46	77.46	78.46
Western Samar	63.54	64.79	67.29	69.59	71.59	73.09	74.29	75.49	76.49
Region 9	67.03	68.18	70.18	71.68	73.18	74.38	75.58	76.58	77.58
Basilan	63.88	65.13	67.43	69.73	71.73	73.23	74.43	75.63	76.63
Zamboanga del Norte	65.36	66.51	68.81	70.81	72.31	73.81	75.01	76.01	77.01
Zamboanga del Sur	68.11	69.11	71.11	72.61	73.81	75.01	76.01	77.01	78.01
Region 10	67.46	68.61	70.61	72.11	73.61	74.81	76.01	77.01	78.01
Bukidnon	67.72	68.72	70.72	72.22	73.72	74.92	76.12	77.12	78.12
Camiguin	65.92	67.07	69.37	71.37	72.87	74.07	75.27	76.27	77.27
Lanao del Norte	65.25	66.40	68.70	70.70	72.20	73.70	74.90	76.10	77.10

Table 9. Female Life Expectancy at Birth by Region and Province: 1995-2040 (con't.)

Region	1995-2000 (base)	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Misamis Occidental	67.26	68.41	70.41	71.91	73.41	74.61	75.81	76.81	77.81
Misamis Oriental	70.07	70.82	72.32	73.82	75.02	76.02	77.02	78.02	78.82
Region 11	66.76	67.91	69.91	71.91	73.41	74.61	75.81	76.81	77.81
Davao del Norte	65.41	66.56	68.86	70.86	72.36	73.86	75.06	76.06	77.06
Davao del Sur	68.53	69.53	71.53	73.03	74.23	75.43	76.43	77.43	78.43
Davao Oriental	66.89	68.04	70.04	71.54	73.04	74.24	75.44	76.44	77.44
Compostela Valley	65.41	66.56	68.86	70.86	72.36	73.86	75.06	76.06	77.06
Region 12	67.84	68.84	70.84	72.34	73.84	75.04	76.04	77.04	78.04
Cotabato City	67.70	68.70	70.70	72.20	73.70	74.90	76.10	77.10	78.10
North Cotabato	68.08	69.08	71.08	72.58	73.78	74.98	76.18	77.18	78.18
Sarangani	67.75	68.75	70.75	72.25	73.75	74.95	76.15	77.15	78.15
South Cotabato	68.80	69.80	71.80	73.30	74.50	75.70	76.70	77.70	78.50
Sultan Kudarat	65.77	66.92	69.22	71.22	72.72	73.92	75.12	76.12	77.12
ARMM	56.68	57.93	60.43	62.93	65.43	67.73	69.73	71.73	73.23
Lanao del Sur	58.99	60.24	62.74	65.24	67.54	69.54	71.54	73.04	74.24
Maguindanao	57.90	59.15	61.65	64.15	66.65	68.95	70.95	72.45	73.95
Sulu	54.78	56.03	58.53	61.03	63.53	66.03	68.33	70.33	71.83
Tawi-tawi	53.75	55.00	57.50	60.00	62.50	65.00	67.30	69.60	71.60
Caraga	65.84	66.99	69.29	71.29	72.79	73.99	75.19	76.19	77.19
Agusan del Norte	66.43	67.58	69.58	71.58	73.08	74.28	75.48	76.48	77.48
Agusan del Sur	64.01	65.26	67.56	69.56	71.56	73.06	74.26	75.46	76.46
Surigao del Norte	69.98	70.98	72.48	73.98	75.18	76.18	77.18	78.18	78.98
Surigao del Sur	65.79	66.94	69.24	71.24	72.74	73.94	75.14	76.14	77.14

D. Migration

The migration data used in these projections were taken from the results of the 2000 Census of Population and Housing. There was a question in the census that asked for the residence five years prior to the enumeration. The SWG on Migration evaluated the migration data from the 1990 Census of Population and Housing (CPH) and 2000 CPH to come up with the robust estimates of the number of migrants by region and by province. As noted earlier, for the nation as a whole, the effect of the growth of the national total population on international migration is assumed to be negligible. However, internal migration plays a great role hence, the need to estimate the inter-regional and inter-provincial migration rates.

A migration matrix was constructed showing the population by five-year age group (five years old and over) tabulated by current residence in the 2000 CPH and by residence five years prior to the census based on the new regional groupings. The same procedure was followed for the 1985-1990 migration data as obtained in the 1990 CPH, thus making the two censuses comparable. Unfortunately, the examination of the trend beyond 1985 using the most recent censuses could not be done due to changes in the administrative set-up of the regions over the three-census periods.

1. Projections of Regional/Provincial Net Migration Rates

a. Estimating the Net Migration Rates

The baseline regional and provincial net migration rates (NMRs) were generated using this formula.

$$NMR_{1995-2000} = \frac{NM_{1995-2000}}{P_{July 1997} - (0.5 * NM_{1995-2000})}$$

Where: $NMR_{1995-2000}$ = net migration rate for the period 1995-2000

$NM_{1995-2000}$ = net number of migrants

= no. of in-migrants – no. of out-migrants

$P_{July 1997}$ = mid-period household population 5 years old and over

This formula was used to compute the overall net migration rates (total, male and female) as well as the baseline age-specific net migration rates.

b. Assumptions

In formulating the migration assumptions, the regions/provinces were classified based on the trend of the overall male and female migration rates observed between 1985-1990 and 1995-2000. The SWG on Migration identified six categories based on the net migration rates for these two periods as shown in Table 10.

Table 10. Trends in Net Migration Rates for 1985-1990 and 1995-2000

Group	Trend
1	Increasing positive
2	Decreasing positive
3	Increasing negative
4	Decreasing negative
5	Positive to Negative
6	Negative to Positive

The major migration streams for the periods 1985-1990 and 1995-2000 by province and by region were noted. The growth poles between the period 1985-1990 and 1995-2000 remained the same except for the exclusion of the province of Quezon during 1995-2000.

The inclusion of a province/region in a certain group was justified by the inputs from the Regional Development Plans for 2004-2010 from the National Economic and Development Authority (NEDA) and the 2003 Countryside in Figures Report from the National Statistical Coordination Board (NSCB). These plans are directed towards spreading development and provide new opportunities for growth in the regions.

To predict the projected migration rates for each region and province, a regression model was derived using the following variables: poverty incidence, ecozones, presence of growth centers and state colleges and universities, transport infrastructures, palay production, and so on. The significant predictors turned out to be ecozones and poverty incidence. However, in the absence of information regarding poverty beyond 2015, three possible scenarios on poverty incidence were considered. These were: status quo after 2015, decline in poverty incidence by five percent every 10 years and decline by five percent every 5 years. It was also noted that the ecozones, after their establishment, may have saturated migration for a span of 5 years. Beyond that time period, such ecozones will have lost their attraction.

2. Methods of estimating net migration rates

Two methods were used to generate the provincial projections of net migration rates.

a. Use of Regression Equation. Utilizing the migration rates for the periods 1985-1990 and 1995-2000, the net migration rates for the period 1990-1995 was derived by means of linear interpolation. The derived 1990-1995 net migration rates were then incorporated in the regression model and proved to be the only significant variable in predicting the projected net migration rates for each province/region. This was supported by the high correlation among the variables used in deriving the regression equation. Moreover, 1993 was considered a crisis year which may have brought about a shift in the migration patterns of the population. This could lead to changes in the trends of migration streams between the two-census periods. The constant and the coefficient of the regression equation for each group are listed in Table 11.

Table 11. Regression Coefficients for deriving the Projected Net Migration Rates

Group	Trend	Constant	1990-1995 NMR Coefficient
1	Increasing positive	0.00158	1.27839
2	Decreasing positive	-0.00454	0.88713
3	Increasing negative	0.00116	1.45784
4	Decreasing negative	-0.00114	0.47800
5	Positive to Negative	-0.00795	0.34248
6	Negative to Positive	0.00714	0.47204

For the projected regional migration rates, the same set of equations were utilized since there were not enough samples (17) to derive a separate regression equation. The above-mentioned equations were applied to each province/region depending on which group the province/region was included. Separate projections were done for male and female.

b. Use of Linear Interpolation. On the initial application of the regression equation to each province/region, the graphical representation of the provincial/regional rates showed sudden increase/decrease of rates in the projection years. Thus, a ceiling (+0.40) and a floor (-0.20) were adopted to control the surge of the projected net migration rates. Adjustments were made to the projected NMRs when the resulting overall trend failed to match the pre-determined overall trend.

Not all the net migration rates of provinces were projected using the above mentioned regression equations. Of the 81 provinces, 17 were linearly interpolated. For example, the derived migration rate for the projection period 2000-2005 was placed at the end-period 2035-2040 and using linear interpolation, gradually increased/decreased the rates for the in-between projection periods.

Migration data from the 2000 Census of Population and Housing were obtained for persons 5 years old and over. The People software required the presence of age group 0-4. Thus, the migration rate for age group 0-4 was estimated using the following formula given by *Shryock and Siegel*.

$$NMR_{0-4} = CWR_{0-4} * NMR_{(female)15-44}$$

Where NMR_{0-4} = net migration rate for age group 0-4

CWR_{0-4} = child-woman ratio for age group 0-4

$NMR_{(female) 15-44}$ = net migration rates for age groups 15-44

For the projected age-specific migration rate, the ratio of each age group to the total (male/female) served as a multiplier to the total (male/female) projected migration rate. It was assumed that the projected age-specific migration rate maintained the 1995-2000 age specific migration distribution.