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The demographic situation in the Philippines: an assessment in 1977

by Mercedes B. Concepción and Peter C. Smith

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PREFACE

Work on this essay began in Manila at the University of the Philippines Population Institute and was completed at the East-West Population Institute in Honolulu. Much of the data processing was carried out in Manila under the direction of Ms. Nellie Mangubat. Subsequent data processing at the East-West Population Institute was performed by Carol Carlson and Judith Tom.

We have drawn extensively from the published work of specialists in Philippine demography. In addition we have had access to unpublished data from the National Demographic Surveys of 1968 and 1973 as well as the 1970 Census of Population, the latter generously provided by Dr. Tito Mijares of the National Census and Statistics Office. Unpublished materials generated by Project PREPF (Population, Resources, Environment, and the Philippine Future) have also been valuable.

We received helpful comments on a first draft, particularly from Lee-Jay Cho and Jay Palmore of the East-West Population Institute staff. Sandra Ward provided editorial supervision, while Lois Bender and Gregory Chu handled production and graphics, respectively. Financial support has come from the Agency for International Development through a grant to the East-West Population Institute.

ABSTRACT Recent patterns of population change in the Philippines are assessed on the basis of available evidence, including new information from the 1970 Census and the 1973 National Demographic Survey. The assessment comes at an appropriate time, following a quinquennium of intensive, government-sponsored family planning effort.

The rate of population growth diminished somewhat after a peak achieved in the 1960–1970 period. Because mortality also declined over the decade, this growth trend implies some decline in the level of fertility. Unambiguous evidence of declining fertility is not found in the available data, however. A trend toward later marriage has been under way throughout the century, but the pattern of marital fertility is not so straightforward. Nevertheless, the preconditions of fertility decline are widespread. Recent survey data depict a virtual revolution in family planning knowledge and attitudes and even in behavior.

Historically, population redistribution has taken the form of predominantly male pioneering migration to the nation's frontiers. In recent decades this pattern has begun to be replaced by a more complex mix of interregional flows related to economic opportunities outside of agriculture, especially in the larger cities and towns. The urbanward streams have recently been dominated by female migrants.

The immediate future is likely to bring continued delays in entrance to marriage for both sexes and diminished fertility within marriage. The future for mortality patterns is less clear; the long-term mortality decline has lost its momentum and much now depends upon innovation within the nation's health delivery system. The pattern of urbanward migration is likely to continue in the face of mounting population pressure in the rural sector.

The Republic of the Philippines is an archipelago with a land area of some 300,000 square kilometers, scattered over six times as large an area of the earth. Its northernmost offshore islands lie less than 250 kilometers south of Taiwan; its southernmost reach nearly to the island of Kalimantan in Indonesia. Although the continent of Australia is more than 25 times larger in size, the Philippines has a population more than three times as great. In 1975 only 15 other nations reported populations larger than the 42.1 million enumerated in the Philippine census of that year.

The history of the Filipino people has been a tumultuous one,

marked by a sequence of religious, cultural, and political incursions. This eventful history has created a series of dualisms and dichotomies in contemporary Philippine society. Newly introduced or emergent institutions exist together with institutions from the past, a juxtaposition that has led to syncretic forms of Christianity and folk religion; to competing claims from government and family; to competing ideologies of colonialism and nationalism; to a money economy built upon a subsistence rural sector; and generally to contrasting cultures of modernity and tradition. In short, the inherent discontinuities of an island ecosystem combined with successive overlays of culture, religion, and political system have created a modern Philippines of great diversity.

Economic development has been irregular, both in time and in space. The Spanish, who dominated the islands from 1565 until 1898, were uninterested in economic development until late in the eighteenth century, when political events in Iberia and the New World forced a reconsideration of its long-standing mercantile policy. As the nineteenth century progressed efforts were made to develop export agriculture. Rural land use, tenure systems, and even social structure were selectively transformed in the process.

The American colonial period saw continued interest in export agriculture. Where the Spanish merely wanted their distant colony to pay its own way, the Americans saw the Philippines as a profitable adjunct of their metropolitan economy. The American period was characterized by slow and irregular growth outside of agriculture and by a relatively stagnant system of subsistence agriculture existing side by side with an export agriculture founded upon cheap labor. Technology in agriculture, particularly in the subsistence sector, changed little during the American period. Most growth in output occurred as a consequence of frontier settlement, particularly on the large southern island of Mindanao.[1]

Agricultural policy since independence in 1946 has not substantially

1 Hooley (1968: table 5) estimates that agricultural output expanded by four times in the first six decades of this century; land and animal energy use grew by six times, machinery by slightly less, human labor by 3.5 times. Output per unit of labor improved, but otherwise the mix of factor inputs changed little. Meanwhile, Hooley estimates (see table 6), labor in manufacturing expanded by ten times, capital in this sector by 23 times, and manufacturing output by 16 times.

Excellent reviews of economic development programs and policies in the American colonial period and since independence are found in Golay (1961) and International Labor Organization (1974).

changed. Export agriculture continues to be emphasized, while the subsistence sector has moved rapidly toward impoverishment as a consequence of population growth and the maturation of the agricultural frontiers. On the other hand, industrialization in the core metropolitan area has moved ahead rapidly with the emphasis on import substitution. The population of metropolitan Manila grew from one-fourth million at the turn of the century to four million in 1970, while the level of urbanization nationwide increased over this period from 13 to 33 percent (Pernia 1976c:18, 23, tables 1 and 4). In 1970 nearly half the labor force was engaged in nonprimary economic activities.

Social development policies are a relatively recent phenomenon. Efforts in this area were largely nonexistent under the Spanish regime, though health and education came to receive some attention late in the nineteenth century. The strenuous American efforts in this area stand in sharp contrast. Universal education was implemented early in the American regime, and a public health service was developed. These basic social programs have been maintained and strengthened in the period since independence, and early in the 1970s a large-scale program of family planning supplemented the health delivery system.

This paper is intended to provide a distillation of what we know more or less firmly about the demography of the Philippines. Emphasis is placed upon recent trends and the latest data, but a cogent discussion is impossible without some consideration of long-term trends. The broad sweep of population change and regional differences in population growth are first examined. Then in subsequent sections we consider in turn the major components of change: mortality; marriage and fertility, including fertility control; and migration, both international and internal. In a final section we consider the implications of recent trends for the future of population growth in the Philippines.

POPULATION GROWTH

The Spanish period

The long process of peopling the archipelago, and the interactions between culture and environment that led to the population distribution at the time of Spanish contact are matters that can only be approached indirectly, through the evidence of excavated artifacts and oral and written literature. It is generally agreed, however, pending findings from the many excavations now in progress, that settlement by Indo and South Chinese had begun well before the end of the pre-Christian era (Fox 1970), and that small communities of 50 to 100 households

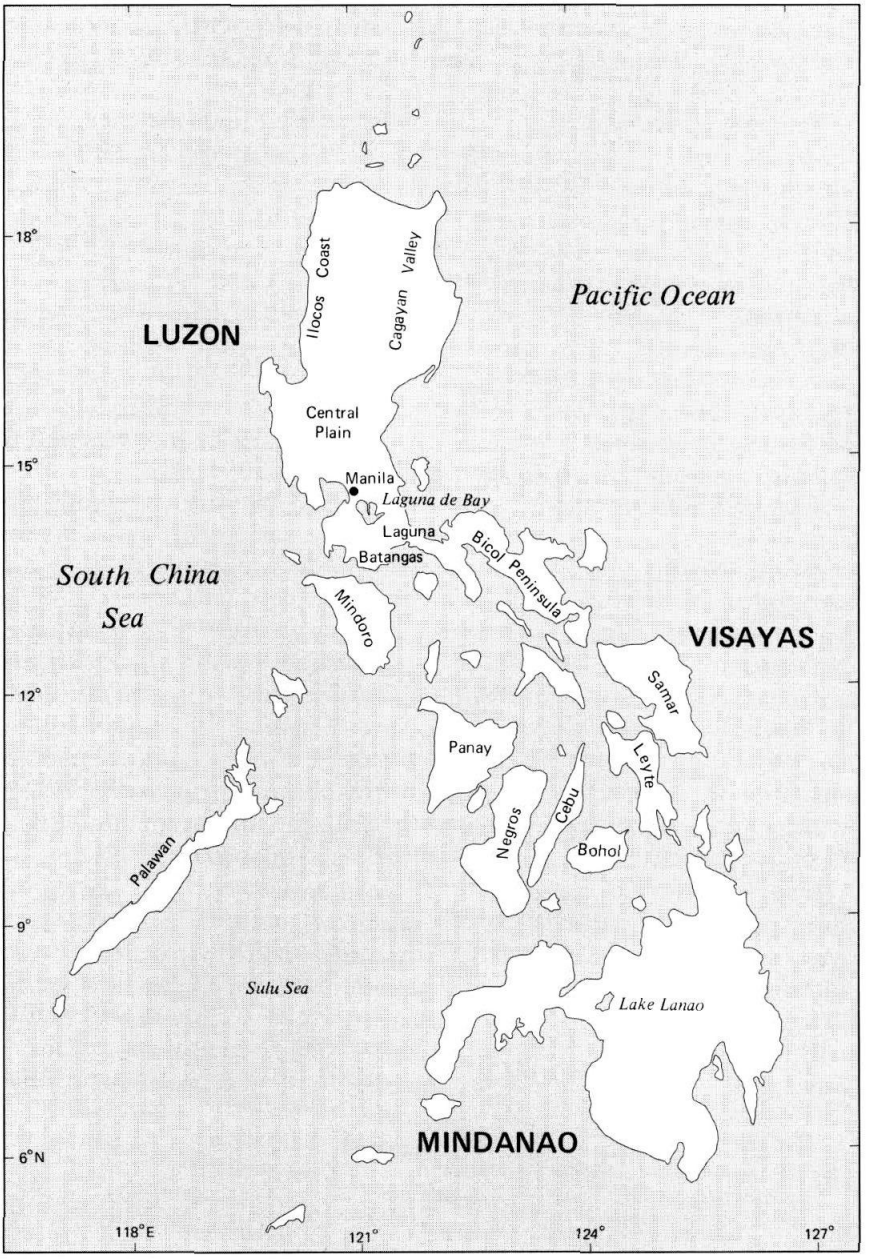
were widely dispersed throughout the lowland parts of the island chain by the sixteenth century or even earlier. At this time such communities were in evidence on all the major islands, concentrated in coastal and riverine areas and around the few inland lakes (Cushner 1971; Phelan 1959).

Wet rice agriculture was known and practiced from a very early date, and this together with dry rice cultivation in the uplands and a sizeable take of coastal fishing seems to have provided pre-Spanish Filipinos with an adequate and fairly stable subsistence base. Iberian explorers first sailed among the islands of the Visayas in 1521 and found concentrations of population on Leyte, Cebu, Bohol, Panay, and other islands (Figure 1). Later explorations identified substantial settlements to the north as well—for example, the inland communities encountered by Salcedo in 1571 on his march across the Bicol Peninsula and through present-day Batangas and Laguna, and the Ilocos settlements described by Salcedo in 1572. Laguna de Bay was said to contain a population of 25 thousand (Cushner 1971:68).

The scattered reports by early explorers of the various regions present a picture that is difficult to evaluate in quantitative terms. It was not until 1591 that a systematic colony-wide assessment of population size and distribution became available in the form of Dasmariñas's well-known report to Philip II of Spain (Dasmariñas 1591, in Blair and Robertson 1903–1909). In that account he enumerated 181 *encomiendas*[2] containing, all told, 166,903 tributes. Applying the ratio of four persons per tribute, which was conventional for the period, Dasmariñas estimated there to be 667,612 *almas*, or souls. Figures of this kind are suspect for a number of reasons, needless to say. There was undoubtedly a tendency to exaggerate the numbers conquered. On the other hand, the populations of some inland or mountainous regions and most of Mindanao were only guessed at. De la Costa (1961: 89), for example, adjusts sixteenth century estimates upward by several times in consideration of these factors. Still, some orders of magnitude are provided by Dasmariñas's summary, through which we can at least infer relative levels of density by region and the broad picture with respect to distribution (see Table A1). The figures suggest an average density of some 22 persons per thousand hectares. The largest

2 The *encomienda* was an "area of jurisdiction" comprising a delimited territory and any villages therein. The recipient of the *encomienda*, or *encomendero*, was responsible for maintaining order and justice and for spreading the Christian faith. In return he could levy tribute and claim regulated amounts of labor (de la Costa 1961:13–14).

FIGURE 1 Philippines: major islands and other areas in the Spanish period



settlement, *Maynilad*, contained about 3,000 persons, with several tens of thousands in the nearby hinterland communities. Three-fourths the total population was in the north, on the island of Luzon, though this figure is undoubtedly inflated by the failure to tally many unconquered Muslim communities in the south.

Once we have examined these and a few other data for the late sixteenth and early seventeenth centuries we come upon a statistical hiatus. The quantitative materials on the following three centuries of Spanish dominion are uneven, at times inaccessible, and to date barely examined (Smith 1976a). Apart from contact-population estimates, there are scattered figures pertaining to specific times throughout the seventeenth and eighteenth centuries, mostly ecclesiastical in origin. As centralization and secularization of government occurred in the late eighteenth and nineteenth centuries (Robles 1969) the quantity of data on population at both local and national levels expanded markedly, although only a tiny fraction of the available materials has been investigated by researchers. Regional analyses are rare and quantitative local studies nonexistent. Nevertheless, the broad outlines of population change might be drawn, at least at the national level.

There was, first of all, nothing analogous to the demographic collapse in the New World at the time of Spanish contact. One reason perhaps is the simpler and therefore more flexible social and economic system that prevailed. Another is the limited opportunity for contact provided by the island environment. But the key factor almost certainly was the long-standing contact between the native population and the Chinese.[3] The Spanish brought no disease with them for which immunities had not already been developed. Finally, "conquest" in the Philippines was a relatively bloodless enterprise, especially when contrasted with the wholesale violence in the New World.

Growth was curtailed and losses incurred a few decades later, however, as heavy demands for food and labor were levied upon the population to support Spanish efforts in the Hispano-Dutch War of 1609–1648 (Phelan 1959). From this period until the late eighteenth century the picture is as yet incomplete, though it is clear from the low average annual rate of growth (roughly 0.5 percent) and other evidence that there must have been repeated episodes of exceptionally high mortality.

The improved data base of the nineteenth century provides evidence

3 This contact, in the form of trade and tribute collection, had been continuous for a number of centuries before the Spanish arrived (Purcell 1965).

of moderate mortality and a burst of population growth beginning sometime in the late eighteenth century and continuing through 1870, followed by three decades of demographic crisis which accompanied the major political upheavals of the era. Both these contrasting nineteenth century patterns—rapid growth before 1870 and diminished growth thereafter—are important elements in the social history of the period and deserve more attention from historians than they have received. When we take into account recent downward revisions of the growth rate for Java during the nineteenth century (Peper 1970; Nitisastro 1970), the island held up by Taeuber (1964:135) as the "classic illustration of population growth," the growth rate of the Philippines during the first seven decades of the nineteenth century appears quite similar. Caused, it would seem, by relatively low "normal" mortality and the near-absence of extreme episodic mortality, the rapid growth of the period has not been recognized because it was followed by a time of high and fluctuating mortality which led in some regions to absolute declines in population.

The differentials in regional growth shown in Table 1 (see also Table A1) reflect broad patterns of net migration during the Spanish period. (This interpretation requires that we assume regional differentials in natural increase to have been minimal at the time.) The transfers of population are of two general types: the drift of people inland and to unsettled areas on the major islands; and movement to selected areas of relatively rapid economic change. The seventeenth and eighteenth centuries saw movements into the Central Plain of Luzon and to areas surrounding the City of Manila, as well as a general movement southward across the archipelago. In the early nineteenth century the Visayas grew most rapidly, especially the island of Cebu (noted for the absence of malaria) and Negros (opened up to sugar cultivation at this time). Northern Mindanao also grew rapidly because of heavy in-migration from the Visayas.

In the late nineteenth century the principal patterns of redistribution included in-movement to Negros, Mindanao, and Northern Luzon, all agricultural frontiers at the time, and the expansion of the Manila area due, apparently, to some tendency toward urbanization. During this period Cebu's growth was curtailed as a result of out-migration, and the same is true of Bohol.

Among the most significant aspects of these nineteenth century migration patterns are, first, the evidence they provide of a popular response to agricultural and other kinds of economic change almost

TABLE 1 Growth rates by major area: Philippines, 1591–1903

Area	Average annual growth rate (percentage) 1591–1817	1817–1876	1876–1903
Philippines	**0.5**	**1.5**	**1.2**
Luzon	0.5	1.3	0.8
Ilocos	0.6	1.2	0.4
Northern Luzon	0.2	0.0	3.5
Central Luzon	0.6	1.6	0.7
Manila City (*Intramuros*)	0.4	−1.0	3.1
Manila Environs	0.7	1.2	0.7
Southern Luzon	0.4	1.4	−0.0
Bicol Peninsula	0.4	1.4	1.2
Visayas		2.1	1.3
Cebu		3.1	1.7
Panay		1.6	0.2
Negros		3.0	3.5
Bohol	0.7	2.0	0.2
Other Visayas		2.1	1.6
Mindanao		0.8	5.5
North		3.1	3.0
South		a	a

a 1876 estimate is implausible.

SOURCE: Table A1.

as soon as these changes had begun to occur;[4] and, second, the broad continuities between these nineteenth century patterns and those of the present century.

Twentieth century growth

Just as the nineteenth century saw a revolution in the extent and coverage of data on population levels and composition, the twentieth has seen a rapid expansion of modern sources of demographic information: national censuses, scientifically drawn sample surveys, and specialized data collection of other kinds. The series of censuses begins with that of 1903, conducted (as were the enumerations of 1918 and 1939) by the U.S. Bureau of the Census. Since independence the government of the Philippines has sponsored national censuses in 1948, 1960, 1970,

4 The period was characterized by the rise of commercial agriculture and the demise of mercantile controls over the colonial economy. The historian de la Costa (1967) refers to the period 1760–1860 as "the formative century."

TABLE 2 Indexes of age-sex accuracy and age composition for Philippine censuses: 1903–1970

Index	1903	1918	1939	1948	1960	1970
Age-sex accuracy						
U.N. index[a]	72.1	18.8[b]	51.7	43.7	32.9	24.2
Meyer's index[c]						
Male	u	u	22.1	25.2	19.5	5.8
Female	u	u	33.9	30.8	21.2	6.2
Age composition						
Percentage under 15	39.6	44.1	43.0	44.2	45.7	43.1
Percentage 15–64	57.2	53.4	53.5	52.7	51.6	53.4
Percentage 65 and over	3.2	2.4	3.5	3.2	2.7	3.5
Sex ratio	1,002	1,010	1,016	1,007	1,018	988
Dependency ratio	749	911	868	898	939	872
Child-woman ratio	651	782	744	701	793	762

u—unavailable.

a United Nations (1955:42–43).

b The index for 1918 is based on adjusted data; see note to Table A2.

c United Nations (1955:41–42).

SOURCES: Tables A2 and A3; single-year data are from official census sources.

and 1975. In addition, a series of semiannual labor force surveys was initiated in 1956 and became a quarterly survey in 1971. The first demographic survey on a national scale was conducted in 1968 and the second in 1973.[5]

The quality of the data derived from these censuses and surveys has improved steadily over time, a claim supported by the indexes of accuracy of census age-sex data shown in Table 2.[6] The extent of digit preference in reporting age declined markedly between 1939 and 1970, especially among females. The overall accuracy of data grouped in five-year intervals as assessed by the U.N. method improved steadily over the period from 1903 to 1970. The level of the index in 1970 was well below that of many other countries at a similar stage of development.

5 These surveys were directed to all segments of the population and looked into all of the major aspects of population change: fertility, mortality, and social and geographic mobility, among both married and unmarried adults. (See unpublished materials at the Population Institute, University of the Philippines; see also Flieger and Smith 1975.)

6 Basic data are presented in Tables A2 and A3.

TABLE 3 Population of the Philippines by major area and intercensal

Area[a]	Population (in thousands) 1903	1939	1960	1970
Philippines	**7,635**	**16,000**	**27,088**	**36,684**
Luzon	4,102	8,166	14,061	19,688
Ilocos Coast	504	717	919	1,102
Frontier (Ilocano)	798	1,450	2,373	3,192
Mountain Provinces	147	385	551	731
Central Plain	914	1,920	3,810	6,216
Frontier (Tagalog)	333	765	1,376	2,004
Southern Tagalog	541	960	1,532	2,146
Bicol Peninsula	644	1,347	2,363	2,967
Manila City	220	623	1,139	1,331
Visayas	2,863	5,590	7,642	9,032
Negros	510	1,220	1,930	2,219
Panay	775	1,349	1,746	2,115
Cebu	654	1,068	1,333	1,634
Bohol	269	492	592	683
Samar-Leyte	655	1,462	2,041	2,381
Mindanao	671	2,244	5,384	7,964
North Coast	291	806	1,462	2,211
Davao	65	293	893	1,476
Cotabato and West	315	1,145	3,029	4,277

a For definition of areas see text and Figure 2.
SOURCE: Official census reports.

The age and sex composition of the national population shows no systematic change over the seven decades, though there is some evidence of temporary distortions: for example, a curtailment of births in the period of conflict preceding 1903 (both percentages under age 15 and the dependency ratio are low in 1903), and shortages of males immediately following the two major periods of military conflict (sex ratios for young adults are low in 1903 and 1948). The low sex ratios at the same ages in 1970, however, cause some concern over the quality of the most recent census, although the U.N. index continues to show improvement. The sex ratios at ages 15 through 24 in 1970 are exceptionally low, and unlike the similar patterns in 1903 and 1948 cannot be accounted for by recent military activity. The issue is an important one because it raises doubts about the usefulness of many

growth rates: 1903–1970

Intercensal growth rate (annual)			Land area (thousands of hectares)	Density (persons per 1,000 hectares)	
1903–1939	1939–1960	1960–1970		1903	1970
2.1	**2.5**	**3.1**	**30,000**	**255**	**1,223**
1.9	2.6	3.4	14,140	290	1,392
1.0	1.2	1.8	747	675	1,475
1.7	2.4	3.0	3,592	222	889
2.7	1.7	2.9	1,829	80	400
2.1	3.3	5.0	1,642	557	3,786
2.3	2.8	3.8	3,940	85	509
1.6	2.2	3.4	621	871	3,456
2.1	2.7	2.3	1,763	365	1,683
2.9	2.9	1.6	4	55,000	332,750
1.9	1.5	1.7	5,661	506	1,595
2.4	2.2	1.4	1,367	373	1,623
1.6	1.2	1.9	1,230	630	1,720
1.4	1.1	2.1	509	1,285	3,210
1.7	0.9	1.4	411	655	1,662
2.3	1.6	1.6	2,143	306	1,111
3.4	4.2	4.0	10,200	66	781
2.9	2.9	4.2	3,288	89	672
4.2	5.5	5.2	1,967	33	750
3.7	4.7	3.5	4,945	64	865

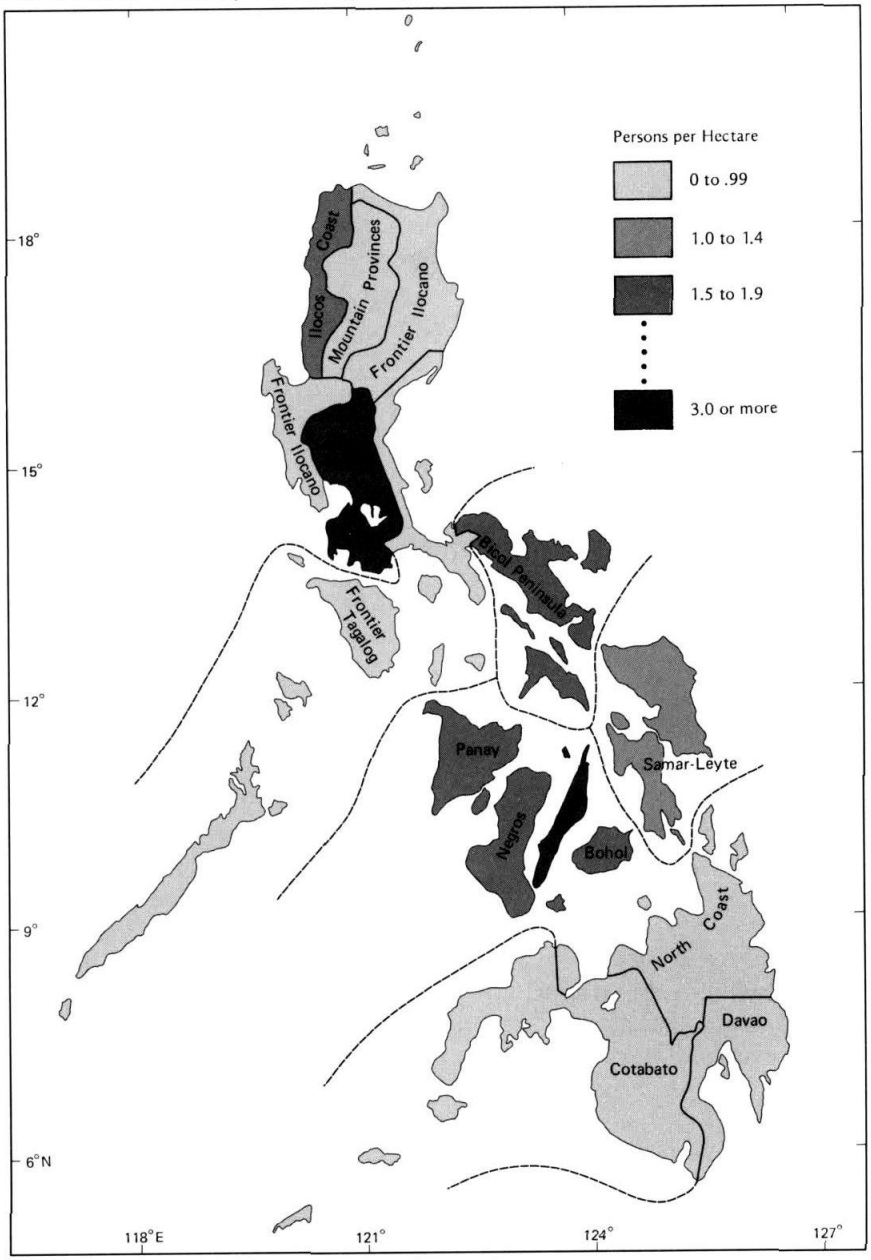
kinds of 1970 census information for policymaking. For example, the "youth cohort" of the 1970s, to judge from sex ratios earlier in the century, may actually be a tenth or so larger than the census suggests.[7]

The national growth rate moved sharply upward during this century from 2.1 percent per annum in the prewar period to 3.1 percent in the 1960s, a reflection of the gradual and then rapid curtailment of mortality after 1905 (Table 3). Overall density per hectare increased from 0.26 persons in 1903 to 0.53 in 1939 and had reached 1.22 by 1970. In less than seven decades the total population had nearly quintupled.

Accompanying this trend in national growth have been significant

7 This estimate is based on the 1960 sex ratios. It assumes that female estimates in 1970 are correct, and that there were transfers of males aged 15–24 into the 10–14 and 25–29 categories.

FIGURE 2 Density levels by major area: Philippines, 1970



regional differences in population growth and density. To indicate these clearly and to portray areal variations in population density in an effective manner we have had to set aside the official regional delineations in favor of a new scheme of areas designed to maximize demographic homogeneity (Figure 2).[8]

The predominant pattern has been a continued growth differential in favor of sparsely settled areas. We saw previously that this movement toward areas of greatest agricultural opportunity had begun during the nineteenth century, perhaps before. With the important exception of the City of Manila, the areas of rapid prewar growth were all frontiers with low overall densities of population: the Mountain Provinces, the Tagalog Frontier, Negros, Samar and Leyte, and the island of Mindanao. In the postwar period this frontier growth continued, while the growth of the core areas accelerated as well (e.g., the Central Plain), as did the expansion of two remote agricultural regions—the Cagayan Valley ("Frontier Ilocano") and the Bicol Peninsula. These same patterns continued into the 1960s.

MORTALITY

In considering mortality we traverse some of the least known terrain in Philippine demography. Death events have been underregistered throughout this century, and even recent assessments place the level of underregistration at around 30 percent (Flieger 1976; Osteria and Baltazar 1976). The extent of underregistration and the fact that these shortfalls are unevenly distributed across areas and social sectors minimize the utility of vital statistics for most purposes. Nevertheless, the need for significantly better mortality information has not been felt keenly by policymakers until quite recently, perhaps in part because the historic downward trend in mortality was evident to all and raised no issues for policy.

Recent developments are creating some pressure for better and more detailed statistics, however. First, current attempts to assess the impact of small fertility declines upon the population growth rate depend heavily on the magnitude of this effect relative to the positive impact that mortality decline has on population growth. Second, there is new evidence (outlined below) that the long-term mortality decline may have run its course. Third, among health professionals and social

8 The country's official regionalization scheme is based on administrative criteria and is not very effective in distinguishing areas by their demographic characteristics. Because of data restrictions it has been necessary to utilize the official regionalization in parts of this chapter.

scientists there is a new interest in mortality *differentials,* both as a policy concern and as a factor contributing to differences in fertility.

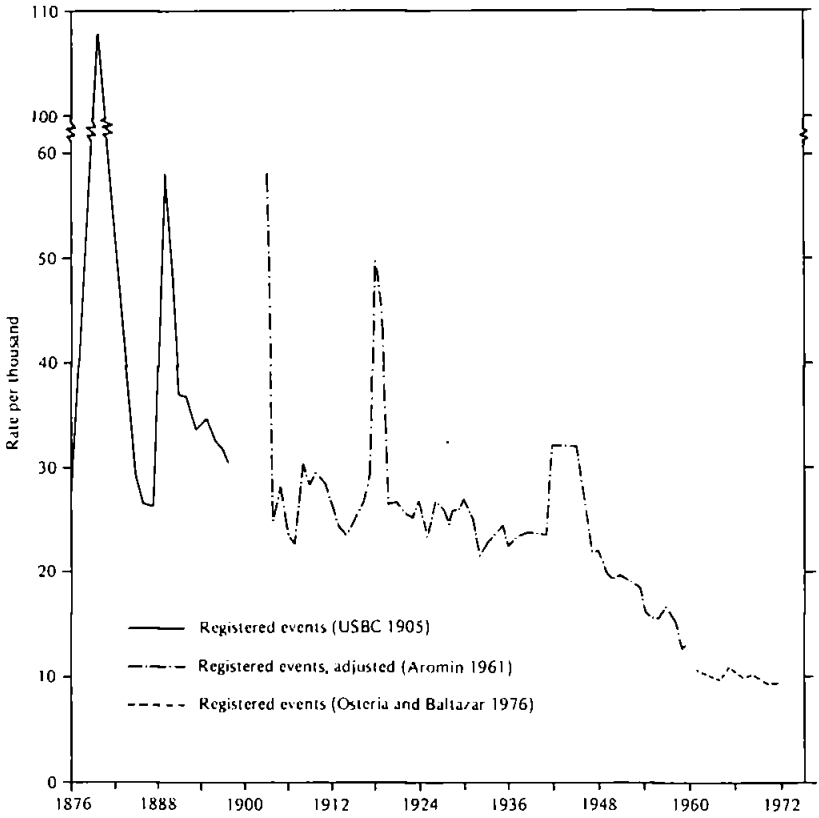
There are two further developments that have generated new interest in mortality statistics. One is a growing concern over the adequacy of the health care system in the Philippines, in particular over its capacity to bring inexpensive, timely, and relevant medical care to the entire Filipino population. The other is the emergence of indirect approaches to mortality measurement (Brass et al. 1968), which make it feasible to produce estimates from data other than direct vital statistics, and which can provide estimates of mortality differentials.

Data deficiencies notwithstanding, the broad pattern in the overall mortality level over time can be described with some confidence, largely because the changes have been so substantial and so similar to those in other nations of the region. The transition from Spanish to American colonial rule was preceded by social turmoil and, whether coincidentally or not, by a three-decade period of high and violently fluctuating mortality. Between 1870 and 1903 there were repeated national and local epidemics of cholera, smallpox, and influenza, as well as direct and indirect military deaths, all contributing to the national picture for the last quarter of the nineteenth century depicted in Figure 3. Average registered mortality over the 1876–1898 period was 39.1 per thousand; and even with the two peaks of mortality excluded (1879 and 1889), the rate exceeded 32 per thousand.

The end of the Revolution and the expansion of American colonial administration, which included some efforts at public health, had two significant effects on the mortality trend. First, the level steadily (though not very rapidly) declined—except during the world-wide influenza epidemic of 1918 and later during World War II. Second, the major fluctuations in mortality level from year to year and from season to season diminished significantly. The twentieth century mortality decline was abrupt during the post-independence decade, but otherwise has been gradual throughout the entire span of time. In fact, the adjusted data suggest that the impact of American civil administration and public health methods was not extremely great over the first two decades or more (Table A4).[9] At 25–26 per thousand, the estimated death rate for the 1920s is not far below the level for

9 We have used Aromin's (1961:4–5) Method II series, obtained on the assumption of a constant birth rate of 49 per thousand, with annual registered death rates adjusted upward by a factor reflecting estimated average underregistration during corresponding intercensal periods. The resulting estimates are rough but serviceable for the present purpose.

FIGURE 3 The long-term trend in death rates: Philippines, 1876–1971



SOURCE: Table A4.

the late Spanish period once crisis mortality has been discounted. The post-independence mortality decline, on the other hand, was sharp and continued into the late 1960s.

As in so many developing nations, the data suggest that declining mortality has been due less to effective public health and preventive medicine at the village and community levels than to infusions of technology suitable for application almost independent of an effective delivery system. This view is certainly supported by much of the available data as well as by the policy discussions of the recent past.

Causes of death

It is difficult to describe the pattern of causes of death during the early decades of this century for lack of suitable data. It may not be entirely coincidental that in the two earliest years for which deaths were tabulated by cause, 1902 and 1918, the results are dramatically influenced by severe epidemics: Asiatic cholera in 1902, influenza in 1918 (United States, Bureau of the Census 1905; Philippine Islands, Census Office 1921). In 1902 the registered death rate from cholera alone was 20 per thousand while a high incidence of malaria deaths (17 per thousand) and other communicable diseases pushed the death rate from all causes to 63.2 per thousand. In 1918 the overall death rate was 40.8, half of which resulted from six major communicable diseases. One-fourth resulted from one disease, influenza. In the time between these major outbreaks the overall death rate was much lower, but communicable diseases always made a significant contribution to the total.

In the four decades since 1920 major epidemics have ceased to occur, but communicable diseases in general continue to be important, still accounting for 40 percent of all recorded deaths in 1961 (Philippines, Bureau of Census and Statistics 1961).

The evidence suggests little, if any, significant change in the situation during the 1960s. Pneumonia and tuberculosis, the two major killers, accounted for 26.2 percent of all deaths in 1961, and virtually the same percentage in 1971. The percentage accounted for by communicable diseases as a whole drops somewhat, from 40 to 34 percent. But the health problems remaining are not susceptible to eradication through straightforward spraying or innoculation. Their roots are imbedded in poverty and fertilized by inadequate knowledge of preventive medicine and environmental hygiene.

That the present health system is not adequate to the problems that remain is evident from statistics describing the health services available in the recent past. The ratios of doctors and nurses to population were one to 22,000 and 19,000 respectively in 1965, at a time when the ratios recommended by the Department of Health were one to 6,000 and 4,000. Similar shortfalls prevailed for various kinds of public health categories. Observers agree that the general difficulty seems to be one common to many developing societies—adherence to a medical delivery system organized around hospitals and Western techniques, oriented to curative rather than preventive concerns, and aimed at cash customers in urban and small-town locations. As recently as 1972, more than one-third of the nation's hospital bed capacity was located

in Manila or nearby Rizal province, where less than one-eighth of the population resides. Drugs are dispensed largely through the commercial sector at prices well beyond the means of most families.

A related and alarming problem is the high and possibly growing incidence of malnutrition, estimated by the Department of Health to occur among 80 percent of all children under age six, with one in 14 having third-degree malnutrition. Finally, there is evidence that malnutrition is most prevalent in rural areas and in urban squatter districts (Popkin 1975:226). There is no evidence that the nutrition problem is receding, and much to suggest that conditions have worsened in recent years.

Mortality in the 1960s

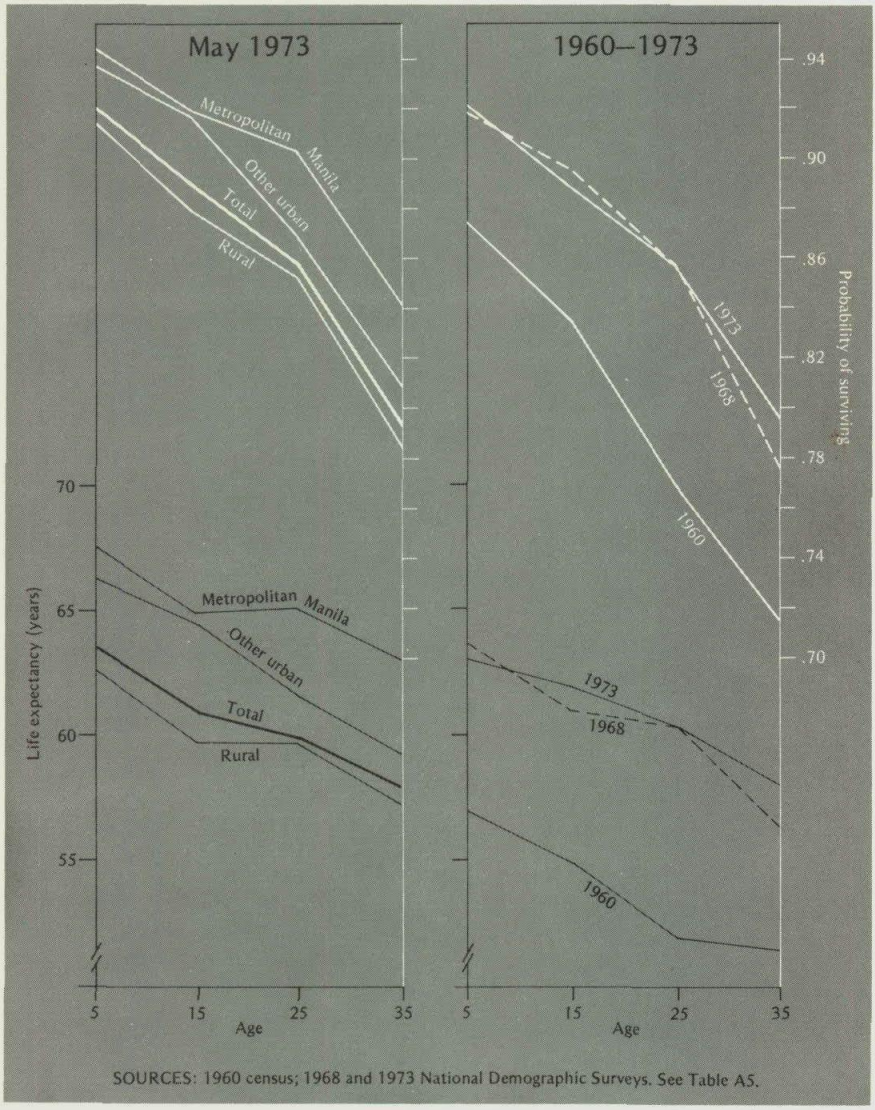
As we noted above, recently developed indirect methods for estimating mortality levels make it possible to discuss mortality patterns during the 1960s and early 1970s. Reconstruction of mortality using the Brass technique (Brass et al. 1968) and census and survey data on children ever born and still living (see Figure 4 and Table A5) indicate a life expectancy at birth of somewhat under 60 years by the mid-1960s, an increase of 12 percent or so over the level at the end of the decade of the 1950s. The rough estimates of infant mortality produced by the Brass technique suggest a decline in infant mortality over the period from 116 to 81 per thousand live births.

The extent of mortality improvement may be exaggerated by this 1960–1968 comparison since the 1960 census data are probably less accurate than the 1968 survey data with respect to the inclusion of deceased children in the retrospective responses. This source of error would be likely to cause underestimation of mortality levels in both sets of data, but to a greater degree in 1960.

When we compare estimates based on 1968 and 1973 data, both drawn from comparable survey sources, we find there is no evidence of continued mortality decline over the most recent period. As Figure 4 demonstrates, life expectancy estimates from the two surveys are not easily distinguishable.

There undoubtedly are serious problems of data accuracy that obscure the results, and it is not entirely clear for each of the estimates what time period is being reflected. However, the broad conclusion that mortality decline has momentarily leveled off, or has been negligible recently, seems well supported. This result is consistent with the structure and performance of the nation's health care system in recent years, and is corroborated by the scattered evidence on causes of death

FIGURE 4 Estimates of mortality by place of residence: Philippines, 1960, 1968, and 1973



SOURCES: 1960 census; 1968 and 1973 National Demographic Surveys. See Table A5.

and on nutrition. The entire system of medical care and public health is now under fundamental review, both within the government and in the health professions. Proposals for reform have taken a range of forms, from an expanded and improved hospital-based system linked to a national medical insurance scheme, to conversion to a community-based delivery system staffed by paramedicals of various kinds. Nutrition has received growing attention in the last several years. The future course of mortality is tied to the outcome of these initiatives.

Recent socioeconomic differentials in mortality

It is generally expected that a downward shift in mortality will be "led" by the social sectors best in a position to benefit from new technologies or new forms of health care. The Philippine health care system puts a premium on urban residence and income: that is, on location near scarce health facilities and on resources to pay for transportation, medical services, and other costs.

In general, socioeconomic and urban-rural differentials in mortality are consistent with these characteristics of the services available. In the 1973 National Demographic Survey (NDS) data, urban and rural life expectancies differ by three years, and the contrast between the rural sector and metropolitan Manila reaches five years when the offspring of younger women are compared. These differentials are all the more significant when we take into account the likely greater underestimation in the rural sector, and the fact that estimates for the urban sector include the experience of large numbers of very poor urban dwellers.

Directly assessed class differentials in mortality would probably be substantially greater than these urban-rural differences. The scanty direct evidence that is available on this point is supportive: occupational differentials exceed 13 years, from 67 years among professionals to 54 years among farm workers (neither farm owners nor tenants). The same differential of 13 years separates the college educated (70 years) from those with no education (57 years). These differentials, which are drawn from unpublished tabulations of the 1973 NDS,[10] are based on insufficient survey samples but they are suggestive in their directions and magnitudes.

MARRIAGE PATTERNS

As population pressure has gathered force in the rural sector over the course of the twentieth century the most evident demographic re-

10 Population Institute, University of the Philippines.

sponses have been in two areas of behavior, migration and marriage. In both instances there is evidence that the most significant twentieth century patterns have their origins in the nineteenth century or even before.

The seventy-year trend in nuptiality is summarized in Table 4. It is clear that a substantial shift in nuptiality has occurred, the most important elements of which are an upward trend in percentages of both sexes who were single in the age groups 15–19 and 20–24, beginning as early as the prewar period, and an acceleration of the trend for both sexes in the period since 1960.

The sources of this change in marriage patterns can be traced, on one hand, to environmental pressure on traditional systems of land holding and inheritance in the rural sector, and, on the other, to several interrelated processes of "modernization," including urbanization, educational expansion, and the shifting social composition of the labor force (Smith 1976c). All three processes have affected both men and women, but in each case women have been involved increasingly over the course of time. This discussion focuses on the determinants of nuptiality among females, though the forces underlying male patterns are largely similar.

TABLE 4 The trend in marriage timing and nonmarriage, females and males: Philippines, 1903–1970

Sex and indicator	1903	1939[a]	1948[a]	1960	1970
Female					
Percentage single at ages 15–19	73.6	80.3	85.1	87.3	89.2
Percentage single at ages 20–24	33.3	36.2	40.7	44.3	50.3
Percentage never marrying[b]	7.8	5.4	6.9	7.0	6.7
Mean age at marriage[c]	20.9	21.9	22.1	22.3	22.8
Male					
Percentage single at 15–19	92.3	96.2	97.0	97.0	97.6
Percentage single at 20–24	56.9	62.5	64.8	65.5	9.3
Percentage never marrying[d]	5.8	3.2	3.5	3.1	3.5
Mean age at marriage[c]	24.9	25.1	25.0	25.0	25.4

a Women whose marital status was not reported have been removed from the total.

b Among women aged 45–54 in 1903, 1939, and 1960; among women aged 45–49 in 1948 and 1970.

c Singulate mean age at marriage computed by Hajnal's (1953) method from proportions single in successive age groups.

d Among men aged 45–54.

SOURCE: National census reports.

The impact of population pressure has been pervasive throughout the rural landscape, and the rural sector of virtually every province in the Philippines has experienced some marriage delay in recent decades (Smith 1976c). Its effect on nuptiality is most evident, however, when we consider illustrative data for the nation's densest agricultural region, the Ilocos Coast. The region is populated by the Ilocanos, an ethnic group popularly noted for their traits of energy and drive, which may be a response to the harsh environment in which they live. Since at least 1850 Ilocanos have been expanding beyond their narrow coastal region to Tagalog areas in the south and into the distant but rich Cagayan Valley in Northeastern Luzon (see Table 1 above and Lewis 1971). It is significant from the standpoint of nuptiality that this centrifugal expansion, at least until the postwar period, involved males far more than females. The resulting distortions in the sex ratio of the Ilocos Coast, together with growing difficulties for young men of the region in finding the land and resources with which to provide a suitable *sabong*, or bride price, caused the Ilocano female age at marriage in the early decades of the century to rise well above the level in other regions. In addition, celibacy rates among older women rose to 15 percent throughout the region and exceeded 20 percent in many localities. Similar patterns, though not so sharp as in the Ilocos, are found in other densely settled rural regions as well.[11]

It is significant that when female outmigration from the Ilocos began to occur in the postwar period in response to urban job opportunities and other changes, the demographic effect was reversed and I_m[12] declined, only to rise sharply again in the 1960s as "modern" influences reached the rural Ilocano. These modernization influences—which have begun to have a dominant effect on the nuptiality patterns in all the regions—are considered in the following paragraphs.

Educational expansion has been a major force in Philippine society, however one assesses its net effect. In particular, the government's emphasis on universal education has made it possible for females to move into sectors of the society that were not accessible to them in the traditional milieu. Male-female literacy rate differentials declined dramat-

11 The Visayan islands of Bohol and Cebu are other densely settled areas that have had heavy out-migration of men. The celibacy level there was 15.2 percent in 1903 and 11.6 percent in 1960.

12 Coale's index of marriage pattern (Coale 1969). This index, which is based on cross-sectional data on female age and marital status, ranges from zero to unity and assesses the impact of a marital status distribution on fertility. An index of unity is associated with universal marriage from age 15 onward.

ically between 1903 and 1970 from 19 percentage points (30 versus 11 percent) to 3 percentage points (85 versus 82 percent), and female literacy in the metropolitan area reached and exceeded 95 percent by 1970. (All literacy rates are for persons aged 10 and over.)

These important changes in education have doubtlessly had a pervasive effect on marriage behavior. Evidence of this impact is provided in Table 5, where a differential of 1.4 years in age at marriage is seen between elementary and secondary levels (nearly five years when we consider girls who completed college). Moreover, youthful marriages (involving girls under age 18) are quite common at the lower educational levels but increasingly rare with higher educational attainment.

The expansion of labor force opportunities outside of agriculture (a concomitant if not a consequence of educational change) has had significant effects on women's adult roles and life styles, including marriage behavior. Professional and other white collar jobs for women have expanded only moderately thus far, but the urban services sector has seen very rapid growth, creating a range of jobs for women outside the home. Table 5 offers some indirect indication of how work force opportunities bear upon nuptiality. Comparing women in the 1973 NDS who had worked at some time since marriage, we find there is no difference in the proportion who married young, but larger proportions of working women had married late (over age 26), and on average as a group they married one-half year later than other women. Data available from the 1968 NDS (Smith 1975a) indicate that women who worked before marriage married later than others, especially if they had been involved in wage and salary employment. In contrast, work in a family enterprise seems to have little relation to marriage timing.

Another important facet of labor force changes is their part in creating single adult roles for women. Census data for selected provinces and occupations in 1970[13] indicate percentages still single among urban women aged 45 and over as follows: professionals, 20.0 percent; clerical workers, 16.6 percent; service workers, 18.8 percent. For all occupations the percentage is 14.7, as against 9.0 percent for urban women aged 45 and over taken as a whole. Clearly, the links between delayed marriage, increased female celibacy, and the transformation of societal expectations for adult females in the Philippines are significant and need to be investigated carefully for their demographic ramifications.

13 Reported in Smith (1976c). The provinces include an area of high development (Manila) and areas of moderate development (Bulacan, Nueva Ecija, Pampanga, Pangasinan, Rizal, Tarlac) and low development (the Bicol Peninsula).

TABLE 5 Selected indicators of marriage timing for certain geographic and social groups: Philippines, 1973

Characteristic of group	Number in sample[a]	Percentage distribution in population[b]	Percentage married[c] Under 18	Under 20	Over 26	Median age at union	Mean age at union
All women	5,778	100.0	27.6	46.4	12.0	19.4	20.8
Residence							
Metropolitan	702	8.9	18.4	36.3	16.8	20.8	22.0
Other urban	1,468	22.1	21.8	41.1	14.5	19.9	21.5
Rural	3,608	69.0	31.1	49.6	10.5	19.1	20.4
Distance to town							
0–5 km	3,579	60.6	24.9	44.5	12.9	19.7	21.0
6–10 km	879	17.1	32.9	48.4	10.2	19.2	20.3
11–20 km	586	10.8	32.8	51.7	9.7	18.8	20.2
21+ km	259	3.8	35.3	56.9	8.1	18.5	19.7
Educational level							
No schooling	745	13.6	31.9	46.1	12.1	19.7	20.7
Elementary 1–7 years	3,454	62.9	31.7	53.2	9.2	18.7	20.1
High school 1–3 years	508	7.9	23.3	42.6	9.6	19.6	21.5
High school 4+ years	439	6.6	12.7	30.5	14.1	21.3	22.8
College 1–3 years	180	2.6	5.9	18.6	17.1	21.5	
College 4+ years	431	6.0	4.3	10.1	40.1	24.9	25.4
Work experience since marriage							
Some	2,613	43.8	26.2	43.6	14.4	19.8	21.1
None	3,159	56.1	28.6	48.7	10.1	19.2	20.5

a Frequencies do not always add to 5,778 because women for whom information was missing have been excluded.

b Percentages are based on all women including those for whom information was missing; the percentages may not sum to 100 because of rounding.

c Base is number of ever-married women who had married by age 40.

SOURCE: 1973 National Demographic Survey.

The impact of urbanization is also pervasive, extending beyond the borders of the cities and towns into the surrounding hinterlands. Its effects, moreover, are tied in multiple ways to those of educational and work force changes, since both these processes have had their greatest effect in urban centers and especially in the national metropolis. Survey data demonstrating the extent of urban-rural nuptiality differentials are shown in Table 5, as are data indicating the manner in which the age at marriage moves downward in relation to distance from an urban center. Overall the urban-rural differential in age at marriage is 1.2 years, and it is even greater for the rural-metropolitan contrast. Marriages among the young are reduced in prevalence only with very close proximity to an urban area, but there is a distinct gradient for the percentage marrying late and for the timing of marriage overall.

Census data for local areas in 1939 and 1970 provide further evidence of this phenomenon (Smith 1975b). Where I_m for the country as a whole declined by 12.9 percent over the period (from .705 to .614), declines for the City of Manila, chartered cities, and provincial capitals were greater at 29.9, 15.7, and 13.6 percent, respectively, in each case starting from a point significantly below the national level in 1939.

The same processes that have been shown to influence nuptiality also have a bearing on patterns of marital fertility, as we will see in the following section. It will also be useful to separate systematically the effects of urbanization and education on marriage patterns and marital fertility.

FERTILITY

Estimates of fertility during the first 70 years of the twentieth century have been based on a variety of demographic data sources and techniques. All indications point to a level in excess of 50 births per thousand at the turn of the century (Smith 1975c), declining to the mid-40s by 1960 (Lorimer 1966) and to nearly 40 per thousand by 1970 (Table 6).

But despite these declines in the crude birth rate, total marital fertility is still extremely high (Table 7) and shows little or no evidence of decline at the national level. That there is some fertility control, concentrated in selected sectors of the population, is indicated by the clear gradient in total marital fertility, which is lowest among metropolitan women, higher in other urban areas, and highest among rural women. The differential between metropolitan and rural residents in

TABLE 6 Decomposition of fertility differences across metropolitan, other urban, and rural sectors: Philippines, 1968–1972

Item	Age group 15–19	20–24	25–29	30–34	35–39	40–44	45–49	All ages
Age-specific fertility rates, Philippines	56	227	302	272	199	100	22	na
Contribution to crude birth rate								
Philippines	3.0	11.1	12.0	8.4	5.0	2.0	0.4	41.9
Metropolitan	1.2	11.2	11.1	7.5	3.5	1.7	0.2	36.3
Other urban	1.7	9.6	10.9	7.7	3.9	1.4	0.3	35.4
Rural	3.7	11.8	11.6	8.7	5.6	2.2	0.5	44.1
Percentage distribution of differential by source								
Metropolitan								
Age structure	−33.6	3,751.7	−247.9	−171.6	−26.5	−49.6	0.7	−166.5
Marriage pattern	123.4	−4,102.5	235.0	79.4	7.5	12.5	1.1	176.0
Marital fertility	10.2	350.8	112.9	192.3	119.0	137.0	98.2	90.5
All sources[a]	100.0	100.0	100.0	100.1	100.0	99.9	100.0	100.0
Other urban								
Age structure	−26.8	−91.6	−94.0	−92.1	−14.5	−113.7	−1.8	−81.6
Marriage pattern	126.4	202.9	119.1	99.5	14.6	135.6	13.1	156.0
Marital fertility	0.4	−11.3	74.9	92.6	99.9	78.1	88.7	25.6
All sources	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rural								
Age structure	−45.3	−166.2	−139.7	−144.4	−22.2	−27.9	0.0	−90.5
Marriage pattern	143.1	274.0	148.3	124.5	17.2	23.9	37.3	135.7
Marital fertility	2.2	−7.8	91.4	119.9	105.0	104.0	62.7	54.7
All sources[a]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9

na—not applicable.

a Totals may not sum to 100 because of rounding.

SOURCE: Table A6.

TABLE 7 Total marital fertility rates for women by geographic area of residence: Philippines, five-year periods from 1958 to 1972

Geographic area	1958–1962	1963–1967	1968–1972
Philippines	9.56	9.67	9.63
Metropolitan	9.15	8.92	8.51
Other urban	9.14	9.55	9.08
Rural	9.74	9.86	9.96
Luzon	9.43	9.69	9.26
Visayas	9.49	9.59	9.97
Mindanao	10.14	10.12	10.44

SOURCE: 1973 National Demographic Survey.

1968–1972 is 17 percent. There is also a clear differential as we move south across broad regions from Luzon to the Visayas to Mindanao. Total marital fertility rises from 9.3 children in Luzon to 10.4 children in Mindanao, a difference of 13 percent. As we will note in a subsequent section, this differential across broad regions is consistent with regional differences in level of development and urban-rural composition.

The three quinquennia shown in Table 7 provide some indication of recent changes in total marital fertility. Clear evidence of decline is found only in the urban sector (metropolitan and other urban); data for the rural sector indicate that total marital fertility there has been rising. Similar data for the broad regions indicate that decline is evident only on the island of Luzon.

In sharp contrast to this picture of steady or rising *marital* fertility in all but a few isolated sectors of the population, total fertility rates for all women have declined sharply at the national level in the recent past: from 6.5, to 6.3, to 5.9 over the three periods shown (unpublished 1973 NDS data). This trend in the total fertility rate reflects the widespread delay of marriage outlined in the preceding section, whereas the total marital fertility rates reflect only changes in marital fertility.

Recent age-specific patterns of both overall and marital fertility are shown in Figures 5 and 6 (see also Table A6). Data presented for urban-rural residence categories (Figure 5), as well as for levels of educational attainment (Figure 6), indicate that marital fertility differences by age are very small for these social sectors. Differences in age-

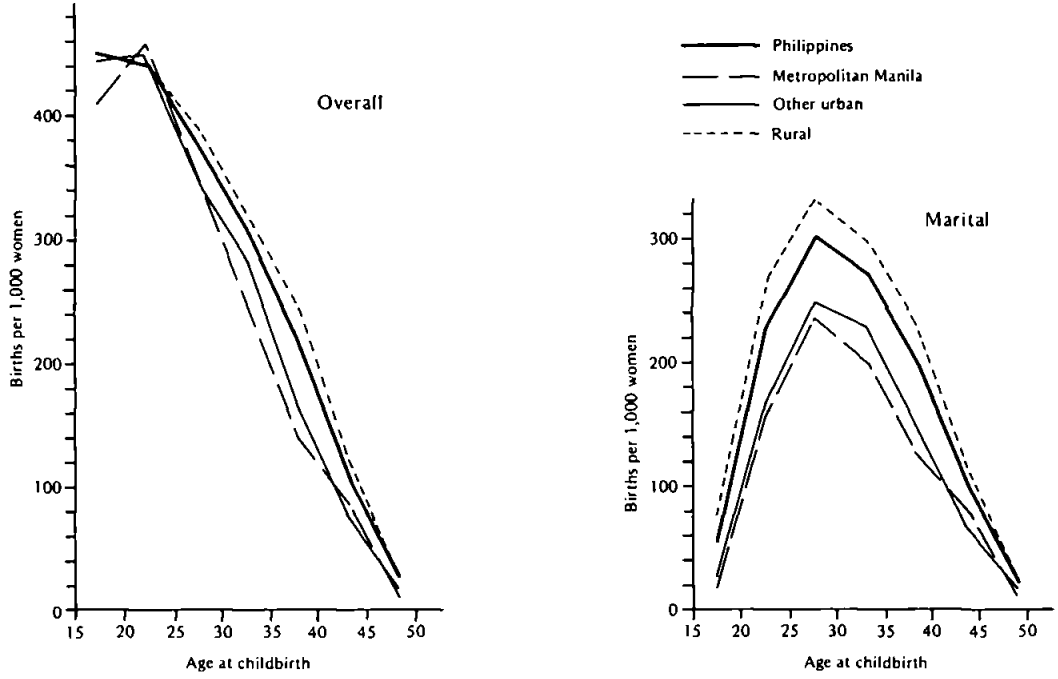
specific fertility rates are greater and are more consistent across the age groups. The exceptions to this statement relate to women with primary education, whose early fertility is exceptionally high, and women with no schooling, whose fertility in the later years is relatively low. Considering age-specific fertility rates, there is a distinct age-by-age threshold between rural women and those in the urban sectors, and between high school-educated women and all others.

These sectoral differentials in age-specific and total fertility reflect both marital-status and age-structure differentials across sectors in addition to differences in levels of marital fertility. It is instructive to separate these effects for purposes of detailed analysis. This decomposition is presented in Table 6.

When estimated age-specific fertility rates for the 1968–1972 period are applied to the census population of May 1970 (roughly the midpoint of the five-year interval), estimates of sector-specific crude birth rates are obtained. As the table indicates, the 1970 Philippine crude birth rate estimated in this manner is 41.9 births per thousand, while the corresponding rates for metropolitan and rural areas are 36.3 and 44.1 births per thousand, respectively. The metropolitan-rural difference of 8.5 births per thousand is nearly one-fourth the metropolitan birth rate. Age-specific contributions to these crude birth rates, also recorded in Table 6, indicate that in all sectors more than one-half of the crude birth rate was contributed by births to women in their 20s. Close to one-third of each crude birth rate represents births contributed by women in their 30s.

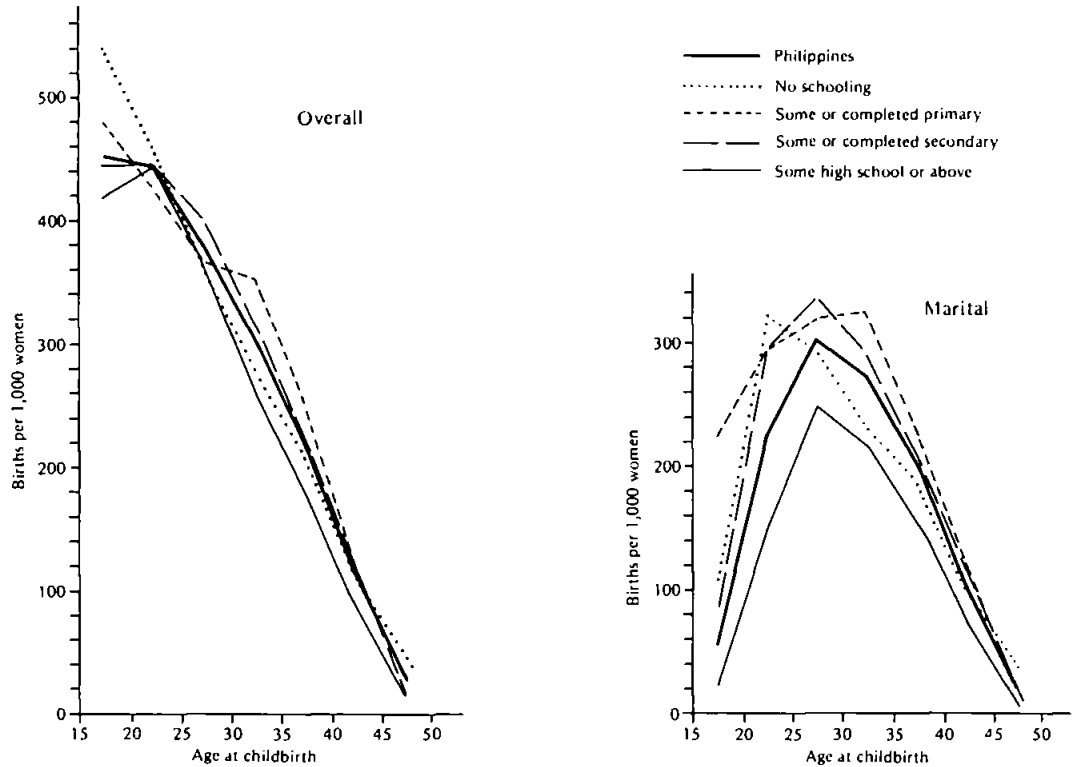
The lower panel of Table 6 records the decomposition of fertility differences across metropolitan, other urban, and rural sectors into percentages due to each of three sources: age structure, marriage pattern, and marital fertility. Since these three sources are exhaustive, and their effects additive, all observed differences are taken into account. A positive percentage indicates a source of the observed difference between sectoral and national fertility levels, while a negative percentage indicates that the source had the effect of reducing sector-national level differences. All age-structure percentages are negative, indicating that in those sectors where fertility is high (e.g., rural) age-structure differences have had the effect of reducing fertility, whereas where fertility is low (e.g., metropolitan) age structure has had the effect of raising fertility. The important implication of this is that observed intersectoral differences in fertility would have been even greater were it not for sectoral differences in age composition. On the other hand, most marriage-pattern contributions are positive, indicating a general

FIGURE 5 Age-specific fertility rates, overall and marital, among Philippine women by residence: average over 1968–1972



SOURCE: Table A6.

FIGURE 6 Age-specific fertility rates, overall and marital, among Philippine women by educational level: average over 1968–1972



SOURCE: Table A6.

coincidence of high marital fertility rates and high percentages married across sectors.

The effect of differences in marital status across sectors can be measured by standardizing age-specific fertility rates on marital-status composition. This standardization is carried out by weighting each sectoral age-specific fertility rate listed in Table A6 with the proportion reported married at each age in the total population. The resulting standardized total fertility rates are compared with the observed total fertility rates for each sector below:

	Total fertility rate	
Sector	Observed	Standardized
Metropolitan	4.08	4.99
Other urban	4.52	5.28
Rural	6.66	6.22
Philippines	5.89	5.89

The unstandardized total fertility rates for metropolitan and rural areas differ by 2.6 children. By the process of standardization just described this difference is reduced to 1.2 children; more than one-half the original difference can be attributed to differences in marriage pattern between these two sectors.

During the past several decades the mean educational attainment of the population, especially the female population, has risen dramatically. Along with this increasing educational level, variations in educational attainment have also increased over all segments of the population, thus making educational achievement an important dimension of the social structure. Number of years of schooling completed correlates highly with a series of other indicators of social and economic status. These factors are important determinants of fertility behavior and contribute to educational differentials in marriage and reproduction.

As is evident in Figure 5, the overall pattern revealed by total fertility rates according to educational attainment is curvilinear: rates rise with primary education but subside with each higher level of educational attainment beyond the primary. The difference in completed family size between the primary and high school levels is 3.3 children, more than 40 percent of the primary level rate. The high total fertility rate for women with primary schooling as compared with those unschooled proves to be due to differences in age at marriage. At ages

15–19 only 20 percent of those women with no schooling were married in comparison with the 46 percent of women in their late teens with primary education who were married.

Thus far we have noted widespread and substantial differences in overall fertility but much smaller differences in marital fertility, focused in specific sectors of the population. The pattern of differences in marital fertility suggests the possibility that deliberate birth control, though not widespread in the population, has become common in at least some sectors. Data from the 1973 National Demographic Survey allow us to estimate the extent of birth control practice in selected sectors of the population. The method employed is an indirect one (Coale and Trussell 1974) that infers birth control practice from the age pattern of marital fertility.

Coale and Trussell's indexes of fertility level (M) and level of fertility control (m) are shown in Table 8. Estimates have been obtained for the urban and rural sectors and for each of the three most recent quinquennia. The index of fertility level (which is assessed in this model by the marital fertility rate at ages 20–24) rises over the three quinquennia and is slightly higher in the urban sector than in the rural. Levels of birth control practice, estimated from the age pattern of fertility in subsequent age groups, is not high, but reaches significant

TABLE 8 Indexes of fertility level (M) and fertility control (m): urban, rural, and total Philippines in recent quinquinnia

Area and period	Index of fertility level (M)	Index of fertility control (m)	
		Ages 20–34[a]	Ages 35–49[a]
Philippines			
1958–1962	.93	.08	.01
1963–1967	.94	.10	.06
1968–1972	.96	.14	.05
Urban			
1958–1962	.96	.14	.07
1963–1967	.94	.14	.12
1968–1972	.98	.25	.20
Rural			
1958–1962	.92	.04	.00
1963–1967	.95	.07	.06
1968–1972	.96	.10	.05

a Average of indexes computed for five-year age groups.

SOURCE: Computed from data in Table A6.

levels in the urban sector, particularly in the most recent quinquennium.[14] The highest degree of birth control practice according to this index is generally found at ages under 35, a result that is consistent with the age pattern of acceptors in the national family planning program.[15]

Perhaps the most important result in Table 8 is the indication that birth control levels are relatively low, even when we focus upon the urban sector in the very recent past. But we should bear in mind that these NDS data describe the 1968–1972 period, whereas the national family planning program came into existence in 1970 and was not operating in the field nationwide until 1972. In the following section we consider some additional information on family planning in the Philippines and some further evidence of its possible impact.

FAMILY PLANNING

Family planning in the Philippines was first promoted by Protestant missionaries in the 1920s. A family planning program, however, did not begin until the 1960s, when several clinics were established in the Manila metropolitan area. During the late 1960s the Manila City Health Department quietly introduced family planning in seven health centers spread throughout the city. These "prepregnancy" clinics quickly grew in number until all 40 health centers in Manila were involved.

Although the private sector initiated the family planning movement, the Philippine government's commitment, expressed in 1970 through an Executive Order, accelerated the expansion and growth of the movement. At the same time a Commission on Population (POPCOM) was empowered to coordinate and direct the population program as an integral part of the national development strategy. Republic Act 6365, known as the Population Act, was signed into law by the Philippine president on 15 August 1971. Subsequent revisions authorized the POPCOM to distribute contraceptives through commercial channels and paramedical personnel, and recognized the private sector's role in the formulation and implementation of population policies by granting it representation on the Commission.

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14 For levels of M and m in a series of Asian populations see Knodel (1976: table 1).

15 The median age at acceptance of respondents in the 1972 National Acceptor Survey was 30.4, some two years younger than the median age of the target population (Laing 1973). Three-fourths of the acceptors were under age 35 at the time of acceptance.

Operating from a broad multisectoral base, the national population program today has four major areas of activity: (1) delivery of family planning services through clinics situated all over the country; (2) training; (3) information, education, and communication; and (4) research and evaluation.

From a handful of clinics offering family planning services in the mid-1960s, the number of POPCOM-assisted clinics increased to 2,593 in mid-1975. This growth in the number of clinics was matched by the trend in reported new acceptors. Only 2,288 acceptors had been recorded by the few operating family planning clinics in 1965, but in 1967 there were 23,470 new clients reported. From 1968 to 1975 the number of new acceptors continued to expand considerably:

Year	Number of acceptors (in thousands)
1968	42.8
1969	85.2
1970	191.7
1971	285.2
1972	621.8
1973	721.3
1974	733.1
1975	740.0
1976	643.3

During 1974, however, the average number of monthly acceptors stabilized at some 60,000, and clinic performance figures indicate a poorer monthly acceptor average per clinic in 1974 than in 1973 (29 acceptors in 1974 as against 33 in 1973). In 1976 there was an absolute decline in the number of new acceptors. Thus, the program appears to have reached a temporary peak.

In the seven years since the national population program was officially established, participating clinics report their cumulative number of acceptors to have reached 3.9 million. About 30 percent of these reported cases must be discounted for various reasons (double-counting, fraudulent record-keeping, and so on), so that only 2.7 million can be counted as true acceptors.

Today the program is attempting both to intensify its activity in rural towns and villages and to diversify its approaches to delivery of services. These program efforts are expected to produce major changes in the knowledge of, attitudes toward, and practice of family planning (KAP).

Much of the information available to assess the impact of the program comes from the 1968 and 1973 National Demographic Surveys. The 1968 NDS provides a picture of people's attitudes toward and practice of family planning at a time when activity in this field had just started; the 1973 NDS portrays the situation at just about the end of the rapid-growth phase of the program. Data from these two surveys will be presented in the following paragraphs to indicate what effects the national population program may have had on the KAP of married women of reproductive age.

Family planning knowledge

There is no doubt that knowledge of specific family planning methods increased significantly during the period between these surveys (Table 9). The greatest increase, more than fourfold, was in recognition of the IUD. Awareness of pills and condoms rose by nearly 100 percent. In 1968 the method least known was the IUD, whereas in 1973 it was the second best known method. By 1973, four out of every five married women of reproductive age had heard about oral contraceptives and two out of three of them had heard of the IUD. Since the national program is the single largest provider of pills and IUDs it is almost certain that the program was the key factor in heightening public awareness of these methods.

TABLE 9 Knowledge and use of selected contraceptive methods: Philippines, 1968 and 1973

	Percentage of currently married women aged 15–44				
Indicator and year	Any method	Pill	IUD	Rhythm	Condom
Recognize method					
1968	63.1	43.5	15.5	38.6	23.3
1973	87.3	82.9	67.8	51.8	43.5
Know how to use method					
1968	36.4	16.7	4.7	19.1	8.1
1973	50.7	38.7	24.7	22.3	17.8
Have used method					
1968	18.7	3.5	1.2	8.9	1.2
1973	28.0	14.2	4.3	7.5	2.4
Currently using method					
1968	15.5	1.3	0.9	5.5	1.6[a]
1973	17.3	6.9	2.6	3.9	0.8

a Included with other methods such as withdrawal, foam, ligation, and vasectomy.

SOURCES: 1968 and 1973 National Demographic Surveys.

TABLE 10. Indexes of changes in childbearing attitudes, knowledge and use of family planning, and program influence, by geographic sector: Philippines, 1968 and 1973

Indicator and year	Percentage of currently married women aged 15–44			
	Philippines	Manila	Other urban	Rural
Attitudes toward childbearing				
Desire a family size[a] under five				
May 1968	39.0	54.7	44.7	35.0
May 1973	64.0	81.3	70.7	59.7
Expect a family size[a] under five				
May 1968	31.0	47.6	35.6	29.9
May 1973	62.4	78.1	69.8	37.0
Knowledge and use of family planning				
Recognize a method				
May 1968	63.1	84.0	69.5	58.0
May 1973	87.3	95.5	93.7	84.3
Know how to use a method				
May 1968	36.4	55.6	39.1	32.7
May 1973	50.7	69.7	65.7	43.8
Have used a method				
May 1968	18.7	26.5	19.5	17.3
May 1973	28.0	44.8	42.9	21.3
Currently using a method				
May 1968	15.5	20.6	16.3	14.5
May 1973	17.4	27.6	27.9	12.9
Extent of program's influence by May 1973				
Know of a family planning clinic	58.0	66.1	74.2	52.0
Currently using a clinic method[b]	63.4	62.7	67.6	61.3

a Family size is number of children in completed family.

b Among currently married women aged 15–44 ever accepting from a clinic.

SOURCES: 1968 and 1973 National Demographic Surveys.

A similar pattern was evident with regard to knowledge about how methods are used. By 1973 nearly two of five married women 15–44 years of age stated that they knew how to use the pills. One-fourth revealed they knew how the IUD was used.

In general, the greatest increases in recognition of any one method occurred among rural wives in the childbearing ages (Table 10) followed by those residing in urban places other than metropolitan Ma-

nila (26 and 24 percentage points, respectively). Knowledge of use of a family planning method, on the other hand, improved greatly between surveys for other urban areas (27 percentage points). Manila respondents ranked second with an increase of 14 points.

Recognition and knowledge of contraceptive use is clearly associated with level of education (Table 11). As wives move up the educational ladder their ability to recognize and their knowledge of how to use a family planning method increase significantly. In 1968 close to four-fifths (38 percent) of unschooled respondents recognized a method although less than one-fifth (19 percent) knew how to use one. But 90 percent of wives with college degrees in 1968 recognized a method and nearly two-thirds (66 percent) knew how to use a method. By 1973 slightly more than half of the unschooled married women (55 percent) stated that they knew of a method and nearly all wives with college educations recognized a method. More than three-quarters of them (77 percent) knew how to practice family planning.

Despite the fact that over nine out of ten respondents (93 percent) lived in localities that had family planning clinics, less than three-fifths of them (58 percent) knew of a clinic where they could obtain a contraceptive method. In 1973 awareness of available services was greatest among wives 15–44 years of age living in other urban localities (74 percent). About two-thirds of Manila residents knew of a family planning clinic, whereas just over a half (52 percent) of all rural residents had this knowledge.[16] It is thus apparent that the national program has not succeeded in conveying information to rural women to the same extent as to urban wives on where to obtain supplies and further information about contraceptives.

Attitudes toward family planning

In the 1968 and 1973 surveys respondents were asked the following questions:

> If you could start your married life over and have just the number you would want by the time you will be 45, how many children would you want altogether?
>
> If it were up to you, is the number of children you now have sufficient for you, would you have preferred fewer than you have now, or would you want more?

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16 The higher precentage for other urban than for Manila residents reflects the almost primary group character of other urban places, most of which are small *poblaciónes* of one or two thousand persons.

TABLE 11 Indexes of changes in childbearing attitudes, knowledge and use of family planning, and program influence, by level of wife's education: Philippines, 1968 and 1973

Indicator and year	Percentage of currently married women aged 15–44					
	Philippines	No schooling	Grades 1–4	Grades 5–7	High school (1–4 years)	College (1–4+ years)
Attitudes toward childbearing						
Desire a family size[a] under five						
May 1968	39.0	25.6	34.9	39.7	50.1	59.3
May 1973	64.0	39.4	55.3	64.3	71.5	80.7
Expect a family size[a] under five						
May 1968	31.0	21.3	25.9	30.0	41.8	55.0
May 1973	62.4	51.5	57.1	60.9	69.9	72.0
Knowledge and use of family planning						
Recognize a method						
May 1968	63.1	37.5	55.3	67.0	77.9	90.3
May 1973	87.3	54.5	82.2	89.7	93.8	98.0
Know how to use a method						
May 1968	36.4	19.0	29.2	37.7	45.7	65.5
May 1973	50.7	17.5	38.1	49.1	66.0	76.7
Have used a method						
May 1968	18.7	11.8	15.3	19.0	21.9	38.5
May 1973	28.0	5.9	17.0	25.7	41.5	49.1
Currently using a method						
May 1968	15.5	10.3	12.6	15.0	19.3	32.6
May 1973	17.4	3.5	9.9	15.7	24.2	34.8
Extent of program's influence by May 1973						
Know of a family planning clinic	58.0	17.8	44.8	59.2	71.4	82.1
Currently using a clinic method[b]	63.4	38.3	65.9	63.5	58.3	68.8

a Family size is number of children in completed family.

b Among currently married women aged 15–44 ever accepting from a clinic.

SOURCES: 1968 and 1973 National Demographic Surveys.

If the respondents preferred fewer or more children than those they had, they were asked how many they would prefer.

Between 1968 and 1973 there was a marked increase in the proportions of women desiring or expecting smaller families (Table 10). The largest relative changes (70 percent) occurred among rural women and the lowest (49 percent) among Manila residents insofar as family-size desires are concerned. Even more significant are the shifts in family-size expectations that took place among women in Manila and other urban areas. In 1973 almost double the proportion of women in other urban areas expected families with fewer than five children than did so in 1968.

More pronounced shifts toward smaller families occurred among women with no schooling or with some elementary education (Table 11). On the whole, the increases in proportions of better educated women who desired or expected smaller families between the two surveys were not so large as those obtained for women belonging to lower educational levels. Although the change cannot be wholly attributed to program effort, it is likely that the program did play a part in the shift in attitudes toward smaller family size.

Married women of reproductive age were also asked whether or not they approved of the use of contraceptive methods. Although the proportion who approved increased little over time (59 percent in 1968 to 63 percent in 1973), the fraction of respondents who disapproved of contraceptive use declined by 23 points (37 percent to 14 percent) between 1968 and 1973. Thus, opposition was reduced rather than support increased. This decline in overt disapproval can very likely be traced to program influence.

The practice of family planning

According to the 1968 survey, nearly one-fifth (19 percent) of married women in the 15–44 age group claimed to have tried at least one method of family planning. In 1973 the corresponding figure was 28 percent, although not all of these women were currently using a method. The 1973 figures point to a proportional increase of 50 percent over 1968 figures in ever-use rates (Tables 10 and 11).

When ever-use rates are broken down by method (Table 9), we note a pronounced increase in proportions who tried highly effective methods. Between 1968 and 1973 the proportion who used pills increased fourfold, those who used the IUD rose almost to the same extent, while condom usage doubled. Rates of rhythm use seem to have declined during this period.

Ever-use rates showed significant increases in the urban areas, both in Manila and outside this major city (Table 10). But the increase in proportions of rural women having used a method between survey periods was only about 23 percent. Viewed against educational levels (Table 11), changes in proportions of ever-users were small for unschooled women and those who had not gone beyond elementary school. Higher education, however, brought about large gains in the numbers reporting previous use of contraception by 1973.

In 1968 nearly one-sixth (15.5 percent) of the respondents reported that they were currently using a family planning method. Five years later the proportion had increased to 17.4 percent, an increment of only 1.9 percentage points. The largest percentage increase in current users was reported by women in other urban areas (71 percent), while Manila's current users recorded a gain of about 34 percent. What is noteworthy is the *drop* in current-use rates in rural areas (12 percent). The data indicate unsuccessful rural outreach by the program. Even more significant is the finding that current-use rates among women who had no schooling or who had reached primary school had dropped considerably by 1973. The gains reported by better educated users were not substantial, thus providing support for the contention that the program was not even reaching the groups who would have been highly motivated to practice family planning.

Nevertheless, there was one advantage for the current users reported in 1973; on the average, they were practicing more efficient methods than users in 1968. Four out of ten current users in 1973 were taking pills as compared with only 8 percent in 1968. The number of IUD users had risen by 156 percent in the interval between surveys. By way of contrast, use of all other methods declined.

On balance, the findings from the 1968 and 1973 surveys indicate that the early years of the program affected knowledge of highly effective methods, attitudes toward family size and contraception, and contraceptive use, particularly of pills; but none of these effects was substantial. The median number of children desired in 1973 was still about four, about twice that required for replacement. Only three out of five married women of reproductive age unconditionally approved of contraception, although it can be said that disapproval declined significantly during the period. Nearly three-quarters (72 percent) of the respondents revealed that they had not yet tried any contraceptive method, and only one-sixth (18 percent) stated that they were currently using a method at the time of interview. Only one-tenth of the wives were using the more effective methods, pills and the IUD.

The extent of the program's influence by 1973 was better seen in the urban sector, where two-thirds to three-fourths of respondents knew of a family planning clinic. The effect of program clinics on current practice varied slightly among places of residence.

A positive association existed between educational level and knowledge of a family planning clinic. Spectacular increases in knowledge were recorded for women with primary education compared with those wives who had not gone to school. Current use of a clinic method nearly doubled among married women with college education compared with unschooled wives. These findings illustrate the strong bias of the national program—thus far, at least—toward urban women and those with higher socioeconomic levels. This result is not surprising, since the population program is built upon the infrastructure of the nation's health care system, in which the same biases are evident (see our discussion of mortality above).

INTERNATIONAL MOVEMENT

The Philippines is one of a small number of developing societies for which international migration is a significant social-demographic phenomenon. The reasons are that outmigration historically has been linked to important internal population adjustments; the recent international flow has involved large numbers of skilled professionals; and the century-long international exodus has created large permanent communities of Filipinos abroad, especially in the United States, where in 1970 they numbered 382 thousand (Smith 1976b).

It is estimated that more than 100 thousand persons, nearly all young men, migrated to work in the fields of California and Hawaii during the 1920s (Lasker 1969:347). After the passage of the Immigration Law of 1924 the legal status of the Philippines encouraged American use of Philippine citizens as cheap labor to replace the no longer available Japanese. Subsequent migration was more evenly balanced between men and women, and though small in magnitude formed the basis for permanent Filipino settlements on the West Coast of the United States and in Hawaii. The stream showed little growth, however, until the postwar, post-independence period when U.S. Filipinos endeavored to sponsor relatives from the Philippines. During the 1950s the flow remained small, only to expand dramatically again after the passage in 1965 of a new and more liberal (from the standpoint of Asians) immigration law. Moreover, this new wave of migrants has consisted mostly of unrelated individuals entering on

the basis of their occupational skills (Table 12). The percentage of annual migrants with professional or managerial occupations rose in the period before 1974 from 45 to 70 and has recently numbered close to 10,000 per year. In the case of the medical professions in particular, these outflows represent a significant fraction of the country's annual production.

INTERNAL MIGRATION

In a number of significant ways, the patterns of international movement just noted parallel the history of Philippine internal migration. There was the same rural-origin, male-dominant, and land-seeking character to the early internal streams; the same shift over time (and especially in the period since independence) to migrants with relatively high socioeconomic status and urban background; and finally, the same shift to female-dominated urbanward flows in the postwar period. In this section and the next on urbanization we offer an overview of internal migration and its links to other societal changes in the course of this century.

Perhaps because of the variegated character of the island ecosystem and the great cultural diversity within the nation, and perhaps also because the archipelago was settled so recently, the population of the Philippines at the beginning of this century was remarkably uneven in its distribution over the landscape. Densities in some rural areas exceeded five persons per agricultural hectare (for example, on Cebu and Bohol islands) at a time when other parts of the nation were underpopulated in relative or even absolute terms (e.g., much of the Frontier Tagalog area and the Cagayan Valley, where similar densities were below 1.5 persons per farm hectare). The size of the average farm was 1.5 hectares or less in Cebu and Bohol but 4.0 hectares or greater in the frontier areas of Cagayan and Mindanao. This very uneven distribution of people and economic opportunities, and the distances between areas of over- and under-settlement, have given rise to what is probably the most outstanding feature of Philippine migration: its predominantly long-distance character. Much larger numbers have migrated from Negros Oriental by steamer to Mindanao than have moved by land to Negros Occidental on the other side of the same island. And more rural Cebuanos have moved the 600 kilometers to Manila than have migrated to nearby Cebu City.

The significant impact of long-term, long-distance redistribution on

TABLE 12 Filipino immigration to the United States by occupation

Major occupation	1963	1964	1965
Number			
All migrants	3,618	3,006	3,130
Migrants with an occupation[a]	1,027	688	773
Professional, technical, and managerial personnel[b]	661	296	347
Clerical and sales personnel	101	85	104
Craftsmen, foremen, operatives	80	66	75
Service workers, including private household employees	147	171	173
Laborers, including farm	38	70	74
Percentage			
Migrants with an occupation[a]	100.0	100.0	100.0
Professional, technical, and managerial personnel[b]	64.4	43.0	44.9
Clerical and sales personnel	9.8	12.4	13.5
Craftsmen, foremen, operatives	7.8	9.6	9.7
Service workers, including private household employees	14.3	24.9	22.4
Laborers, including farm	3.7	10.2	9.6

a Excludes housewives, children, and others without an occupation.

b Includes farmers and farm managers.

SOURCE: United States, Immigration and Naturalization Service (1963–1972: table 8).

the landscape is plain when we examine indexes of dissimilarity between land area and population:[17]

1903	1939	1960	1970
46.4	40.8	34.2	32.0

In 1903 nearly half of the population would have to have been displaced across provincial borders in order to achieve an even distribution of land and people. By the 1960s this figure had been reduced to one-third.

The principal mechanism by far in this redistribution has been interregional transfers by rural residents of oversettled areas to open frontiers in distant provinces. As the matrix of lifetime interregional flows

17 These indexes indicate the percentage of the total population on each date that would have to be moved to different areas in order to create an equal distribution of people and land area. The areal units in this calculation are the provinces as they were defined in 1903 (N=45).

before migration: 1963–1974

1966	1967	1968	1969	1970	1971	1972	1973	1974
6,093	10,865	16,731	20,744	31,203	28,471	29,376	30,799	32,857
2,215	4,829	8,180	10,229	14,252	12,648	13,158	12,907	12,243
1,150	3,034	5,618	7,682	10,124	9,607	9,435	9,209	7,305
242	333	462	628	989	951	1,188	1,274	1,409
210	383	533	454	901	533	627	646	924
324	542	749	562	994	1,067	1,300	1,226	1,830
289	538	818	903	1,244	490	608	552	775
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
51.9	62.8	68.7	75.1	71.0	76.0	71.7	71.3	59.7
10.9	6.9	5.6	6.1	6.9	7.5	9.0	9.9	11.5
9.5	7.9	6.5	4.4	6.3	4.2	4.8	5.0	7.5
14.6	11.2	9.2	5.5	7.0	8.4	9.9	9.5	14.9
13.0	11.1	10.0	8.8	8.7	3.9	4.6	4.3	6.3

in Table 13 indicates, a substantial 13.5 percent of the 1970 population of all ages was living away from the region of birth. Just a few streams account for the largest part of the total migration. Of the 4.9 million interregional migrants nearly half are accounted for by three major flows: the southward movement of Visayans to Mindanao (28.9 percent of the total); the northward flow of Visayans to the Manila metropolitan area (10.6 percent); and the relatively short-distance flow of Tagalogs out of crowded Central Luzon to more open areas to the north and east (9.4 percent).

Two of these are frontier streams. A third frontier stream is the smaller but highly significant flow of Ilocanos southward and eastward to open land in the Cagayan Valley and the northern end of Central Luzon. Earlier we noted the impact that this flow has had on marriage patterns among Ilocanos at both ends of the migration. Together these three major frontier movements account for 44 percent of all lifetime interregional migrants in 1970.

On the other hand, migration to the national metropolis is also sig-

TABLE 13 Net lifetime migration (in thousands) between regions:

Area of birth	Area of 1970 enumeration			
	All areas	I	II	III
I Ilocos	1,885	**1,521**	86	56
II Cagayan	1,575	14	**1,476**	14
III Central Luzon	5,547	37	108	**4,789**
IV Southern Tagalog	5,739	7	6	65
V Bicol	3,202	3	3	28
VI Western Visayas	4,196	2	2	21
VII Central Visayas	3,941	2	1	14
VIII Eastern Visayas	2,806	2	2	29
IX Western Mindanao	1,591	*	*	2
X Northern Mindanao	2,687	1	*	3
XI Southern Mindanao	2,161	1	1	3
XII Manila	1,186	10	6	61
All areas	36,515	1,598	1,690	5,084

NOTE: Rows and columns do not tally because of rounding. Roman numerals refer to cen-

* Fewer than 500 migrants.

SOURCE: Unpublished 1970 census tabulations.

nificant; 47 percent of the total lifetime flow involves in some way the Manila metropolitan area. One interregional migrant in ten moved to the City of Manila, while one in three migrated to somewhere in the metropolitan area as a whole. The remainder of the movement is taken up by migration out of the metropolitan area (6.5 percent) and between Manila and its suburbs (8.0 percent, of which 4.1 percent is the net suburban flow).

In an archipelagic and ethnically diverse nation the importance of this long-distance movement for culture contact and national integration (or as a test thereof) cannot be overstressed. Among all interregional migrants only four of ten moved *within* the three broad zones defined on linguistic and cultural grounds earlier (Luzon, Visayas, and Mindanao), and these were largely Tagalogs moving to other regions within Luzon. Among migrants out of the three Visayan regions fully nine of ten left that zone entirely. Moreover, 1970 census data on *interprovincial* migration indicate that of 6.5 million lifetime migrants so defined, 75 percent changed their region of residence as well, generally traveling by sea to other islands to do so. Even when we consider *intermunicipal* lifetime migrants, numbering 9.1 million in the

Philippines, 1970

IV	V	VI	VII	VIII	IX	X	XI	XII
118	4	1	2	1	4	10	36	47
41	1	1	1	*	1	5	5	16
353	10	4	4	2	8	15	67	152
5,481	39	9	6	4	4	10	14	95
247	**2,827**	5	5	6	3	6	10	59
150	9	**3,506**	43	4	52	61	295	52
75	34	56	**2,885**	37	155	287	370	25
155	15	5	33	**2,300**	22	77	102	65
13	*	1	8	1	**1,512**	24	26	3
17	2	3	19	6	93	**2,482**	55	5
11	1	6	11	4	9	29	**2,082**	4
299	21	13	9	13	3	8	11	**732**
6,959	2,963	3,612	3,026	2,379	1,866	3,013	3,072	1,254

sus regions.

1970 Census, over 70 percent had moved to another province and over 50 percent to another region.

The broad frontier and urbanward patterns just noted completely dominate the interregional matrix of flows, with only 9 percent of interregional migrants representing other kinds of stream. They have been significant enough to capture the imaginations of contemporary writers and filmmakers, as well as the population at large. Many a Tagalog film involves the tragic experiences of a young man or woman gone to Manila for a job or an education. Others portray the traits of the frontier: boundless opportunity, and lawless exploitation thereof.

While both kinds of stream have been significant to the society and to the individuals and families involved, they have entailed contrasting kinds of individual and family-level decisions and consequences. This is evident from the different compositions of the two major flows. Most of the frontier migrants early in the century were male, single, and young. They moved in search of land with which to support families. The later stages of the frontier flow have tended to involve whole families, as well as brides to the pioneering generation.

In sharp contrast, the urbanward stream is a response to opportuni-

TABLE 14 Migration between and within more and less developed

Type of migration and area at end of period	Population (in thousands)	Rate of migration[a] In	Out	Net
Lifetime migration in 1960				
Less developed	10,593	4.4	15.0	−10.6
More developed	16,443	14.1	7.9	6.2
Migration during 1960–1970				
Less developed	10,598	3.8	9.2	−5.4
More developed	21,284	10.1	7.4	2.7

a Percentage of average population during 1960–1970 period; for lifetime migration, per-

SOURCE: Unpublished 1970 census tabulations.

ties of a different kind: for jobs in the urban areas, and for education. We discuss the character of the urbanward migration in more detail below, but it is worthwhile here to emphasize the principal difference in demographic composition between frontier and metropolitan migrants, their sex ratios. While the movement to the frontiers has been dominated by men, that to the metropolitan area has largely involved women. This phenomenon is evident even in the following data for lifetime migrants of all ages combined.[18]

Migration stream	Sex ratio
Frontier	
Visayas to Mindanao	1,070
Central Luzon to neighboring islands	1,031
Ilocos to Cagayan Valley	1,034
Metropolitan	
From the Visayas	690
From all other sources	821

We have attempted thus far to describe the broad, century-long experience; but what has the pattern been more recently? There are a number of reasons to expect migration patterns to have changed in the course of time. For one, population growth was more rapid by the 1960s, at 3 percent per annum, than it had been earlier in the century when the major frontier migrations were in progress. This more rapid growth, together with rural densities some four times their levels in

18 These are unweighted averages of sex ratios within regional streams. The pattern is most pronounced in the young adult age groups (unpublished 1970 census tabulations, Population Institute, University of the Philippines).

areas of the Philippines: lifetime in 1960, and during the 1960s

Number of migrants (in thousands)				Percentage of out migrants
In	Out	Net	Within region	transferring to contrasting area
413	1,589	−1,176	161	89.9
2,475	1,299	1,176	1,047	19.4
406	975	−568	83	91.5
2,143	1,575	568	1,033	34.4

centage of those born in the region.

1903, provides an impetus for continued or expanded outmigration. On the other hand, the national frontiers now have largely been populated to capacity. Farm sizes and intensities of land use are rapidly approaching the levels in the principal areas of origin.

The consequences of this maturing of the traditional frontiers for interregional migration patterns are readily summarized from available data: there has been a decline in the significance of long-distance, interregional transfers; an increase in the magnitude of counterstreams as areas of origin and destination have developed permanent social and economic ties; a substantial rise in urbanward migration, especially in more heavily urbanized Luzon; and, with this, a rise in female migration as a component of the total.[19] On balance, migration in the 1960s was far more complex, multi-directional, and variously motivated than before.

Beneath the complex mosaic of these patterns, however, is one motivational constant: the underlying hope of all migrants to make a move that will eventually enhance life chances for themselves and their kin. The significance of this motivation is seen in the pattern of net transfers between more and less developed regions in the pre- and post-1960 periods (Table 14).[20]

In the period prior to 1960, nine of ten lifetime migrants leaving a less developed region moved to a region of greater development, while

19 Some discussion of total flows and sex ratios is provided by Research Notes 31 and 32 of the Population Institute, University of the Philippines; our comments on urban-rural patterns are drawn from unpublished 1970 census tabulations.

20 The delineation into more and less developed regions used here is taken from Zachariah and Pernia (1975), who used the criterion of annual family income.

only one in ten moved to another of the poorer regions. Movers leaving a more developed region, on the other hand, strongly tended to move to another more developed region (eight of ten did so). In the 1960s this pattern of transfer from poor region to rich continued, but there has also been a growing tendency for migrants from the more developed regions to move to the poorer areas as well as to other more developed regions. In general, by the 1960s there was more circulation among the more developed regions; and people leaving the more developed regions were electing a wide variety of destinations, including not only other developed regions but the relatively backward areas as well. In contrast, movement out of the poorer regions had become more one-directional than ever—toward areas of apparent opportunity. The difference may well reflect a greater ability on the part of movers out of the developed areas to learn about, evaluate, and act upon specific opportunities in distant places.

Urban growth in developed regions clearly has much to do with the attractiveness of these regions for migrants. Census data (not shown here) on rural versus urban destinations of lifetime migrants to and from more and less developed regions indicate that migrants among the more developed regions largely have urban destinations, whereas migrants from one less developed region to another typically move to a rural destination. Migrants from one type of area to another are more evenly divided.

URBANIZATION

It is evident from the data reviewed above that much of the nation's migration behavior is a response to two contrasting stimuli: the classic attraction of empty land on the frontiers, and the newer attraction of diverse opportunities, real or perceived, in growing urban centers. The urbanization process that is in part fed by the latter migration is described in the following section.

The earliest form of Philippine urbanization was *reducción*, the Spanish program to force the native population "under the bells" in both spiritual and spatial terms. Confronted with the sixteenth century mode of settlement in dispersed clusters of population close to agricultural plots, *reducción* was essential to the Spanish if they were to have any kind of control over the indigenous population. Their efforts were only partly successful, however (Reed 1968). Thus, the counterposition of two forces—the Spanish need for nucleated settlement, and the desire of the Filipinos to remain dispersed and close to their source of livelihood—led to the settlement compromise that pre-

vailed at the turn of the twentieth century. At that time there were nearly a thousand nucleated *pueblos*, or towns, most of them containing fewer than 2,000 people and each surrounded at several kilometers' distance by perhaps 15 smaller *barrios* (villages) of 100 or so families. Apart from Manila itself, the largest towns were merely *pueblos* of significant size, still predominantly agricultural in character. The largest, Laoag and Iloilo, contained no more than 20,000 persons. Manila, the only genuine urban center, was at this time a city of just over 200 thousand, surrounded by a dozen or so substantial settlements.

Urban growth in the twentieth century has followed a course influenced heavily by American colonial policies favoring export agriculture over industrial growth, and at the same time encouraging the location of urban investments in the small area encompassed by the Manila metropolitan region (International Labor Organization 1974). The impact of these policies has been to discourage technological and social change in the rural areas and at the same time to discourage commercial and industrial growth in the small towns and cities, while feeding the expansion of the nation's primate city. Under these conditions urbanization has not been very rapid in the Philippines, though both rural-to-rural and urbanward migration have been encouraged by population growth in the relatively stagnant rural sector and by the apparent attractions of the nation's one metropolis, exaggerated by the lifestyle of its West-oriented urban middle class.

These have been the principal forces underlying urban growth. To explore the resulting patterns of urban change in detail we examine two kinds of data: first, a reconstruction of time-series census information to estimate levels and rates of urbanization over the 1903–1970 period; and second, 1973 NDS data that describe characteristics of urban and rural residents and provide information on the characteristics of rural-to-urban migrants in the pre- and post-1965 periods.[21]

The interplay between urbanization and internal migration in the Philippines remains somewhat puzzling until a critical distinction is made between *urban growth*, the absolute expansion of the urban population over time, and *urbanization* as the transformation of the population from predominantly rural to predominantly urban residence. The Philippines has recently been characterized by accelerated urban growth and growing rural-to-urban migration, but at the same time by a decelerating pace of urbanization. The source of this apparent anom-

21 Our discussion of the changing level and tempo of urbanization draws its empirical support from research by Ernesto Pernia, reported in Pernia (1976a, 1976b, 1976c).

aly is found in the expanding rate of population growth overall. Rapid population growth due to a high rate of natural increase stimulates both urban and rural growth, unless of course there are very sharp urban-rural differentials in vital rates. At the same time, the expanding contributions of natural increase to both rural and urban growth reduce, *ceteris paribus*, the influence of migration in redistributing population from the rural to the urban sector.

These relationships are seen in the following rates of total, rural, and urban growth for selected periods obtained from the basic data in Table 15:

Rate	1903–1939	1939–1960	1960–1970
Total	2.1	2.4	3.1
Urban	3.5	4.1	4.1
Rural	1.8	2.0	2.6
Urban-rural growth differential (urban/rural)	1.94	2.05	1.58

In the prewar and immediate postwar periods the rate of urban growth was roughly double the rural rate as a consequence of net migration between these sectors; rural growth did not exceed 2 percent during these periods, whereas urban growth was very rapid, exceeding 4 percent in the postwar period. These rates of urban growth, combined with the slowly rising level of urbanization before 1960, mean that the urban sector received about 30 percent of all population increase in the 1903–1939 period and somewhat over 40 percent in the 1939–1960 period.

But the high level of natural increase in the 1960s changed this picture. During that decade the ratio of urban to rural growth diminished as natural increase "flooded" both sectors. Following are the resulting shifts in the contributions of migration and natural increase to urban growth over time:

	Percentage of growth		
Cause of urban growth	1903–1939	1939–1960	1960–1970
Natural increase	60.5	53.2	59.6
Rural-to-urban migration	19.4	28.4	26.3
Reclassification	20.1	18.4	12.9

The contribution of natural increase declined proportionally with the substantial rural-to-urban migration of the postwar period, but rose

TABLE 15 Indicators of urbanization and urban growth: Philippines, 1903–1970

Indicator	1903	1918	1939	1948	1960	1970
Total population (in thousands)	7,635	10,314	16,000	19,234	27,088	36,684
Urban population (in thousands)	1,000	1,294	3,451	5,184	8,072	12,069
Percentage urban	13.1	12.6	21.6	27.0	29.8	32.9
Number of urban places	228	355	690	1,078	1,504	2,343
Average population per urban place	4,387	3,646	5,002	4,809	5,367	5,151
Number of urban clusters	6	18	73	96	155	147
Metropolitan population (in thousands)	257	371	903	1,526	2,426	3,953
Percentage metropolitan	3.4	3.6	5.6	7.9	9.0	10.8
Percentage of urban population that is metropolitan	25.7	28.7	26.2	29.4	30.1	32.8

SOURCES: Official census reports; Pernia (1975a; 1976c).

again in the 1960s. At no time does the contribution of migration to urban growth dominate that of natural increase. The latter is always important, even when rural-to-urban migration is rapid. This is especially evident when we consider that much of the urban growth due to reclassification of places occurs as a result of natural increase in these smaller areas.

Thus, urban growth has been rapid, but so has the expansion of the rural population, in both instances because of declining mortality in the absence of declining fertility. The real significance of rural-to-urban migration lies not so much in its absolute contribution to urban growth, though this has been substantial, as in the highly selective characteristics of rural-to-urban migrants. We have already seen that the majority of urbanward migrants have been female. Now we consider some additional characteristics.

In general, a strong positive selection has operated, drawing to urban areas those of high educational and occupational levels relative to those who remained behind. The force of educational opportunities in attracting young persons and especially women to urban areas is evident from the 1973 NDS data presented in Table 16. The data, which cover the period before 1965 and between 1965 and 1973, describe nonmigrants, migrants from one rural area to another, and two urbanward streams.

TABLE 16 Educational characteristics of males and females aged 15 and over by migrant status, type of migration stream, and period of migration: Philippines, birth to 1965 and 1965–1973

Characteristics, period, and sex	Non-migrants	Type of stream: All streams[a]	Rural-to-rural	Rural-to-other urban	Rural-to-Manila
Percentage with 5+ years of schooling					
Birth to 1965					
Male	64.8	66.8	50.8	73.4	86.9
Female	61.7	64.1	47.9	69.2	78.8
1965 to 1973					
Male	64.8	76.2	54.8	77.3	91.4
Female	61.7	79.1	59.1	81.5	88.2
Percentage with at least some college					
Birth to 1965					
Male	10.2	16.9	5.5	21.2	32.3
Female	12.1	14.1	4.9	15.6	22.8
1965 to 1973					
Male	10.2	22.2	3.4	18.8	33.0
Female	12.1	18.9	6.0	21.9	19.3
Percentage currently studying					
Birth to 1965					
Male	10.3	4.8	2.6	2.9	7.1
Female	10.0	5.0	1.7	5.1	6.6
1965 to 1973					
Male	10.3	10.2	5.8	6.9	26.7
Female	10.0	9.2	5.0	10.3	14.2
Approximate number of cases in sample[b]					
Birth to 1965					
Male	8,160	2,538	947	1,034	557
Female	8,308	2,596	858	1,155	583
1965 to 1973					
Male	8,160	1,535	338	466	265
Female	8,308	2,159	335	695	434

a Includes only three intersectoral streams shown.

b Estimated by applying metropolitan, urban, and rural sampling fractions (580, 664, and 877 respectively) to weighted frequencies; assumes constant weights within these sectors for persons by sex, period of migration, and type of stream.

SOURCES: 1973 National Demographic Survey; Pernia (1975b).

Urbanward migrants had higher levels of educational attainment than did either nonmigrants or migrants from one rural area to another. This selectivity was strongest in the most recent period, and seems to have operated with greatest intensity among women. Finally, the metropolitan area drew disproportionately large numbers of college-educated migrants. The sharpest contrast of all is between the educational attainments of rural-to-metropolitan migrants, for whom positive selection prevailed, and that of rural-to-rural migrants, who were characterized by negative selection.

These patterns reflect both the impact of educational attainment on migration and the role of migration in facilitating educational attainment. Thus, among males aged 15 and over the percentage currently enrolled in school was 7.3 in the nonmigrant rural sector and 15.3 in the nonmigrant urban sector, but among migrants to metropolitan Manila since 1965 fully 26.7 percent were enrolled in school (Pernia 1975b).

Occupational selection is equally significant. The occupational distributions in 1965 of nonmigrants and various types of migrants over the 1965–1973 period are given in Table 17. Among males, there is a sharp contrast between the rural-to-rural flow, which exhibits little or no selectivity, and the urbanward flows, which select positively for professional and service backgrounds. These patterns of course reflect the structure of economic opportunity in the respective places of destination. Similar data for females reveal distinctly different patterns and suggest the kinds of forces that underlie the strong sex selectivity of recent urban migration. Whereas male migrants to the metropolitan area from the rural sector have been drawn heavily from workers in transport and communication occupations and in crafts, female migrants have come disproportionately from service backgrounds (one-third of the total). White-collar workers of both sexes have been attracted to the metropolis as might be expected; this group accounts for one in five migrant men and nearly one in three women. Other urban areas seem to draw some professional and some service workers in addition to nearby farm families. Female migration to other urban areas is disproportionately white collar (nearly half of the total). This group probably includes a large number of primary-level teachers whose migration covers short distances and is related to the municipal organization of the primary and secondary educational system.

On balance, these patterns reflect two conditions dictated by the character of development policies obtaining under both colonial and republican governments: first, there is the geographically widespread distribution of and access to Western-style education, oriented to non-

TABLE 17 *Occupational distribution in 1965 of males and females aged 15 and over by migrant status during 1965–1973 and type of migration stream: Philippines*

Sex and migrant status[a]	Occupational group (in percentages)					
	Professional/ sales	Farmers/ miners	Transport and communication	Crafts	Services	All groups[b]
Male						
Nonmigrants						
Rural	4.7	80.6	4.7	6.6	2.0	100.0
Urban	19.5	41.9	15.3	18.3	3.6	100.0
Metropolitan	35.4	4.1	22.4	27.0	10.0	100.0
Migrants						
Rural-to-rural	4.2	80.4	3.0	8.0	3.0	100.0
Rural-to-urban	20.3	50.0	14.0	10.8	3.6	100.0
Rural-to-metropolitan	21.6	17.5	17.8	31.5	9.9	100.0
Female						
Nonmigrants						
Rural	18.2	51.9	0.2	20.6	3.3	100.0
Urban	48.0	20.7	0.0	16.7	9.9	100.0
Metropolitan	72.2	0.8	1.9	12.7	6.4	100.0
Migrants						
Rural-to-rural	17.0	56.0	0.0	16.0	2.4	100.0
Rural-to-urban	45.1	23.9	0.0	14.3	12.1	100.0
Rural-to-metropolitan	29.8	3.3	1.1	15.8	32.5	100.0

a During 1965–1973 period only.

b Include occupational categories not listed.

SOURCES: 1973 National Demographic Survey; Pernia (1975b).

agricultural occupations; second is the limited distribution of the kind of nonagricultural investment that creates jobs outside of agriculture. The focus of capital investment has overwhelmingly been the metropolitan area and Rizal Province, where three-fourths of the nation's manufacturing employment was situated in 1960 (Luna 1964). Investment outside of agriculture has created jobs in industry, but mostly an expanding metropolitan tertiary sector in response to the growth of a metropolitan middle class. The services sector in the metropolitan area is composed mostly of migrants from rural areas. Six of ten male workers in this sector in 1973 were migrants with rural origins, while

among women the proportion was eight of ten. One-third of the female workers in the services sector had rural origins and had migrated to the metropolis since 1965. The metropolitan service sector has truly become a siphon for the rural disaffected.

This urbanward exodus represents a significant drain on human resources in the rural sector. The 1973 data indicate, for example, that 37.9 percent of all college-level individuals born in the rural sector were living in one of the urban areas by 1973. The effect of migration on the urban-rural distribution of college-level persons is seen clearly in indexes of dissimilarity. The index of dissimilarity comparing persons of urban and rural *birth* on college experience is only 15.7. But in terms of place of *current residence*, 28.8 percent of all college-level adults in 1973 would have to be moved from the urban to the rural sector in order to equalize their per capita distributions. These statistics indicate, first, the remarkable fact that chances of college entrance have not been highly unequal between the urban and rural sectors (though they surely have been highly unequal among social groups within them); and, second, that rural-to-urban migration siphons off a substantial part (one-third) of the rural-origin college population and generates an urban-rural difference in current residence double its level otherwise. Similar though somewhat smaller effects are observed when we consider data for lower levels of educational attainment.

It should be evident that in considering urban-rural relations in this way we are touching upon a critical element in the political economy of the Philippines. Educated migrants to urban areas are not randomly selected from the rural population; on the contrary, they are in large measure the sons and daughters of the rural landed and commercial elites. The resources that go into their education, and support their urbanward migration, are rural resources made available by prevailing systems of landholding and tenure. The productivity of these migrants in the urban areas might well have been realized, in different forms and for different ends to be sure, in the rural sector. Major financial resources and significant human potential are drawn away by the interplay of rural stratification and rural-to-urban migration patterns, the whole process supported by national policies biased toward urban development..

It is not clear, on balance, that recent rural-to-urban migration has benefited rural areas. Nor is it obvious that some of the migration benefits urban areas either, since the absorption of educated labor in the cities is running well behind supply, creating significant issues for urban policy (Presidential Commission to Survey Philippine Education 1970).

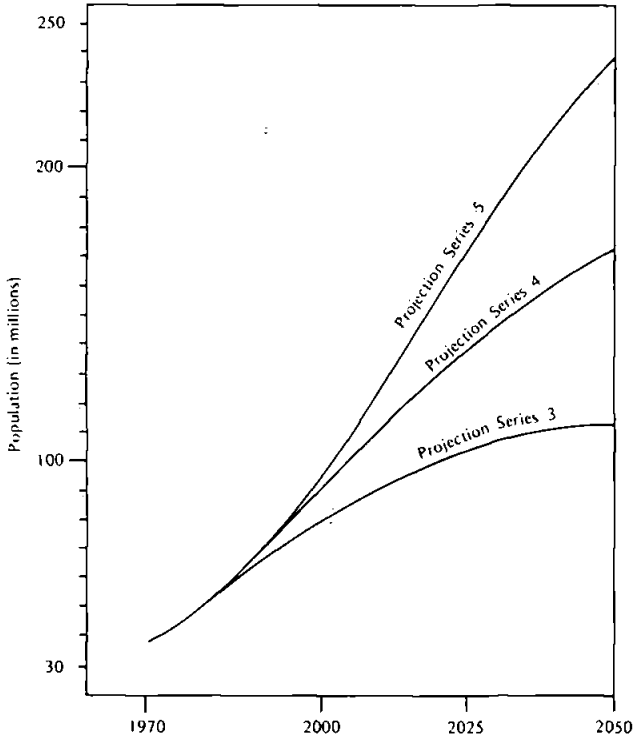
POPULATION PROSPECTS IN THE PHILIPPINES

Previous sections have sketched the pace and distribution of population growth; the level and age patterns of mortality, fertility, and migration; and the establishment of a population policy and a family planning program in an effort to help modify some of these trends. In light of recent Philippine demography and likely developments in the near future, what are the prospects for population growth in the decades ahead? One approach to this question is that taken by Frejka (1973), calculation of alternative paths to a steady state in population numbers. The projections so generated differ in the assumed speed with which fertility will decline to a stationary level; at one extreme an immediate decline is assumed, while in another projection this decline takes place over 70 years. For the majority of less developed areas, including the Philippines, the achievement of a net reproduction rate (NRR) of unity without delay or even within the next decade is clearly not possible. Thus, those of Frejka's five population series that seem at all likely for the Philippines—i.e., the three projecting a stationary; nongrowing state sometime in the twenty-first century—have been selected and plotted in Figure 7. These projections do not explicitly consider specific demographic and nondemographic factors such as proportions of women married, the average age at marriage, the type and amount of labor force participation by women, or the level of education, although all of these are relevant phenomena influencing demographic behavior. The central objective of these projections is to portray alternative paths to equilibrium and thereby to illustrate the demographic trends, especially fertility trends, that would have to be generated in order to approach a stationary state of population change in the reasonable future.

The selected population futures in Figure 7 differ mostly in the length of the period of fertility decline—from 30 years in Projection Series 3 to 70 years in Projection Series 5. Fertility is assumed to decline from its 1965–1970 level to a level corresponding to an NRR of unity, and to remain at this replacement level thereafter. Mortality is assumed to decline somewhat further than it already has, at first maintaining the 1965–1970 pace of decline and then decelerating gradually. The female expectation of life at birth (about 55 years in 1965–1970) is assumed to stabilize at 74 years by the middle of the twenty-first century.

The resulting differences in future population growth, particularly in the long run, are extremely great (Figure 7). By the year 2050 the

FIGURE 7 Projections of total population under alternate fertility assumptions: Philippines, 1970–2050



SOURCE: Frejka (Population Council 1973:434–443).

population would be three times or six times larger than in 1970—numbering anywhere between 119 and 240 million persons—depending upon whether an NRR of unity is reached in 30 or 70 years.

Even with very rapid fertility decline (Projection Series 3) the average population density of the Philippines by the middle of the next century might reach 395 persons per square kilometer. With a slower rate of decline (Projection Series 5) the resulting density for the year 2050 could reach 799 persons per square kilometer.

The assumed patterns of change in the net reproduction rate imply differing trajectories for crude vital rates (Table 18). If a rapid fertility decline were to occur (Projection Series 3) the crude birth rate would decline by 5 to 6 percentage points per decade for the remainder of

this century and reach 24 per thousand by the final quinquennium. If fertility were to decline moderately (Projection Series 5) the crude birth rate would decline by 2 to 3 points each decade until the end of the century, reaching 35 per thousand by 1995–2000. If a trend in mortality decline following roughly on that of the past 20 to 30 years were to materialize the crude death rate would decline to a level between six and seven deaths per thousand (assuming fertility remains in the range of experience suggested).

Another significant aspect of Table 18 is the trend in the crude rate of natural increase (synonymous here with the population growth rate). With a rapid drop in fertility (Projection Series 3) the rate of natural increase would decline by about 45 percent by the year 2000, reaching 1.7 percent annually. On the other hand, a moderate fertility decline (Projection Series 5) would not be likely to generate any significant decline in the rate of natural increase during the next 15 to 20 years, and even by the end of the century the decline would only be about 10 percent, to 2.9 percent or so.

The absolute annual increments of population suggested by these projections are enormous. At the 1970–1975 growth rate estimated by Frejka, 1.2 million persons would have been added to the population annually during the quinquennium. (It should be noted, however, that preliminary results of the 1975 Census suggest a somewhat lower growth rate of 2.8 percent for 1970–1975. The actual increment of

TABLE 18 Projected birth, death, and growth rates, 1970–2000, under alternate fertility-decline assumptions: Philippines

Rate and Projection Series	1970–1975	1985–1990	1995–2000
Birth rate			
Projection Series 3	40.3	31.7	23.5
Projection Series 4	41.7	36.7	31.6
Projection Series 5	42.3	38.9	35.0
Death rate			
Projection Series 3	9.8	7.3	6.6
Projection Series 4	9.9	7.3	6.4
Projection Series 5	9.9	7.3	6.3
Growth rate			
Projection Series 3	3.1	2.4	1.7
Projection Series 4	3.2	2.9	2.5
Projection Series 5	3.2	3.2	2.9

NOTE: See text for description of projections.

SOURCE: Frejka (Population Council 1973:434–443).

population over the period was about 1.1 million per year.) Even with a rapid fertility decline the annual increment in Frejka's projection would nevertheless be about one million persons per year by the end of this century. If fertility were to decline only moderately fast the annual increment would increase very rapidly. Over 1980–1985 around 1.8 million people would be added per year, and at the beginning of the twenty-first century the annual addition to population would be around 2.5 million persons.

The age structure of the population is currently a very youthful one. Almost 45 percent of the population is under age 15 and only 3 or 4 percent of the population is 65 years of age or older; the median age is around 16.3 years. Obviously, the speed of the aging process of the population will depend on the speed of fertility decline. A rapid drop in fertility (Projection Series 3) could result in a decline of 30 percent in the age group under 15 (from 47 percent to 33 percent) by the year 2000. The corresponding increase in the age group 65 and over would be two-thirds. A moderate fertility decline (Projection Series 5) could generate a population under age 15 of about 42 percent, representing a 1.2 percent decline in three decades. An important feature of the probable age structure changes is a transitional stage between a typically "young" population and an "aging" population—a stage characterized by an unusually large portion of middle-aged people. For the Philippines this state of affairs would arise around the turn of the twenty-first century (Projection Series 3) or around 2030 (Projection Series 5), when over 63 percent of the population would be concentrated in the age groups 15–64. This development would substantially ease the dependency burden and bring about an increase in the proportion of the working-age population, but it would also entail a high proportion of women in the childbearing ages.

These figures result from an exercise—a hypothetical manipulation of future mortality and fertility patterns. But if these projections misrepresent the future they probably do so on the conservative side as far as the long-term future is concerned. While recent data suggest that the fertility level has now begun to decline, and the 1970–1975 intercensal growth rate seems to be below any of the projected levels, it remains unlikely that replacement levels of fertility will be reached by the year 2000 (Projection Series 3), nor is it at all certain that this state will be accomplished by 2040. On the other hand, if reproduction does not diminish to levels within the range of these projections, Philippine resources will be severely taxed, as they are even today, and the future downward trend of mortality will be in serious doubt.

There is evidence now that fertility levels have begun to taper.[22] If a vigorous and effective program of family planning can be combined with rapid and equitable development of the rural sector, Frejka's projections for replacement fertility may not be beyond accomplishment.

22 The evidence is circumstantial thus far. The low 1970–1975 intercensal growth rate compared with that of 1960–1970 raises the possibility of diminished fertility, and a recent survey of fertility in seven provinces yields 1975 birth rates for these areas ranging from 32.8 to 39.2 per thousand (unpublished results provided by the Population Institute, University of the Philippines). Confirmation of a declining average national birth rate must await fertility estimates from the 1975 Census.

APPENDIX TABLES

TABLE A1 The population of the Philippines by major area: 1591–1903

Area	Population (in thousands) 1591 Number	1591 %	1817 Number	1817 %	1876 Number	1876 %	1903 Number	1903 %	Land area (thousands of hectares) Number	%
Philippines	**668**	**100.0**	**2,231**	**100.0**	**5,494**	**100.0**	**7,635**	**100.0**	**30,000**	**100.0**
Luzon	504	75.4	1,512	67.8	3,241	59.0	4,013	52.6	12,783	42.3
Ilocos	69	10.3	255	11.4	500	9.1	556	7.3	1,043	3.1
Northern Luzon[a]	94	14.1	150	6.7	154	2.8	391	5.1	3,913	12.9
Central Luzon[b]	98	14.7	404	18.1	1,055	19.2	1,266	16.6	2,348	8.1
Manila City (*Intramuros*)	3	0.5	9	0.4	5	0.1	11	0.2	*	0.0
Manila Environs[c]	39	5.8	203	9.1	412	7.5	494	6.5	260	1.2
Southern Luzon[d]	112	16.8	283	12.7	652	11.9	651	8.5	3,130	10.6
Bicol Peninsula[e]	89	13.3	208	9.3	462	8.4	644	8.4	1,826	6.4
Visayas			618	27.7	2,096	38.2	2,952	38.7	7,043	23.9
Cebu			69	3.1	418	7.6	654	8.6	522	1.7
Panay			291	13.0	741	13.5	775	10.2	1,304	4.3
Negros			35	1.6	201	3.7	510	6.7	1,304	4.3
Bohol	164	24.6	80	3.6	254	4.6	269	3.5	522	1.3
Other Visayas[f]			142	6.4	483	8.8	744	9.7	3,391	12.3
Mindanao			101	4.5	156	2.8	671	8.8	10,174	33.8
North			23	1.0	140	2.5	314	4.1	3,391	11.1
South			78	3.5	16	0.3	356	4.7	6,783	22.7

a Includes Nueva Viscaya, Batanes, Isabela, Cagayan, and the Mountain Provinces.
b Includes Pampanga (extending to Bataan and Bulacan), Pangasinan, Zambales, and Tarlac.
c Excludes Manila City (*Intramuros*); includes Cavite and Passi uplands and Morong; excludes Pampanga.
d Includes Laguna, Caliraya, Marinduque, Quezon, and Mindoro.
e Includes Catanduanes, Masbate, and Burias.
f Includes Leyte, Samar, Distrito de la Concepción, Palawan, and Romblon.
* Negligible.
SOURCES: Dasmariñas (1591), in Blair and Robertson (1903–1909); Aragon (1819); Payo (1878).

TABLE A2 Reported population distributions by sex and age: Philippines, 1903–1970

Sex and age group	Census year 1903	1918[a]	1939	1948	1960	1970
Male						
0–4	532,197	809,433	1,329,418	1,539,409	2,354,038	3,114,668
5–9	490,678	747,324	1,278,498	1,514,517	2,254,566	2,789,682
10–14	388,442	559,941	914,310	1,312,941	1,765,992	2,188,017
15–19	329,505	457,999	800,402	1,001,595	1,384,759	1,732,927
20–24	243,972	428,660	759,711	855,098	1,194,182	1,573,616
25–29	310,768	366,204	660,540	715,785	952,368	1,420,272
30–34	257,549	291,870	454,491	545,249	764,978	1,154,528
35–39	232,192	244,173	446,076	568,085	702,568	972,460
40–44	167,229	215,096	300,619	374,436	546,393	705,777
45–49	137,420	180,814	301,995	363,700	524,638	607,271
50–54	106,912	140,659	199,114	207,052	365,354	501,626
55–59	94,697	114,526	163,010	177,730	252,394	440,867
60–64	90,721	90,616	181,893	168,305	231,786	357,850
65+	114,370	123,001	273,930	306,654	368,853	625,256
Female						
0–4	521,899	794,954	1,273,328	1,452,245	2,218,377	2,956,320
5–9	469,386	721,420	1,215,180	1,427,050	2,114,832	2,614,335
10–14	362,801	556,840	870,308	1,247,172	1,669,435	2,110,620
15–19	366,675	479,271	856,710	1,062,709	1,429,547	1,941,489
20–24	314,646	452,638	764,286	912,396	1,264,441	1,789,833
25–29	328,484	377,704	683,186	778,162	1,000,981	1,452,012
30–34	250,681	293,868	462,669	575,776	791,473	1,125,923
35–39	193,401	243,559	422,778	560,768	725,906	928,009
40–44	165,889	204,334	305,674	380,429	552,585	731,050
45–49	117,940	163,522	269,035	329,737	508,045	671,002
50–54	117,866	127,563	213,485	226,725	344,745	569,655
55–59	78,134	110,038	152,138	166,172	235,536	484,732
60–64	90,696	87,948	165,719	163,501	199,118	376,668
65+	112,536	108,353	279,852	299,982	369,795	647,184

a The 1918 census report shows the population in irregular age groups: <1, 1, 2–3, 4–5, 6–9, 10–14, 15–17, 18–20, 21–25, . . . , 56–60, 61–70, . . . , 91–100, 101+. These data were interpolated to obtain standard five-year groups using the method in United Nations (1956:16).

SOURCE: Official census reports.

TABLE A3 Sex ratios based on reported population distribution by sex and age: Philippines, 1903–1970

Age groups	Census year 1903	1918	1939	1948	1960	1970
5-year groups						
0–4	1,020	1,018	1,044	1,060	1,061	1,054
5–9	1,045	1,036	1,052	1,061	1,066	1,067
10–14	1,071	1,006	1,050	1,053	1,058	1,037
15–19	899	956	934	942	969	892
20–24	775	947	994	937	944	879
25–29	946	970	967	920	951	978
30–34	1,027	993	982	947	966	1,025
35–39	1,200	1,002	1,055	1,000	968	1,048
40–44	1,008	1,053	983	984	989	965
45–49	1,165	1,106	1,122	1,103	1,033	905
50–54	907	1,103	933	913	1,060	880
55–59	1,212	1,041	1,071	1,070	1,072	910
60–64	1,000	1,030	1,098	1,029	1,164	950
65–69	1,148	1,140	1,183	1,119	996	950
70–74	946	1,137	932	983	1,046	1,058
75–79	1,055	1,118	966	1,114	1,027	948
80–84	876	1,121	803	888	953	887
85+	888	1,187	805	935	914	899
65+	1,016	1,135	979	1,022	997	966
All ages	1,002	1,010	1,016	1,007	1,018	988
10-year groups						
0–9	1,032	1,027	1,048	1,061	1,064	1,060
10–19	984	982	993	1,002	1,017	968
20–29	862	957	981	929	948	924
30–39	1,103	997	1,017	980	967	1,036
40–49	1,073	1,076	1,048	1,039	1,010	936
50–59	1,029	1,074	990	979	1,064	894
60–69	1,009	1,088	1,023	1,025	1,103	960

SOURCE: Table A2.

TABLE A4 Estimated annual crude death rates: Philippines, 1876–1971

Year	Unadjusted	Adjusted	Year	Unadjusted	Adjusted
1876	26.7	na	1926	18.9	26.7
			1927	18.4	26.1
1879	106.9	na	1928	17.2	24.3
			1929	18.3	25.9
1885	28.9	na	1930	19.1	26.9
1886	26.5	na	1931	17.7	25.1
1887	26.2	na	1932	15.3	21.6
1888	34.0	na	1933	16.0	22.7
1889	58.2	na	1934	16.5	23.4
1890	48.1	na	1935	17.4	24.5
1891	36.7	na	1936	15.8	22.3
1892	36.7	na	1937	16.4	23.3
1893	33.4	na	1938	16.5	23.4
1894	33.9	na	1939	16.9	23.9
1895	34.7	na	1940	16.6	23.5
1896	32.5	na			
1897	31.8	na	1946	15.1	25.7
1898	30.5	na	1947	12.7	21.6
			1948	12.7	22.0
1903	42.9	58.0	1949	11.7	20.3
1904	18.8	25.4	1950	11.2	19.3
1905	20.9	28.2	1951	11.4	19.7
1906	17.6	23.8	1952	11.1	19.3
1907	16.7	22.6	1953	10.8	18.6
1908	22.6	30.5	1954	9.4	16.4
1909	20.8	28.2	1955	9.0	15.5
1910	21.8	29.5	1956	9.0	15.5
1911	21.1	28.5	1957	9.6	16.5
1912	20.3	27.5	1958	8.4	14.5
1913	16.6	22.4	1959	7.3	12.7
1914	17.3	23.4	1960	7.7	13.3
1915	18.3	24.7	1961	7.4	10.6
1916	19.9	26.9	1962	7.2	10.3
1917	21.2	28.6	1963	7.0	10.0
1918	35.9	49.7	1964	6.9	9.9
1919	31.3	44.3	1965	7.5	10.7
1920	18.8	26.6	1966	7.2	10.3
1921	18.9	26.7	1967	7.0	10.0
1922	18.3	25.8	1968	7.1	10.1
1923	17.8	25.2	1969	6.9	9.9
1924	18.8	26.6	1970	6.7	9.6
1925	16.6	23.5	1971	6.6	9.4

na—not applicable.

SOURCES: 1876–1898: United States, Bureau of the Census (1905, vol. 3:11–17); 1903–1960: Aromin (1961:4–5); 1961–1971: upward adjustment of registration data (see footnote 9 in text).

TABLE A5 Changes in mortality level and sector differentials as inferred from retrospective data from the 1960 Census and the National Demographic Surveys of 1968 and 1973: Philippines

Sector and date	Estimated value of $q(x)$					Implied infant mortality rate per 1,000 births based on average $q(x)$ values		Life expectancy at birth based on average $q(x)$ values	
	$q(3)$	$q(5)$	$q(15)$	$q(25)$	$q(35)$	$q(15)-q(35)$	$q(3)-q(5)$	$q(15)-q(35)$	$q(3)-q(5)$
Philippines									
1960	.1166	.1240	.1646	.2302	.2852	115.9	97.8	52.8	56.0
1968	.0799	.0812	.1038	.1429	.2249	81.2	69.5	59.4	62.1
1973	.0713	.0773	.1114	.1422	.2050	72.1	65.4	59.6	63.0
Metropolitan	.0643	.0541	.0803	.0963	.1569	59.5	53.1	64.3	65.8
Other urban	.0629	.0602	.0835	.1296	.1884	70.8	55.3	61.8	65.2
Rural	.0733	.0840	.1211	.1468	.2125	73.4	67.7	58.9	62.4

SOURCE: Unpublished tabulations of the Population Institute, University of the Philippines; Brass multipliers used to estimate $q(x)$ levels.

TABLE A6 Age-specific fertility rates, overall and marital, and percentages ever married by age among women, by residence and educational level: Philippines, average over 1968–1972

Characteristic and index	Age at childbirth 15–19	20–24	25–29	30–34	35–39	40–44	45–49	Total fertility rate
Philippines								
Age-specific fertility rate	56	227	302	272	199	100	22	5.89
Age-specific marital fertility rate	449	443	378	307	217	108	24	9.63
Percentage married	12.5	51.2	79.9	88.6	91.7	92.6	91.7	
Sector								
Metropolitan								
Age-specific fertility rate	17	156	234	199	124	77	10	4.08
Age-specific marital fertility rate	413	459	348	246	139	85	11	8.51
Percentage married	4.1	34.0	67.2	80.9	89.2	90.6	90.9	
Other urban								
Age-specific fertility rate	27	168	250	230	147	65	16	4.52
Age-specific marital fertility rate	450	451	351	283	166	75	18	8.97
Percentage married	6.1	37.1	71.1	81.2	88.2	86.3	87.9	
Rural								
Age-specific fertility rate	75	265	330	296	227	115	25	6.66
Age-specific marital fertility rate	451	441	391	320	243	121	26	9.96
Percentage married	16.6	60.1	84.4	92.5	93.4	95.0	96.2	
Educational level								
No schooling								
Age-specific fertility rate	108.1	320.0	292.7	230.7	187.3	99.7	37.2	6.38
Age-specific marital fertility rate	538.3	456.7	358.3	278.0	210.8	109.5	41.0	9.96
Percentage married	20.1	70.1	81.7	83.0	88.6	91.0	90.7	

Primary (1–4 years)								
Age-specific fertility rate	222.4	295.1	320.3	326.6	234.4	112.1	21.7	7.70
Age-specific marital fertility rate	479.5	424.2	366.0	353.1	247.7	116.3	23.1	10.05
Percentage married	46.4	69.6	87.5	92.5	94.6	96.4	93.8	
Secondary (5–7 years)								
Age-specific fertility rate	86.2	298.2	338.8	291.9	210.7	110.7	18.8	6.78
Age-specific marital fertility rate	444.3	447.8	399.4	317.7	223.2	116.8	19.8	9.85
Percentage married	19.4	66.6	84.8	91.9	94.4	94.8	95.0	
At least some high school								
Age-specific fertility rate	22.1	149.0	250.3	217.7	155.2	70.5	7.7	4.36
Age-specific marital fertility rate	419.4	446.8	363.2	262.1	179.9	83.2	9.0	8.82
Percentage married	5.3	33.4	68.9	83.1	15.5	84.7	85.6	

SOURCE: 1973 National Demographic Survey.

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