

110 MILLIONS BY THE YEAR 2001*

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Through most of human history, the human numbers game has largely been played blindfolded. A reasonably accurate picture of the world's population size and distribution began to emerge only within the past two centuries. And even today, estimates of the number of the world's inhabitants may be in error by as much as 100 million persons.

Before 1800, no nation in the world had a continuing inventory of its population, though this is recognized today as an essential part of government activities. Estimates of world population prior to 1800 reveal that the tempo of population growth was at that time very slow. By 1750, a change in the trend became evident — a steady acceleration in growth of population started and has continued to this day. This trend has been manifest in many countries, in particular in the developing areas of the world.

On May 6, 1970, the number of inhabitants in the Philippines were counted and reported to be 36,684,486. This latest enumeration makes the Filipino nation the sixth largest in Asia and the fifteenth most populous in the world. Growing at a faster percentage rate than many other nations in Asia, in Africa, and in Latin America, the Philippine intercensal rate of growth indicated an increase from an average 1.9 per cent

in the 40s to 3.1 per cent in the 50s. The reported census figure for 1970 gives 3.0 per cent as the average rate of growth for the 60s.

Any estimate of the rate of Philippine population growth during the 60s is nonetheless complicated by the fact that the censuses of population and the semi-annual survey of households are the only comprehensive sources of nationwide fertility and mortality. From these sources, the United Nations estimated that the Philippines grew by well over 3 per cent a year between 1960 and 1970. Dr. Frank Lorimer, former Visiting Professor at the University of the Philippines Population Institute, using the censuses and other specialized sources, had tentatively calculated the average annual growth rate to be 3.35 per cent for 1965–1970 and 3.45 per cent for 1970–1975.

Whatever the true figure be for the decade of the 60s the country is still growing at a very fast annual rate. If this rate be 3.45 per cent, and should this rate continue, the Philippines will double her population to 74 millions in little over 20 years. By the year 2040, she will have more people than the United States (assuming the U.S. population continues to grow at the current annual rate of 1.0 per cent).

Even if the estimate of 3.0 per cent as the average intercensal growth rate for 1960–1970 were to prevail for the coming years, the Philippines would still double her population in a little over 23 years. The estimated population by mid-2000 would be 89.5 millions.

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A revealing demographic comparison of the

*Revised version of a talk given January 28, 1971, in the public lecture series, "The Philippines Today: Second Thoughts for Citizens Concerned," at the San Miguel Auditorium, Makati, Rizal, under the sponsorship of the Philippine Sociological Society, Inc. Dr. Concepcion, a demographer, is professor of statistics and demography and dean of the Population Institute, University of the Philippines.

Philippines and Japan is provided in Table 1. Between 1850 and 1970, the Japanese population increased nearly three times while that of the Philippines increased seven and a half times. The Philippines' decennial growth was similar to Japan's until the turn of the century. Since 1903, however, the situation has changed—so much so that between 1960 and 1970, the Philippines grew at an average of 3.0 per cent and gained more people than Japan.

It is also the case, according to estimates by Keyfitz and Fliieger (1968), that in 1970 the Philippines' baby crop will be almost as big as its Japanese counterpart, even though the total population of Japan is still close to three times the size of the Philippines.

Mortality Trends

The recent increase in the Philippines' rate of growth is the outcome of declining mortality and continuing high fertility. According to Aromin (1961), the Philippine death rate dropped by about 85 per cent between 1903 and 1960

while her birth rate may have even increased slightly during the same period.¹ The widening gap between these two vital indices has created a population explosion which is affected only negligibly by the deepening stream of net migration.

Because the country lacks comprehensive vital statistics, her mortality and fertility rates must be estimated from the censuses and surveys. Lorimer, using census and survey information available in 1965, estimated that the death rate for the period 1965–1970 was 12.

Longer Lives

A major consequence of reduced mortality has been a dramatic rise in life expectancy at birth for Filipinos. According to a set of mortality tables worked out by Manuel Hizon and Isagani de Castro in 1965, life expectancy at birth for Filipinos was 53.3 in 1960. The corresponding rate estimated by the Bureau of the Census was 56.3.

Table 1

Population size and growth rates of the Philippines and Japan, 1850–1970

Year	Population (in thousands)		Average intercensal rate of growth (per cent per annum)	
	Philippines	Japan	Philippines	Japan
1850	3,875.4	27,201.4 ^a	1.3	1.0
1877	5,567.7	34,899.0	0.8	1.1
1903	7,635.4	46,732.0	1.9	1.3
1918	10,314.3	56,667.0	2.2	1.2
1939	16,000.3	73,500.0 ^b	1.9	1.2
1948	19,234.2	83,200.0 ^c	3.1	1.2
1960	27,087.7	93,418.5	3.0	1.0
1970	36,684.5	103,703.6		

^aPopulation as of 1852

^bPopulation as of 1940

^cPopulation as of 1950

Estimates made prior to World War II indicated that in 1903 a male baby could expect some 11.54 years of life, on the average. The rate for females was 2.38 years higher (13.92 years). By 1918 the life expectation at birth had more than doubled for males (25.17) and females (26.07). Jaramillo (1941), working on 1939 Census data, computed the expectation of life at birth to have been 44.80 for males and 47.72 for females.

Such a marked advance was caused, to a very large extent, by the decline in infant mortality. The death rate for children under one year had been falling when the 1948 life tables were prepared by the Bureau of the Census. By the mid-60s, according to Flieger (1969), this rate had been cut to approximately over 100.

A decline in death rates — especially in the younger age groups — tends to augment population growth in two ways: by slowing the attrition of the existing population and by increasing the number of women who survive through their childbearing years. In 1903, as the life tables showed, only about 19,000 females out of an original cohort of 100,000 could be expected to survive to the age of 45. In 1960, however, more than three times as many (about 69,000) could be expected to reach the same age. Combined with high fertility rates and with the fact that over 1.6 million babies are born in the Philippines annually, this new pattern of survival offers a powerful impetus to continued population growth.

Fertility Trends

As with mortality, a determination of fertility trends in the Philippines is seriously hampered by a lack of data. Such is the seriousness of failures in registering births and deaths, that vital registration statistics do not permit accurate knowledge of the total number of births and deaths. These can only be estimated by conjectures with an ample margin of error.

The 1968 crude birth rate published by the Disease Intelligence Center, Department of

Health (1970), was 26.8 births per thousand. The publication stressed that the crude birth rate declined 20.2 per cent over the 48-year period, 1920–1968. At the same time, the Disease Intelligence Center pointed out that “for the present, it is safe to state that there is ample evidence that incomplete registration is still a problem in many areas in the country.”

As early as 1939, Jaramillo (1941) estimated the degree of underregistration of births to be 29.2 per cent for males and 32.2 per cent for females. Corresponding percentages for deaths were 14.6 and 13.1, respectively. More recent studies and estimates have confirmed the suspicion of serious underregistration existing in the country.

Tests for completeness of birth and death registration in Nueva Ecija were made by the Department of Health in 1956 (Dizon 1958). These tests indicated an underregistration of births by 35 per cent and of deaths by 11 per cent for the whole province. A more extensive survey on the completeness of death registration in all the provinces and cities of Luzon and one province each from Eastern and Western Visayas was undertaken by the same Department in 1961–62 (Dizon 1964). Of the randomly selected names of persons buried in cemeteries located near the offices of local civil registrars in 1959–1962, nearly 3 out of every 10 deaths (27.3 per cent) were missing from the death registers of the local civil registrars.

The Bureau of the Census and Statistics undertook a study of vital registration completeness in October 1964. In a paper analyzing the results of the study, Barretto (1965) disclosed that births were underregistered by almost 40 per cent (39.7 per cent) and deaths by 30 per cent.

Father Madigan (1963) analyzed birth and death registration completeness for 1960 in Misamis Oriental. He estimated that 59.5 per cent of deaths and 55.4 per cent of births for the period were not registered for the province as a whole. The underregistration of births in the city of Cagayan de Oro was 3 per cent higher.

An experimental study of vital statistics registration in the municipality of Imus, Cavite, conducted by the University of the Philippines Population Institute in June 1963 revealed that the local civil registrar underregistered 46 per cent of all births and 15 per cent of all deaths estimated to have occurred during 1960–1963. On the other hand, a fieldworker assigned to the area to enumerate vital events missed 6 per cent of all births and 3.7 per cent of all deaths estimated to have occurred in the municipality during the same 3-year period (Concepción 1965).

A rate of 46 births per thousand population as of 1960 was estimated by Frank Lorimer (1966). He claimed that the fertility estimate could not be far from the true level, as it is supported by several converging lines of evidence: the age distribution, the total fertility rate, and the intercensal rate of population growth. Lorimer also maintained that the estimated growth rate around 1960, namely, 3.2 per cent annually, must have been close to the true value. He argued that a higher rate would have required a far higher intercensal growth rate than that indicated by the census returns or an incredibly rapid mortality decline during the 50s. The high rate of fertility would preclude the intercensal rate of growth from being much lower than 3.2 per cent. This rate of growth gives rise to a stable population consistent with other demographic measures. The death rate was 14 deaths per thousand around 1960. However, since such a figure is a residual, it is subject to all the errors inherent in the other rates.

For the five-year period, 1965–1970, Frank Lorimer estimated the Philippine birth rate of 45.5 births per thousand. A more reliable computation will undoubtedly be made from data supplied by the 1970 census. In the meantime, two other measures of fertility – the number of children ever born per 1000 women and the child-women ratio – offer at best inconclusive evidence that fertility in the Philippines has not undergone any decline in recent decades. It is still extraordinarily high.

It has long been held that fertility is inversely correlated with urbanization, education, literacy,

and socioeconomic status. For reasons that are still not adequately understood, this seems to have been the case in the industrialized countries. Whether it is also the case here remains an open question. Between 1955 and 1970, per capita income grew rapidly in the Philippines, and the country's economic development progressed. During this period, there were increases in the literacy rate, urbanization, and proportion of population in the nonagricultural labor force. A sharp differential in urban-rural fertility also prevailed. Yet, the best available evidence suggests that if a fertility decline has occurred it has only done so in Manila. Thus, the future course of fertility cannot be gauged by the oversimplified hypothesis of an inverse correlation between urbanization and industrialization.

Fertility surveys undertaken in this country during the early 60s provide evidence supporting the high birth rate estimated by Lorimer. Considering that the measure taken was that of children ever born, and the fact that these surveys were rather narrow in scope and methodology, it behooves us to resort to a more sensitive device than the number of children ever born to women. Such a device enables the researcher to determine the fertility behavior of different birth cohorts of women or of cross-sections of women present during different time periods.

Flieger (1969) using pregnancy rosters of some 7,400 women interviewed during the National Demographic Survey of 1968, revealed that Filipino women who were completing their childbearing activities then (women born in the 20s) were having families no smaller in size than those of their predecessors born some 30 years earlier. The average number of children born to mothers ending their childbearing years has not been decreasing. On the contrary, a slight upward trend is suggested by the data. Flieger also maintains that while levels of fertility have somewhat fluctuated over the past half a century, these have not declined. In addition, Flieger holds that, "even if families today do not exceed the size of families our parents and grandparents raised, earlier childbearing and closer child-

spacing cause the population to grow faster than it did while our parents and grandparents were in their primes."

Turning to another aspect affecting population growth; family planning practice, it has been reported that the cumulative number of acceptors at program-supported clinics through December 1970 exceeded 353,000, a figure representing about 6 per cent of all married women in the childbearing ages. Acceptors tended to be younger than the eligible population (married women 15-44 years of age), were more highly educated, had borne more living children, and resided mostly in cities and towns.

Utilizing a model of conceptions averted to estimate population program impact on fertility, John Laing (1971) has estimated that the birth rate can be expected to decline by at least 5 points by 1976. The population rate of growth would be decreased by about half a point during the same period. This model, according to the author, possesses one advantage over others based on the continuation-rate approach, namely, that effective avoidance of births does not end with discontinuation of accepted method, cessation of attendance at family planning clinic, nor with pregnancy. However, Laing's model is based on the empirical evidence from one clinic and does not take into account the age structure of the acceptors.

Urbanization

The fast urbanization of the Philippines is evident in the fact that her city population represented only 14 per cent of her total population in 1960 but 20 per cent in 1970. Two trends underlie this phenomenal increase: a rapid growth in the number of cities and an accelerated expansion of the numbers of people living in such cities. Table 2 gives the number of cities and their populations in 1960 and 1970. Some 3.9 million Filipinos were living in these localities in 1960. By 1970, 7.5 million were living in these areas. Thus, the city population grew by an annual average of 6.7 per cent during the 60s when the nation's population was growing by an estimated 3.0 per cent a year.

It can be seen that the greatest proportional growth has occurred in the numbers and populations of cities with 100,000 or more people. As late as 1960, only nine cities had populations of over 100,000. By 1970 the number rose to 19.

As in all authenticated cases throughout the world, the fertility rates in Philippine cities are significantly lower than in rural areas. Compared to most cities in developed areas, however, the urban cities of natural increase are still relatively high. This is due in part to the youthful age structure of these urban areas, which implies a large number of young adults and a low death rate. Accurate vital statistics, even for the largest cities, are still too scarce to permit a precise evaluation of the importance of this component of growth, but it is believed to be sizeable.

If natural increase is an important but not a decisive factor for urban population growth, it follows that the main source is to be found in the swelling stream of rural-urban migration. Here too the available evidence is slight, but for the larger cities this factor probably represents almost half of the total gain.

Between 1960 and 1970, startling rates of population change were noted in some provinces. Rates of change exceeding 50 per cent were observed in 17 provinces. Percentages for the five leading provinces were as follows: Bukidnon, 113; Rizal, 95; Davao Oriental, 87; Agusan del Sur, 86; and Occidental Mindoro, 71. Such rates of change were a consequence of high immigration.

Rizal, for example, has been a receiving area for migrants from Manila. Real-estate development in Makati and Antipolo have influenced Manilans to move from the center of the city to the contiguous suburbs. The relocation of industries has also been influential in the movement of the city.

The other four provinces are likewise areas of destination for migration. Land settlement schemes and favorable agricultural areas have accounted for the high rates of population change in these areas during the 60s.

Table 2
Population and rank-order by size of Philippine
chartered cities as of 1960 and 1970

<i>Chartered city</i>	<i>1960</i>		<i>1970</i>	
	<i>Population</i>	<i>Rank</i>	<i>Population</i>	<i>Rank</i>
1. Manila	1,138,611	1	1,330,738	1
2. Quezon	397,990	2	754,233	2
3. Cebu	251,146	3	347,116	4
4. Davao	225,712	4	393,020	3
5. Basilan	155,712	5	143,829	10
6. Iloilo	151,266	6	209,738	6
7. Pasay	132,673	7	206,283	7
8. Zamboanga	131,489	8	199,901	8
9. Bacolod	119,315	9	187,300	9
10. Butuan	82,485	10	131,094	12
11. Calbayog	77,832	11	94,323	21
12. San Pablo	70,680	12	105,517	17
13. Cabanatuan	69,580	13	99,890	20
14. Lipa	69,036	14	101,105	19
15. Cagayan de Oro	68,274	15	128,319	13
16. Dagupan	63,191	16	83,582	28
17. Ormoc	62,764	17	84,563	24
18. Legaspi	60,593	18	84,090	27
19. Silay	60,324	19	69,200	37
20. Iligan	58,433	20	104,198	18
21. Naga	55,506	21	79,846	29
22. Cavite	54,891	22	75,739	33
23. Tacloban	53,551	23	76,531	32
24. Baguio	50,436	24	84,538	25
25. Roxas	49,326	25	67,648	39
26. Ozamis	44,091	26	64,643	41
27. Cotabato	37,499	27	61,184	43
28. Dumaguete	35,282	28	52,000	47
29. Marawi	26,910	29	55,708	46
30. Tagaytay	7,203	30	10,907	57
31. Trece Martires	4,422	31	6,522	59
32. Caloocan	—	—	274,510	5
33. Angeles	—	—	134,544	11
34. Cadiz	—	—	124,108	14
35. Batangas	—	—	108,868	15
36. Olongapo	—	—	107,785	16
37. San Carlos (Negros Occidental)	—	—	90,058	22

Table 2 (Continued)

Chartered city	1960		1970	
	Population	Rank	Population	Rank
38. General Santos	—	—	85,064	23
39. San Carlos (Pang.)	—	—	84,333	26
40. Iriga	—	—	77,382	30
41. Lucena	—	—	77,006	31
42. Bago	—	—	71,653	34
43. San Jose	—	—	70,314	35
44. Lapu-Lapu	—	—	69,268	36
45. Toledo	—	—	67,727	38
46. Gingoog	—	—	65,522	40
47. Laoag	—	—	61,727	42
48. Mandawe	—	—	58,579	44
49. Pagadian	—	—	57,615	45
50. Danao	—	—	47,662	48
51. Dipolog	—	—	46,368	49
52. Bais	—	—	40,095	50
53. Oroquieta	—	—	38,575	51
54. La Carlota	—	—	38,321	52
55. Dapitan	—	—	37,781	53
56. Tagbilaran	—	—	33,005	54
57. Tangub	—	—	30,918	55
58. Canlaon	—	—	23,598	56
59. Palayan	—	—	8,382	58

The question, of course, is not whether urban growth will continue, but whether the rapid momentum of recent decades will be maintained. The answer would seem to be in the affirmative. There are indications that total population growth seems certain to remain strong. If the projections made by the Population Institute are at all close to their mark, the population should double itself over the 1960–1980 period. The forecast for the economic sphere is much less certain. Despite efforts to achieve greater balance in the economy, the country has not been able to establish a sound industrial base, and, therefore, the current imbalance between manufacturing and services will probably persist for some time. This condition did not seem to retard recent

urban growth, but it may do so in the future. Migration to the cities will doubtless remain strong despite the growing inability of the large urban centers to provide adequate housing, services, and even suitable employment for the flood of newcomers. For there is growing awareness among the rural populace that levels of living are higher in the city, and the actual transfer of residence is becoming a more familiar and easy step.

In recent years, the cities have been drawing an ever-increasing number of rural people who want to get away from the subsistence level of living they have always known. They hope to find better jobs and a better life in the city. These migrants more often than not end up in

shanty-town hovels which are even inferior to their rural homes. When they finally do find work it is usually as low-paid, unskilled laborers who invariably are caught between rising living costs and low wages. Even though hope turns to frustration for most of the migrants, few return to their rural homes. The discontent generated as levels of living sink lower and lower poses a serious threat to social, economic, and political stability.

The economic burden of increasing urbanization is felt most painfully in the squatter areas which cluster at the edges and in the centers of many Philippine cities, beyond the reach of most public utilities. In Metropolitan Manila, about 30 per cent of the inhabitants are estimated to be squatters.

The squatters suffer, in extreme form, the socioeconomic deprivations which are common even in better-off neighborhoods. According to Laquian's (1968) study of Barrio Magsaysay, a slum settlement in Tondo, 44 per cent of the 2,625 families interviewed reported either no regular income or earnings less than ₱100 per month. Two-thirds of the households had electricity but much less than a third had toilet facilities. The common complaints of the respondent was the lack of water, roads, and toilets. Thus, the country faces the formidable task of urbanizing large areas of her existing cities.

The squatter areas reflect an unfortunate fact of economic and social development in present day Philippines — urbanization is outpacing industrialization. The slower pace of industrialization has contributed to urban unemployment, underemployment, and the resulting low standards of living apparent in the squatter settlements. The country's urban population has grown at a faster rate than the number of her people engaged in non-agricultural work. Clearly, the Philippines faces a double threat, a population explosion combined with a severe population implosion.

Population Projections

The construction of population projections,

using the most advanced demographic techniques, is no exercise in crystal gazing. It is a procedure both sophisticated and ingenious.

The starting point is population data — the more detailed and accurate, the better. Essential information includes the total population and such components as breakdowns of the population by age and sex; death rates for the total population and for its age-components; birth rates and other special measures of fertility. Where such data are lacking or inadequate, as in the Philippines, much skill and ingenuity must be employed in developing from other data estimates adequate to fill these gaps.

If birth rates and death rates never changed, it would be a simple matter to forecast future populations with great accuracy. That vital rates may, and do, change greatly complicates matters. Future population depends on how these variables shift and the rate and magnitude of the shifts.

To meet this difficulty, a series of projections is prepared which, hopefully, will bracket the range of possibilities. These are based on different sets of assumptions regarding changes in birth and death rates.

Depending mainly on how rapidly fertility declines in the Philippines, the "low" and "medium" projections of Lorimer show a population ranging from 49 to 51 million in the year 1980; the "high" projection totals 53 million. The Inter-Agency Committee on Demography, convened by the OSCAS, NEC, in January 1965, adopted the following estimates for 1980: low, 55 million; medium, 56 million; and high, 59 million. The United Nations, in re-assessing its population projections in 1968, calculated the medium variant (gain of 0.60 year in life expectancy at birth per calendar year, until reaching 60 years of age) which showed a population of 54 million by 1980. Thus, these various projections range from a low of 49 to a high of 59 million in 1980.

Estimates of the population at the turn of the century are only available from the Lorimer projections and the United States Bureau of the

Census. These point to a population in the year 2000 which may vary from a low of 73 million to a high of 116 million. Rapid population increase, increasing urbanization, trade intensification, advances in popular education, continued mortality declines, and other social and economic gains may exert pressure toward fertility reduction in the near future. A drop in the birth rate seems likely to occur sooner or later although it is not possible to foresee at what time such a change will occur in the Philippines.

In the longer-range view of the future, the figures suggest that as much as a tripling of the Philippine population can occur by the end of the century, even if fertility decline has already begun. In fact, even if it were possible for the Filipinos to attain a reproduction rate of only two children per couple (net reproduction rate [NRR] = 1) by any date in the reasonably near future, the population would still continue to grow for an additional 65 to 70 years. The ultimate stationary population (one that is no longer growing) achieved would be far greater than at the time the two-per-couple rate were achieved.

The United States Bureau of the Census estimates on the basis of a 32.4 million population in 1965 that should the NRR reach unity in the quinquennial period, 1980–85, the population would become stationary in the year 2045, with 83.6 million people. However, if NRR = 1 were not reached till a decade later, stability of the population would occur around the year 2050, with a total population of 102.5 million. But should the two children per couple not be achieved till the turn of the century, the population would not be expected to assume a stationary structure until 2060, with a total of 127.6 million people.

In evaluating these "radarscopings" of future population growth, it cannot be too strongly emphasized that the realization of the projections depends on many additional factors too complex and unpredictable to measure. The value of projections of future growth is that they do give a picture of what might happen if everything went according to "plan" — if the assump-

tions were realized, if no calamities occurred.

With mortality still declining and with persistent high fertility, a population of 111 million people 30 years hence is within the realm of possibility. If these projections are taken as a point of departure for a realization of the outlook in this country, they will have served a very useful purpose.

In the words of B. R. Sen, former FAO Director-General (1965), "the next two or three decades will be a critical period in man's history, and will either see the beginning of mankind as a whole taking responsibility for its destiny or a drift towards disaster. But inaction will be a counsel of despair. Man with his inexhaustible resources of intelligence and inventiveness is capable of meeting the challenge. What is necessary is to put moral ardour and unbending will into the heart of this intelligence. Only thus will human fellowship and human rights acquire their true meaning."

Note

¹Aromin (1961) used two methods, based on the assumption that fertility has remained unchanged and that the degree of completeness of death registration is similar to that of births in any given year.

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COMMENTS ON THE CONCEPCION PAPER

Francis C. Madigan*

I received Dr. Concepcion's paper only at one o'clock this afternoon. Rather than attempt an "instant evaluation" of it, therefore, I have prepared comments upon the topic itself, not upon her paper.

I have three points to make. First, I believe it unlikely that we will reach 111 million, or even 90 million people by 2000 A. D. this is partly an act of faith in the Filipino people, whom my experience has shown to be highly intelligent. I believe that they will avoid growing like Topsy into a situation which by 2000 A.D. will prove very difficult for the national economy to sustain, if it does not prove disastrous.

My opinion is also based in part on the rate

of increase between 1960 and 1970, which, if both Censuses as so far reported are substantially accurate, was 3.11 per cent per year. To reach 111 million in 2000 A.D. would require an increase of 0.61 in the average rate between 1970 and 2000 A.D., or an average of 3.62 per cent per year.

Further, rural and urban populations, even in Mindanao, are changing traditional notions about family size. A survey of 18 Bukidnon Province barrios accomplished by the Research Institute for Mindanao Culture of Xavier University in 1968-69 and just published, shows that up to 40 or more of families in this isolated rural province have already learned something of family planning, that as many as 15 per cent approve of it, and that some few couples are already practicing it. The transistor radio, to which we found 50 to 70 per cent listening in barrio after barrio, appears to be the main source of their inform-

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ation. Urban population such as that of Cagayan de Oro are much further along in knowledge and practice of family planning. My point is not that restriction of family size has already become substantial in scope, but that the family-planning message is reaching the people, and their experience of hardships in providing for the proper development of their children is confirming what they hear. For much the same reasons, it does not seem likely that the population will total 90 million persons in 2000 A.D. This would require maintaining a rate of growth of 3 per cent a year from now until 2000 A.D.

It seems to me more likely, and this is my second point, that with the difficulties of maintaining a large family in the decades ahead, and with the presumed presence of effective family planning propaganda, rates of increase will decline from present levels so that population size in 2000 A.D. will be between 65 and 85 million, perhaps between 70 and 80 million. The average rate of annual increase will have to fall to 1.89 per cent if population size is to total only 65 million in 2000 A.D., or to 2.27 per cent if the number is to be 72.7 million. In terms of raising levels of living, a population of 70 to 74 million by the year 2000 A.D. would obviously be much more feasible for the economy to support, than one of 90 to 110 million. This would roughly be twice our 1970 population, whereas 111 million would be a population three times as large.

My third point is the adjustment which the economy must make if the large decline in birth rates, which appears necessary for the welfare of the nation, actually takes place. An accom-

panying large decline in rate of growth of demand for certain goods would occur. Such consumer goods as foodstuffs, clothes, domestic utensils, and educational materials would be affected. The domestic market has been for so long a seller's market, in which producers could expand production almost at will, secure in their confidence of a rapidly expanding market, that contraction of the growth rate of demand might lead to overproduction, overstocking, and business losses. The reaction could be one of contraction of output, unemployment, lowered purchasing power, and a deflationary cycle leading to economic depression. Many economists see a close association between falling birth rates in Europe and America in the 1920s and the Great Depression of the 30s.

My point is not that contraction of the economy will necessarily follow. It is rather that the danger of such a contraction should be foreseen, and adequate plans worked out by economic planners to avoid the danger. One way would be to draw up realistic measures to educate manufacturers and merchants for a necessary transition, in certain fields, from a seller's to a buyer's market. The strategy would be, as the birth rate began to fall, to make intensified efforts to induce consumers to increase the volume of their purchase in a wider variety of products than before. The means might be easier credit terms, lower interest on loans, better advertising, and so forth. Such a prepared transition could then lead to a better and wider distribution of goods and services and a higher average level of prosperity.

Wilfredo F. Arce *

Fr. Madigan's caveat notwithstanding, I find Dr. Concepcion's analysis of the continuing and

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projected increases of population in our society quite alarming. It is alarming because it calls into question the ability of our society to achieve and maintain an acceptable quality of life in the face of continuing increases in population. Many

people are now looking for jobs or are under-employed. One estimate says that the number of people seeking jobs will probably double in 14 or 15 years. Every year, we read in the newspapers about children having difficulty in gaining admission to crowded schools. It is projected that elementary school enrollment will expand from 6.7 million in 1968 to 9.4 million in 1980. If we look at other demand areas — the demands for housing, for food, for water, for transportation, for health services — we are likely to see the same worrying picture. While we are encountering difficulty just meeting current levels of demand, these levels are almost certain to increase in the face of an expanding population.

How are we going to meet those demands in the future? Surely, one would be very naive to suggest that arresting population growth alone would solve the problem. We need to organize ourselves more effectively, and make more efficient use of our existing resources, if we are to meet at an acceptable level the demands of the population in the future. But we need time to do all this. Arresting excessive population growth will help us buy that time.

An uncontrolled expansion of population not only poses a threat to that acceptable quality of life that we are all seeking for ourselves; it also poses a threat to the quality of individual freedom that we wish to enjoy. I refer to the freedom of the individual to get married and raise the kind of family that he wants with as little interference — from the state, in particular — as possible. Sometime ago, I attended a conference on family planning. In the middle of the conference a telegram from a congressman was read. It said that the congressman was preparing a bill which, among other things, would require people wishing to get married to attend a family-planning course before a marriage license is issued to them. Now, I do not intend to discuss the pros and cons of this proposed bill; I do not even know all the provisions of this bill or that it has ever been filed. I bring up the matter simply to

make the point that governments will tend to impose stronger if not more coercive measures as the pressure from excessive population growth begins to mount. These measures will tend to erode the freedom of the individual; his freedom of conscience, his freedom to raise a family with a minimum of interference from the state. Our job is to forestall the situation where stronger measures become necessary by undertaking a more rational form of population control.

There are a number of things that might be said about *how* to control excessive population growth. Taking the "family planning message to the people," and "motivating people" are some of the common words and phrases used to label particular strategies adopted to increase acceptance of family-limitation techniques. These are important components of a sound population control program; indeed many of us in the behavioral and social sciences are committed to these strategies and are involved in research which we hope will contribute to the making of these strategies more effective. But an equally, if not more important component, of a successful program is the availability of services-clinics with the personnel and facilities that can provide the necessary assistance. For if it is true that we need motivators and advocates of the family-planning message, it is also true that it would be a tremendous boost to their work if they could honestly say that interested people would have little difficulty gaining access to family planning advice and services.

Finally, I should like to make a statement of opinion. I subscribe to the idea, expressed by others elsewhere, that an effective population control program should be a part of a total economic development program. Communities or families that see increasing opportunities for education, for employment, for raising income levels — in general, for achieving the good things in life — are more likely to see the connection between rational family planning and their enjoyment of a better life.

Flora B. Bayan *

Someone has said that "life is indeed a funny proposition — man is born into this world against his consent, leaves it against his will, and finds the voyage in between exceedingly rough." And we are witnesses to the fact that when the going gets rougher and more difficult than usual, it ceases to be funny and becomes tragic.

The picture that will be shaping up in the coming decades, owing to the awesome implications of uncontrolled population growth, has been depicted and forecasted here and elsewhere. Yet, even in our present situation, there are still those who would call us pessimists and morbid. We have been told that all this alarm is for the birds and the bees, considering that space exploration programs are now reaching places where people can emigrate, thus relieving this population explosion and implosion. How much relief you and I can get from this out-of-space project, is beyond my capacity to judge.

Those who view the population growth with concerned responsibility, and those who regard it as a problem which may very well be self-solving with the progress of time and of economic development, each have their own convincing protagonists.

In the rural setting, however, the national and international implications of the problem are hardly thought of or talked about; where there is any discussion at all, it is rather from a very personal, familial viewpoint. In order to interpret existing facts and figures to those belonging to the lower socioeconomic level, in order to reach the understanding of people living in the outlying areas and barrios, we must come to terms with them. This means that the facts and figures must be made meaningful to them in terms of their own values. Further, once they have made relevant practical conclusions for

themselves and their families, the ideas must be extended to the community level. In our family-planning project, the problem is not so much the dissemination of information, provided all available means and ways are at hand to carry out a general campaign; it is rather the need to deliver our message with an effectiveness that will ring bells with the people. Only if we speak their language and voice their values will they consider our thinking and reasoning valid enough to respect and accept. Only then will they join us and remain with us.

It has been noted that emphasis has to date been given to the family-planning education of those people currently in the reproductive years (15–44). This must change. Population and health education must reach the youth who will become the parents of the next generation. Educators in our school system must be encouraged to introduce suitable units or courses to help students recognize and learn the full responsibilities of parenthood not only in reference to their own families and communities but also to the people and the nation as a whole. By their very nature, educational institutions are well equipped to guide and direct the behavioral and value changes we seek in these young people. This exposure to population dynamics should also include a study of comparative health problems associated with children, pregnancy, and child-bearing, as well as nutrition and disease, personal hygiene, and family and community sanitation responsibilities, along with other socioeconomic matters.

It was stated in Dr. Concepción's paper that a drop in the birth rate seems likely to occur sooner or later, and I believe this too. But even as we are in the process of reaching the family-planning eligibles already with us, there occurs a yearly influx of some 1.6 million new entries into this category of 15–44-year-old females. This, as we all know, goes on and on inevitably; hence the advocated redirection and re-orientation of our pre-high school and post-high school curri-

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cula so as to reach young people even before they enter the child-bearing years. To reach our goal, we must create and nurture a well-instructed mass of Filipinos.

From the public-health point of view, it may very well be that unless we are able to lower the neonatal, perinatal, infant, and childhood mor-

talities to such levels as will ensure survival of the children to be born and already born, we may not be able to convince couples to space, much less to limit, their family size. Hence the reduction of maternal and child mortality is one of the objectives we seek to attain if we are to convince people of the advantages of family spacing and limitation.

Juan M. Flavier *

I was reassured by the chairman, Mrs. Hollnsteiner, that the order of commentators today was not arranged according to height. Even so, being the last person to be called on is not particularly enjoyable, since you wait your turn hoping the earlier comments will not cover the points you have prepared.

Dr. Concepción asked two questions in the opening paragraph of her very scholarly paper: first, "Does the Philippines have a population problem?" and second, "What is to be done about it?" To answer the first question, I believe the Philippines is indeed afflicted with an acute population disease. But as a field man, I would like to comment on the second question, since it is more closely related to my interest in doing something about that acute population disease. My interest is in turning the technical know-how of the scientists into the practical do-how of farm families.

Specifically, I should like to raise the problem of appropriate language for bringing the science of family planning to end-users. While our acceptor rate in the Philippines is supposedly impressive, there is a growing crop of drop-outs. These represent acceptors who stop practicing family planning by removal of the IUD or by stopping the pill for one reason or another. Our data are not yet adequate for a thorough study

of this phenomenon, since our preoccupation has been with first acceptors and our records have been well kept only for about two years. But from my visits to people, especially in the rural areas, I can attest that drop-outs are a growing reality. Incidentally, drop-outs are not only a local phenomenon. The best data from Taiwan and South Korea indicate that their drop-out rate is as high as 60 per cent of acceptors after two years of family-planning practice.

Why is this so? I submit that possibly the explanation rests in the absence of an adequate language to explain the relevant concepts, mechanics, motivations, incentives, and side-effects. How can we in fact teach family planning if there are no equivalent words available to translate much of our terminology and nomenclature?

Do you know for example that there is no translation for IUD, the intrauterine device? Field workers refer to the IUD as *plastik* or occasionally *alambre*. And for some reasons, the connotation of *alambre*, or wire, is one of rigidity or pain. Yet when drop-outs occur we wonder why. Do you know that there is no local word for hormones? How can you explain fully and adequately the hormone basis for the suppression of ovulation as the mechanism of action of birth-control pills? Someone said hormone is *harmónika* in Tagalog. Why, we are not even attuned to our needs! Do you know also that we have no word in Pilipino for ovulation — that is, a word understandable and in common

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use. We should not be surprised when the women who stop taking the pill do not realize that the ovulatory suppression has been lifted. An intelligent nurse once lectured to the rural women, and in defining the reproduction physiology, she spoke as follows:

Alam ninyo, ang bawat babae ay may dalawang obario. Buwan-buwan ay linalabasan ito ng itlog. Ito ang tinatawag na obulasyon. Ang itlog ngayon ay dadaan sa palopiya at pag nakita ang sperma ay ang tawag ay pertilisasyon!

She said *sperma* as a translation for "sperm,"

forgetting that to her listeners it meant "candle," and not the male seed. So often we hispanicize English words and call them Tagalog, but they are not comprehensible to minimally educated women.

If we are to succeed in doing something to avert the future tragedy in terms of this acute population disease, I respectfully submit that we consider the problem of communication with our people about motivation, mechanics, and side-effects in language that our people understand.