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CONTENTS

September, 1959

- Population Increase and Geographical Distribution
in the Philippines 154
John J. Carroll, S. J.
- The Problem of Underemployment in the
Philippines 176
Perfecto R. Franche
- Problems of Developing Urban and Rural Definitions
for Philippine Population Statistics 185
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THE ASSOCIATION

- Directory of Individual Members 195
- Life Members 206
- Board of Directors for the year 1959 207
- Founding Members 208
- Statement of Ownership (Required by Act 2580)
Inside Back Cover
- Directory of Institutional Members Back Cover

POPULATION INCREASE AND GEOGRAPHICAL DISTRIBUTION IN THE PHILIPPINES

By JOHN J. CARROLL, S.J. *

INTRODUCTION

Among the many factors which must be considered in discussing the economic development of a country such as the Philippines, this paper will deal with two: the rate of population growth and the geographical distribution of the population in relation to agricultural resources. The importance of these factors in the overall process of economic development is clear: if economic progress is to be real, it must proceed at a rate greater than that of population growth; and in an agricultural nation the possibility of achieving such a rate of growth will depend in part at least on an advantageous geographical distribution of the population.

But if the general importance of these factors is clear, their relationship to each other and to the other factors involved in economic development is highly complex, and accurate information for each specific country is necessary before any conclusions can be drawn. A United Nations analysis states:

The review of scientific studies points clearly to this conclusion: the question of how population growth affects the material welfare of the people does not admit of any general answer that would be valid in all places and at all times. The answer depends on many circumstances, all of which must be examined in order to understand the problem of population in any country. At present the relevant circumstances are very different in different part of the world.¹

It is not the purpose of this paper to propose a plan for economic development in the Philippines; it will deal with only two of the many "relevant circumstances" referred to in the United Nations study, and will be more concerned with the accuracy of the data than with detailed economic planning. The implications of the data for problems of economic development will be indicated briefly and in quite general terms.

*Southeast Asian Study Program, Cornell University, N. Y., U. S. A.

¹United Nations, *Population Growth and the Standard of Living in Under-Developed Countries*, (New York, 1954), ST/SOA Ser A, No. 20 p. 2.

CHAPTER I

POPULATION TRENDS IN THE PHILIPPINES

Until 1939

It has been estimated that in the year 1800 the population of the Philippines was 1,561,251.¹ Two censuses were taken during the nineteenth century, but of the Christian population only;² a third was interrupted by the Spanish-American War. The population-growth from the beginning of the present century to the Second World War can be seen in the totals for the three censuses taken during the American period:³

Year	Census Total
1903	7,635,426
1918	10,314,310
1939	16,000,303

The above census totals indicate an annual rate of natural increase of 21 per 1,000 for the period 1903-1939.⁴ This rate is calculated from the censuses rather than from the birth rate and death rate statistics because it is generally agreed that there was considerable under-registration of both births and deaths throughout the period.

Estimates of natural increase based on census totals show the difference between the birth rate and the death rate; they do not indicate the rates themselves. A rate of natural increase of 21, for example, could be the resultant of a birth rate

¹ Philippine Bureau of the Census and Statistics, *Statistical Abstracts of the Philippines*, (Manila, 1950 rep.int), p. 12, Table 11 "Population of the Philippines from 1799 to 1939."

² Ibid.

³ Ibid.

⁴ Unless otherwise specified, by birth rate and death rate in this paper are meant the crude rates. These are defined as number of births or deaths in a given year per 1000 of the midyear population. The rate of natural increase is the increase due to births and deaths, per 1000; it can be calculated by subtracting the death rate from the birth rate, or estimated from the increase shown in successive censuses. Aside from natural increase, the other component of population growth in a country is international migration, but the net increase in the Philippine population attributable to international migration is small enough that for our purposes it may be ignored.

of 50 and a death rate of 29 or a birth rate of 35 and a death rate of 14. Accurate knowledge of the actual birth rate and death rate is necessary for determining the long-term prospects for population development, and in recent years methods have been developed for estimating these rates from census data in the absence of accurate vital statistics. The age-structure of the Philippine population — the proportion of the population in the successive age-groups—has been fairly constant in successive censuses, indicating a fairly constant birth rate. And the very high proportion of the Philippine population found in the earlier age-groups, combined with other factors, points to a birth rate in the neighborhood of 50 per 1000.⁵ Similar studies of the age-structure and of the proportion of reported deaths pertaining to each age-group indicate a death rate between 1918 and 1939 averaging about 27 and dropping perhaps as low as 22 or 23 by the end of this period.⁶ It would follow, therefore, that the rate of natural increase which averaged 21 between 1903 and 1939 was actually approaching 30 as the death rate dropped at the end of this period.

1939-1948

It is reasonable to assume that population-growth in the years 1939-1948 was considerably below what it would have been in normal times. The dangers and privations of the war years undoubtedly caused an excess of deaths, and probably also a deficit of births: the same may be said, for Central Luzon at least, of the years of civil strife and disorder which followed the War. Yet the Census of 1948 indicated a substantial increase in population, and a rate of increase not far below the average rate for the 1903-1939 period. The 1948 total was 19,234,182;⁷ this represented an increase of 3,233,879 over 1939 and indicated an annual rate of increase of 19 per 1000. The age-composition revealed in the 1939 and 1948 Censuses suggests a birth rate for the period of about 50 and a death rate of about 30.

⁵ Edith Adams, "Notes on the United Nations' Population Projections for the Philippines," (unpublished document made available by Director Bernardino G. Bantegui of the Office of Statistical Coordination and Standards, National Economic Council, Manila).

⁶ *Ibid.*

⁷ Philippine Bureau of Census and Statistics, *Statistical Handbook of the Philippines*, (Manila 1954) p. 3.

⁸ Edith Adams, "Notes on the United Nations' Population Projection."

POPULATION INCREASE AND GEOGRAPHICAL DISTRIBUTION

There is a problem, however, about the 1948 Census. Amos H. Hawley has, by internal analysis of the 1948 results and comparison with the 1939 results, given evidence of serious inconsistencies in the year 1948 figures⁹. Hawley suspects that there was considerable over-enumeration in 1948, and by a complicated chain of reasoning he argues to a 1948 population of between 18,000,000 and 18,500,000 with a 1939-1948 average annual rate of natural increase of 16.3 per 1000.

Hawley's criticism of the 1948 Census has been answered by another demographer, Francis C. Madigan, who believes that Hawley exaggerated its defects.¹⁰ Nevertheless, Hawley called attention to an important fact. It is entirely possible that the peace-and-order situation in some regions in 1948, and the fact that the census was taken in the rainy season when travel is particularly difficult, may have induced more than one census-taker to **estimate** the population in dangerous or inaccessible **barrios** rather than to **count** it. The Census remains our best estimate of the 1948 population total, but caution is called for in accepting its regional and age-group sub-totals.

The Present Trend

What is the present rate of population growth in the Philippines? To those responsible for economic and social planning this is the crucial question, and a number of attempts have been made to answer it.

The first class of these attempts has consisted of projections from past census data. The Bureau of the Census has published population estimates based on a continuation of the rate of growth, 19 per 1000 per year, indicated by the 1939-1948 Census totals.¹¹ Vicente Mills has worked out and applied a much more sophisticated method of projection, which involves a "growth factor" derived by a mathematical comparison

⁹ Amos H. Hawley, *Papers in Demography and Public Administration*, (University of the Philippines, Rev. Ed., 1954), "The Philippine Census of 1948," pp. 11-26. vbgkqj

¹⁰ Francis C. Madigan, "Hindsight and Foresight: The Census of the Philippines, 1948 and 1960," *Philippine Studies*, VI (March 1958), pp. 87-104

¹¹ Philippine Bureau of the Census and Statistics, "Estimated Population by Natural Age Groupings, Provinces, and Year, Philippines: 1948-1957," (Manila, processed, 10 p.).

of four successive censuses.¹² His method, moreover, allows for a "high," "medium," and "low" projection—depending on which censuses are used and how their data are combined.

There is not a great difference between these two sets of projections as they apply to the present. For July 1, 1957, the Bureau of the Census estimate of 22,689,700 falls about midway between Mills' "medium" and his "low" estimates. For the more remote future, however, Mills' projection involves a decline in the rate of natural increase to a point considerably below 19 per 1000.

Despite the painstaking work that has gone into these projections, and that of Mills in particular, they are both subject to a source of error which exists as a possibility in any projection of past population trends into the present or future. They presuppose that rates of natural increase, or trends observed in these rates, will continue unchanged.¹³ This is a very questionable assumption in the case of the Philippines. Natural increase during the war years, on which the projections are in part based, was probably below what it would have been in normal times. And postwar improvements in public health and medical practice — malaria control, DDT, antibiotics, etc. — may well have resulted in an increase in the rate of natural increase by lowering the death rate. It would seem probable, therefore, that the population since the war has been increasing more rapidly than the projection would suggest.

Doubts about the validity of available population data and projections have led in the last three years to the collection of a new type of data, that of the Philippines Statistical Survey of Households.¹⁴ By modern sampling methods it is possible to estimate population characteristics from quite small samples, hence to do it quickly and cheaply. It is possible, moreover, to divide the sample into sub-samples, obtain an independent estimate of a population-characteristic from each sub-sample, and by a comparison of these estimates to obtain a definite measure of reliability for the final estimate—usually expressed as the standard error or coefficient of variation.

¹² Vicente Mills, "The Population of the Philippines; Its Growth and Prediction," *The Philippine Statistician*, II, 1 (1953), pp. 55-89.

¹³ Mills explicitly recognizes this difficulty (p. 74).

¹⁴ The Philippines Statistical Survey of Households (hereafter PSEH) is a joint project of the National Economic Council and the International Cooperation Administration.

POPULATION INCREASE AND GEOGRAPHICAL DISTRIBUTION

The PSSH drew up a sample design directed toward a stratified sample of Philippine households: 6,500 households in 300 *barríos*, 150 *poblaciones*, 58 provincial capitals and cities, and Metropolitan Manila.¹⁵ Between May 1956 and May 1958 six survey rounds were completed. In April 1958 an Inter-Agency Committee on Demography was established for the purpose of reviewing the evidence on population growth and of preparing revised population estimates for the period 1948-1962.¹⁶

The figure used by the Committee as a base was the March 1957 PSSH estimate of household population; to this was added 200,000 for the population not living in households, giving a total for mid-1957 of 23,322,000. This is higher than the Bureau of Census estimate, and falls between Mills' "high" and "medium" estimates. It represents for the period 1948-1957 a 21% increase over the 1948 Census total, and an average rate of natural increase of about 23 per 1000.

It seems probable that rate of natural increase during the period 1948-1957 was not constant, but rather was increasing as the post-war improvement in living conditions produced a decline in the death rate. Hence the average figure for this period does not serve as a reliable estimate of the present trend. Other methods were employed, therefore, to obtain a more accurate estimate of the current demographic situation.

The age-structure revealed by the PSSH, similar to the age-structures of the last three censuses, suggests a birth rate near 50.¹⁷ The May 1956 PSSH round indicated that the "average number of children ever born" to married women in the sample who have completed their child-bearing years is 7.1; this is consistent with a birth rate in the low 50's.¹⁸ And a study of the number of children in the 0-4 year and 5-9 year age groups according to the March 1957 PSSH estimate

¹⁵For a brief description of the sampling design, see Philippine Statistical Survey of Households Bulletin, Series 1, Vol. 1, (January 1957), pp. 1 f. See also Milton D. Lieberman, "Philippine Statistical Program Development and the Survey of Households," *Journal of the American Statistical Association*, LIII, 281 (March 1958), pp. 78-88.

¹⁶Information on the work of the Committee has been supplied by Edith Adams, United Nations Population Branch demographer, who worked on the population estimates.

¹⁷The procedure employed here involved the use of model stable populations calculated from life tables constructed by the United Nations from existing populations. (Edith Adams, "Notes on the United Nations Population Projections").

¹⁸Edith Adams, "Notes on the United Nations Population Projections."

points to a birth rate between 46 and 53 for the period 1947-1957.¹⁹ At the same time, studies of the age-distribution of registered deaths points to a death rate dropping from about 30 during the War to about 20 at present.²⁰

Other studies independent of the PSSH data point in the same direction. A study of under-registration of births in Nueva Ecija indicated that only about 65% of births in that province were registered and that the true birth rate there is about 53.²¹ Frank S. Morrison has shown that the average birth rate reported for areas of "relatively good" registration (i.e. above the national average) is 44.8; and that the average reported death rate for these areas is 11.5.²² This is consistent with an actual birth rate in the high 40's.

On the basis of available data, the Inter-Agency Committee adopted a series of estimates for the period 1948-1962 showing a rate of natural increase of 20 at the beginning of this period and 29 at its end. The various studies employed are all subject to errors of one kind or another because of the nature of the data; yet the convergence of results independently arrived at is impressive. Final word on the size and rate of growth of the Philippine population must wait for the results of the 1960 Census; but to the writer it seems most probable that the figures adopted by the Committee are approximately correct, that the birth rate is about 50 and the death rate about 20, with a rate of natural increase close to 30 per 1000 or 3% per year.

Projection of population trends into the future is a notoriously risky undertaking; yet for purposes of economic and social planning they are necessary. Table I shows the United Nations' projections to the year 1980 beside those of Vicente Mills to the same year. Of the two the United Nations' projections are probably the more reliable in terms of present trends. They predict a doubling of the Philippine population

¹⁹ Edith Adams, "Estimates of the Crude Birth Rate of the Philippines by Method of 'Reverse Survival'", (unpublished document dated 19 May 1958 and made available by Director Bernardino G. Bantegui of the Office of Statistical Coordination and Standards, National Economic Council, Manila.)

²⁰ Edith Adams, Notes on the United Nations Population Projections."

²¹ Basilio B. Aromin, "The Demographic Situation in the Philippines," *The Statistical Reporter*, II, 3 (July 1958), p. 1

²² Frank S. Morrison, *A Study of Vital Statistics in the Philippines and Their Relation to the Annual Population Increase*, International Cooperation Administration, (Manila 1957).

in about 22 years — probably as rapid a rate of natural increase as has ever occurred in a national population.

The figures demonstrate graphically the possible impact of modern public health and sanitation upon a population with an initial high birth rate and high death rate. They offer a tremendous challenge, moreover, to the economic and social planners. If these speculative increases are to be realized without a serious decline in an already low standard of living—and such a decline could actually prevent the increases from being realized, by causing a rise in the death rate—the economy must produce 3% more goods and service each year than it did the preceding year. Each year there will be that many more mouths to be fed and jobs to be provided, that many more hospitals, schools, and churches to be built, that many more doctors, nurses, teachers, and priests required. By 1980 the cumulative increase will have doubled present demand for all of these. The number of children—nonproductive members who must be supported by the working population—will increase even more rapidly than the total population. The accumulation of the capital necessary for economic development will be made more difficult by the tendency to apply all income to the immediate needs of the growing population.

At the same time it should not be forgotten that a growing population offers an abundance of manpower to develop the great unexploited resources of the Philippines, and a promise of more and more consumers to stimulate the economy.

Finally it is to be emphasized that these projections, like all projections, are speculative. The superiority of the United Nations' projections to those of Mills lies in the fact that they are based on more recent and more refined data; but their realization will depend on whether present trends continue unchanged. These speculative increases may not, in fact, be realized if either:

- a) the economy fails to keep up with the rate of population increase, with a consequent decline in the standard of living and rise in the death rate: or
- b) some change in the percentage of the population marrying, in the average age at marriage, or in other practices related to marriage, occasions a decline in the birth rate.

Table 1
POPULATION PROJECTIONS FOR THE PHILIPPINES
1950-1980

United Nations ¹		Vicente Mills ²		
		High	Medium	Low
1950	20,150,000	20,227,237	19,948,159	19,669,081
1960	26,605,000	24,747,880	24,029,273	23,310,666
1970	36,320,000	29,914,495	28,575,626	27,236,756
1980	50,840,000	35,727,260	33,585,297	31,443,333

¹ To appear in the United Nations publication, *The Population of SouthEast Asia (including Ceylon and China (Taiwan), 1950-1980*, Population Studies, ST/SOA/Ser. A 30.

² Vicente Mills, *The Population of the Philippines*, p. 72.

CHAPTER II

GEOGRAPHICAL DISTRIBUTION OF THE POPULATION

In 1948

It has long been recognized that the great bulk of the Philippine population is concentrated in the older, long-settled agricultural regions, while much of the great and fertile island of Mindanao is only thinly populated. To many it seems that Mindanao holds the key to the future of the Philippines, offering an abundance of unexploited resources to support the growing population.

Some measure of the concentration of population would seem to be desirable, and in particular a measure which will show the relationship between population and agricultural resources. For predominantly agricultural regions, the physiologic density figure — the number of people per square mile of cultivated land — should, when taken in conjunction with the amount of reserve arable land, give a reasonably good measure of this concentration. It should be noted, however, that these figures directly indicate population concentration relative to resources; they do not necessarily indicate population pressure, low per-worker productivity, or a low standard of living. Hawley has, as a matter of fact, shown that in 1939 certain regions of rather high physiologic density had per-worker productivity rates above the national average.¹ The

¹ Amos H. Hawley, *Papers in Demography and Public Administration*, "Differential Population Pressure in the Philippines", pp. 54-67, esp. p. 58.

POPULATION INCREASE AND GEOGRAPHICAL DISTRIBUTION

population-resources ratio is not a simple relationship of people to land; it involves the relative importance of agriculture and other occupations in the economy, the level of technology employed, the condition of the soil, rainfall, typography, the world market for a given product, and many other factors — social, economic, and technological.

Nevertheless, other factors being equal, physiologic density and the amount of reserve land will serve as a rough index — especially in a country with a high rate of natural increase — of population pressure. In such regions high-per worker productivity can hardly be maintained through time without a genuine technological revolution; and no such revolution has occurred in Philippine agriculture.

A glance at Table 2 will show that in 1948 the regions of high physiologic density and low land reserve were: the Ilocos Region and Mountain Province, parts of Central Luzon, the Eastern and Western Visayas. In these regions the physiologic density was well over 1,000 per square mile, and the reserve land frequently zero; in some cases there were sizeable reserves of land, but this was for the most part too mountainous for profitable farming. A few provinces of Southern Luzon and Bicol Region were beginning to show signs of population-concentration also: the provinces of Batangas, Cavite, Laguna, Albay and Catanduanes. The Cagayan Valley was a region of moderate concentration with a considerable reserve of land, which may or may not be actually suitable for agriculture.

The large reserves of land in Mindanao will be immediately evident, but the high density figures may be surprising. Actually they reflect the difficulties of life on the frontier and the pattern of settlement there — small, closely-packed settlements surrounded by great expanses of unexploited forest land. Clearing the land is a great problem, as is the lack of roads and other facilities.

Table 2
 PHYSIOLOGIC DENSITY AND RESERVE ARABLE
 LAND IN THE PHILIPPINES, 1948 1

Region 2	Province	Cultivated Area (sq. mi.)	Physiologic Density 3	Reserve Land (Acres) 4
Ilocos and Mt. Prov.	Abra	46	1,910	0
	Ilocos Norte	141	1,786	70,000
	Ilocos Sur	133	2,120	0
	La Union	131	1,818	0
	Mountain	132	2,118	99,000
Cagayan Valley and Batanes	Batanes	5.5	2,000	0
	Cagayan	310	1,005	525,000
	Isabela	330	805	408,000
	Nueva Vizcaya	77	1,100	521,000
Central Luzon	Bataan	65	1,450	112,000
	Bulacan	286	1,441	25,000
	Nueva Ecija	880	530	0
	Pampanga	352	1,126	0
	Pangasinan	446	2,066	0
	Tarlac	342	956	0
	Zambales	82	1,716	84,000
Southern Luzon and Islands	Batangas	420	1,214	0
	Cavite	208	1,262	7,000
	Laguna	332	968	0
	Marinduque	126	685	0
	Mindoro	230	737	185,000
	Palawan	82	1,306	1,666,000
	Quezon	740	561	496,000
	Rizal 5	96	7,005	102,000
Bicol	Albay	410	963	0
	Cam. Norte	155	688	165,000
	Cam. Sur	522	1,062	110,000
	Catanduanes	120	942	0
	Masbate	242	876	0
	Sorsogon	435	669	25,000
Western Visayas	Antique	152	1,540	70,000
	Capiz	352	1,256	0
	Iloilo	641	1,328	0
	Negros Occ.	782	1,328	382,000
	Negros Or.	300	1,378	133,000
	Romblon	144	760	84,000

POPULATION INCREASE AND GEOGRAPHICAL DISTRIBUTION

Region ²	Province	Cultivated Area (sq. mi.)	Physiologic Density ³	Reserve Land (Acres) ⁴
Eastern Visayas	Bohol	380	1,462	0
	Cebu	548	2,051	33,000
	Leyte	792	1,271	419,000
	Samar	625	1,230	1,427,000
Southern Mind. and Sulu	Cotabato	350	1,279	1,980,000
	Davao	500	729	2,471,000
	Zamboanga	480	1,087	1,489,000
	Sulu	190	1,272	151,000
Northern Mind.	Agusan	170	743	1,099,000
	Bukidnon	100	634	481,000
	Lanao	314	1,095	681,000
	Mis. Occ.	230	917	80,000
	Mis. Or.	266	1,388	237,000
	Surigao	360	736	870,000

¹ Figures are from Spencer, Joseph E. *Land and People in the Philippines*. Berkeley and Los Angeles, Univ. of Calif. Press, 1952, pp. 44 and 121 f. The figures are based on the 1948 Census.

² The provinces have been grouped in regions corresponding to the regions of the PSSH, for purposes of comparison.

³ Physiologic density is the number of people per square mile of cultivated land. In calculating it, Spencer used 1948 Census data for population, and estimates of cultivated land interpolated from various sources.

⁴ Spencer's data is taken from J. P. Mamisao, "Soil Conservation Problems in the Philippines," *Journal of the Soil Science Society of the Philippines*, Vol. I (1949), pp. 5-17. It is still not known how much of the reserve land of the Philippines can be farmed by the usual methods, how much will require special techniques or be suitable only for tree crops and pasturage, and how much can not be profitably farmed at all by known techniques.

⁵ Rizal Province includes part of the Manila metropolitan area, which explains its high density.

1948-1957

Physiologic density figures must of course be interpreted in terms of factors such as rainfall, topography, soil fertility, etc.; not all of the land reserves listed in the table can be profitably farmed at present. Nevertheless the figures do indicate in a rough way the concentration of population in the

old, long-settled regions, and the possibility of expansion into undeveloped areas. There has in fact been, since 1948, much talk of migration to Mindanao; there has also been some actual migration, but the extent of this migration has not been accurately determined thus far.

An opportunity for estimating the direction and extent of migration is offered by the PSSH figures for the ten regions into which the country was divided for the survey. The PSSH total for May 1957 is slightly less than 20% larger than the 1948 Census total. If we disregard the non-household population omitted from the PSSH total, and if we assume that the rate of natural increase is fairly uniform throughout the country,² then it follows that regions with an increase much in excess of the 20% national average may be considered areas of in-migrations; conversely, regions with an increase considerably below 20% may be considered areas of out-migration. The regional totals are given in Table 3.³

The first and most evident conclusion from the table is that an important current of migration has been directed toward Manila. This is not, of course, news to anyone who has observed the post-war development of the Manila metropolitan area. Certain of the other figures are more interesting.

The Ilocos Region (Region II) shows an increase slightly in excess of the national average, but owing to the high standard error for this region the excess is not statistically significant. The actual increase may be very close to the national average or even somewhat below it. But the common assumption of heavy migration out of the Ilocos area finds no support in the figures.

The Cagayan Valley and Batanes (Region III) show an increase significantly above the national average. This is a region which in 1948 had a lower physiologic density average and more reserve land than either the Ilocos Region or Central Luzon; it may be that there has been a movement from Central Luzon into this area.

² Provided this non-household population (the armed forces, institutional and "floating" population) is not all drawn from one or two regions — which seems unlikely — it will not seriously bias our analysis of relative population increase. Because of rural-urban fertility differentials, the figures will tend to over-estimate natural increase in Manila and underestimate migration to Manila.

³ Since the standard error is proportionally larger for small populations, the PSSH figures do not permit a useful province-by-province comparison.

Table 3
RELATIVE POPULATION INCREASE BY
REGIONS, 1948-1957

Region ¹	1948 Census	May 1957 PESH Estimate	Standard Error of Estimate ²	1948-1957 Increase	1948-1957 Per Cent Increase	Difference from Average (20%) Increase ₃
I Manila	1,366,840	1,988,800	73,187	621,960	45.5	- 348,592
II Ilocos & Mt. Prov.	1,129,793	1,430,450	134,891	300,657	26.6	- 74,699
III Cagayan Valley & Batanes	669,006	1,029,100	109,290	360,094	53.8	- 226,298
IV Central Luzon	2,774,680	3,156,200	73,539	381,520	13.7	- 173,418
V Southern Luzon & Islands	2,160,668	2,665,600	84,766	504,932	23.3	- 72,799
VI Bicol	1,666,459	1,941,550	52,421	275,091	16.5	- 58,200
VII Western Visayas	3,082,795	3,506,600	153,589	423,805	13.7	- 192,754
VIII Eastern Visayas	3,440,617	3,786,250	90,870	345,633	10.0	- 342,490
IX Southern Mindanao & Sulu	1,567,290	2,078,150	137,989	510,860	32.6	- 197,402
X Northeast Mindanao	1,376,034	1,492,900	70,763	116,866	8.4	- 158,340
TOTAL	19,234,182	23,075,600	542,276	3,841,418	19.9	- 5,415

(Footnotes to this table are found on the next page).

¹ The regions are as follows:

- I: Manila. In the 1948 Census tabulation this included the political area only. In the PSSH it includes all of the Metropolitan Area, i.e. Quezon City, Pasay City, Caloocan, San Juan, Mandaluyong, Makati, Parañaque. The 1948 population of these municipalities (382,934) has been added to the 1948 Manila total.
- II: Ilocos-Mt. Prov.: the provinces of Abra, Ilocos Norte, Ilocos Sur, La Union, Mountain Province.
- III: Cagayan Valley, Batanes: the Provinces of Batanes, Cagayan Isabela, Nueva Vizcaya.
- IV: Central Luzon: the provinces of Bataan, Bulacan, Nueva Ecija, Pampanga, Pangasinan, Tarlac, Zambales.
- V: Southern Luzon and Islands: the provinces of Batangas, Cavite, Laguna, Marinduque, Occidental Mindoro, Oriental Mindoro, Palawan, Quezon, Rizal. In the 1948 Census tabulation, but not in the PSSH, Rizal province included municipalities in the Manila Metropolitan Area which were outside the political boundaries of Manila — as listed under Region I. The 1948 population of these municipalities has been subtracted from the 1948 Region V total.
- VI: Bicol: the provinces of Albay, Camarines Norte, Camarines Sur, Catanduanes, Masbate, Sorsogon.
- VII: Western Visayas: the provinces of Aklan, Antique, Capiz, Iloilo, Negros Occidental, Negros Oriental, Romblon.
- VIII: Eastern Visayas: provinces of Bohol, Cebu, Leyte, Samar.
- IX: Southern Mindanao and Sulu: the provinces of Cotabato, Davao, Zamboanga del Norte, Zamboanga del Sur, Sulu.
- X: Northeastern Mindanao: the provinces of Agusan, Bukidnon, Lanao, Misamis Occidental, Misamis Oriental, Surigao.

² Regional totals and coefficients of variation were supplied by Director Bernardino G. Bantegui of the Office of Statistical Coordination and Standards. I have calculated the standard error from the coefficient of variation in each case. The statistical probability is about 68% that the true population total lies within the range: estimate plus or minus the standard error. For example, the probability is 68 out of 100 that the true Manila total lies between (1,998,800 minus 73,187) and (1,998,800 plus 73,187). If we double the range (substitute $2 \times 73,187$ in the above formulas) the probability rises to about 95%. It follows that a population increase which departs from the national average increase by more than one standard error will indicate a real difference from the average 68% of the time; an increase departing from the national average by twice the standard error will indicate a real difference 95% of the time.

³ The actual average increase indicated by the over-all totals is between 19.9% and 20%. I have rounded it to 20 with the result that the positive and negative variations do not cancel out precisely. It is to be noted

POPULATION INCREASE AND GEOGRAPHICAL DISTRIBUTION

that this figure does not represent the total population increase, for the PSSH estimates represent household population only whereas the Census figures represent the total population. It seems reasonable to assume that the non-household population (200,000 or more) is fairly well distributed over the country and is drawn from most of the ten PSSH regions. It will not, therefore, seriously distort our measure of relative population increase in the various regions.

Central Luzon (Region IV), a region in 1948 of high density and low reserves of land, shows a deficit of increase. This suggests migration either to Manila or to the Cagayan Valley, the nearest areas of in-migration. The excess of increase for Southern Luzon and Islands (Region V) is not significant statistically — being less than the standard error; there may have been a small amount of net migration either way.

The Bicol Region (Region VI) shows a deficit which is hardly significant statistically, only slightly greater than the standard error. There may have been a moderate migration out of this region.

The Visayas, both Western (Region VII) and Eastern (Region VIII), show deficits. In the case of the Eastern Visayas, however, this is much more significant than in the case of the Western Visayas; it indicates heavy migration out of the area. The Visayas were in 1948, as has been noted, a region of high physiologic density, with much of the reserve land in the region too mountainous for farming.

Perhaps the most surprising figures are those for North-east Mindanao, indicating a significant deficit. This may be due in part to overenumeration in 1948 — the overenumeration in turn due to difficulties of travel and communication — but there is certainly no evidence in the figures of migration into this region.

Southern Mindanao and Sulu show a moderate excess which may reflect some migration into the area. The excess here is not much greater than the deficit of increase in Northern Mindanao; it could in fact be explained by migration from that region alone.

1939-1957

Doubt may be cast on the conclusions of the previous section in that they are based on the questionable regional totals of the 1948 Census. The conclusions may be tested, however, by a comparison of the 1957 PSSH figures with figures derived from the 1939 Census, which is generally regard-

Table 4

RELATIVE POPULATION INCREASE BY REGIONS, 1939-1957

Region 1	1939 Census	May 1967 PSSH Estimate	Standard Error of Estimate ²	1939-1957 Increase	1939-1957 Per Cent Increase	Difference from Average (44.2%) Increase ³
I Manila	848,211	1,988,800	73,187	1,140,589	134.4	+ 765,660
II Ilocos & Mt. Prov.	1,101,473	1,430,450	134,891	328,977	29.8	- 157,574
III Cagayan Valley & Batanes	600,151	1,029,100	109,290	428,949	71.5	+ 163,683
IV Central Luzon	2,324,187	3,156,200	73,539	832,013	35.8	- 195,277
V Southern Luzon & Islands	1,845,769	2,665,600	84,706	819,831	44.4	+ 4,002
VI Bicol	1,346,620	1,941,550	52,421	594,930	44.2	- 276
VII Western Visayas	2,667,626	3,506,600	153,589	838,974	31.5	- 340,116
VIII Eastern Visayas	3,021,845	3,786,250	90,870	764,405	25.3	- 571,250
IX Southern Mindanao & Sulu	1,194,636	2,078,154	137,989	883,514	74.0	+ 355,485
X Northeast Mindanao	1,049,785	1,492,901	70,763	443,115	42.2	- 20,889
TOTAL	16,000,303	23,075,600	542,276	7,075,279	44.2	+ 3,168

¹ For the provinces included in these regions, see note 1 of Table 3. The 1939 population of suburban Manila (224,719) has been subtracted from the 1939 Region V total and added to the 1939 Manila total.

² For a discussion of the standard error see note 2 of Table 3.

³ The actual average increase is slightly over 44.2%. I have rounded it to 44.2%.

POPULATION INCREASE AND GEOGRAPHICAL DISTRIBUTION

ed as reliable. This we have done in Table 4, with the result that most of our conclusions are confirmed. In general, a region with a deficit of increase in Table 3 shows a deficit also in Table 4, and a region with an excess in Table 3 shows an excess also in Table 4.

The chief case in which our previous conclusion was not confirmed is Region II, Ilocos and the Mountain Province. This region shows a deficit for 1939-1957 in contrast with its excess for 1948-1957. This could be the result of an underenumeration in 1948, but as this was not a region of civil disorder or special difficulties of travel in 1948 we have no special reason to suspect an underenumeration there. To this writer it seems more probable that there was a migration out of this area between 1939 and 1948, which migration ceased between 1948 and 1957.

The Cagayan Valley and Batanes show an excess both for 1948-1957 and for 1939-1957; but the excess for 1948-1957 is greater than the excess for the longer period 1939-1957. This suggests that there may have been a migration out of this region between 1939 and 1948, followed by a larger migration into the region in recent years. This pattern has a resemblance to the Ilocos pattern and may reflect a single cause, such as the vicissitudes of Ilocos-Cagayan tobacco farming.

Southern Luzon and the Islands have an increase remarkably close to the national average, suggesting an absence of net migration of any importance.

Manila is the most important region of excess on both tables, indicating migration to the capital throughout the 1939-1957 period. The Bicol region is stable for period 1939-1957; there may have been some in-migration in 1939-1948 balancing the 1948-1957 deficit. Both Eastern and Western Visayas are areas of out-migration; and Southern Mindanao and Sulu an important area of in-migration.

The 1939-1957 deficit in Northeastern Mindanao is not significant statistically, in contrast with the very significant 1948-1957 deficit. To the writer this suggests overenumeration in 1948 due to difficulties of travel there during the rainy season, and an absence of net migration. It could also, however, indicate a migration into this region in the period 1939-1948 followed by migration out of the region.

Table 5 gives in summary form the writer's conclusions--in part conjectural -- based on his interpretation of Table 3

Table 5

NET MIGRATION IN THE PHILIPPINES BY REGIONS,¹
1939-1957

Region	1939-1948	1948-1957
I Manila	in-migration	in-migration
II Ilocos & Mountain Province	out-migration	n o n e
III Cagayan Valley & Batanes	out-migration (?)	in-migration
IV Central Luzon	out-migration	out-migration
V Southern Luzon & Islands	n o n e	n o n e
VI Bicol	in-migration (?)	out-migration (?)
VII Western Visayas	out-migration	out-migration
VIII Eastern Visayas	out-migration	out-migration
IX Southern Mindanao & Sulu	in-migration	in-migration
X Northeastern Mindanao	n o n e (?)	n o n e (?)

¹ For the provinces comprising these regions, see the note 1 of Table 3.

and 4. It will be interesting to see how these conclusions are affected by the studies of migration and geographical distribution now under way or to be undertaken by the PSSH and the United Nations Population Branch.

Prospects for the Future

We shall conclude this paper with a consideration of a different type from those which have occupied us hitherto. Migration to the agricultural frontiers in the past ten years has accounted for only a small fraction, certainly less than 15%, of the population growth of the period. Which seems to confirm a statement of Hawley:⁴

In short, population is seldom the only factor that lends itself to change, and it is seldom the most manageable factor. As the experience with resettlement programs has abundantly shown, the transplantation of substantial numbers of people is a slow and costly process.

The development of Mindanao is important for the long-term progress of the Philippines, but it is no short-term cure-all for the economic problems of a growing population. And it would be a tragedy if it were emphasized to the extent of neglecting the improvement of per-man and per-hectare yield of land presently under cultivation. The per-hectare yield of Philippine agriculture is among the lowest in Southeast Asia, and far below the level which can be achieved by known techniques. Improving this yield is less dramatic, but probably far more important for the immediate future, than resettlement programs on the frontier.

⁴ Amos H. Hawley, *Papers in Demography and Public Administration* p. 67

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THE PROBLEM OF UNDEREMPLOYMENT IN THE PHILIPPINES

By *PERFECTO R. FRANCHE* *

The confusion on employment and unemployment statistics has led the Philippine Statistical Survey of Households (PSSH) to undertake a series of studies and experimentations and to develop concepts, definitions, and techniques in the measurement of the labor force of the Philippines. The results of the sample surveys taken during the last three years have helped to clear up to a certain extent the confusion arising from conflicting statistics in this field.

Due to the peculiar nature of the Philippine economy, the major objective of any study of labor potential should be directed more to its utilization rather than to measuring the volume of unemployment. Too much emphasis and importance have been given to unemployment.

The measurement of unemployment in industrialized countries is not as important as it is in less developed countries. In the former the evil effects of rising levels of unemployment have their economic and social repercussions. It may even have its political impact, hence, it should be kept to a certain level.

Due to the peculiar economic and social structure in agricultural countries like the Philippines, total unemployment is not as serious a problem as underemployment. The inefficient and inadequate utilization of available labor in these countries has led to general poverty and suffering among the masses. There is not much work to do in the farms except, perhaps, during the planting and harvest seasons and if there is any work to do at all it is not enough to keep all persons of working age fully occupied. This lack of steady and sufficient work as well as appropriate jobs for persons who have some kind of employment, has resulted in low production and low incomes which may not even be sufficient for the bare necessities of life.

In the Philippines, for example, where around sixty percent of the employed labor force is engaged in farming, the low

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THE PROBLEM OF UNDEREMPLOYMENT

production has brought about not only poverty and want but also widespread discontent. The situation is made worse by the fact that roughly one-fourth of the total employed population of the country or more than 2 million persons are unpaid family workers who have no visible income; and roughly two-fifths or more than 3 million are self-employed workers including, among others, small farmers, peddlers, and sari-sari store operators who are forced to engage in marginal enterprises because of lack of wage or salary work.

There is no doubt that labor wastage is a chronic economic malady especially in the rural areas, and the measurement of the real nature and extent of such wastage, manifested in various forms and degrees of underemployment, is a more pressing need at present than the measurement of total unemployment which is concentrated in the Metropolitan Manila area and other urban centers. It was, therefore, the primary purpose of the PSSH surveys to categorize the different segments of the labor force so as to show the degree of utilization of the country's available manpower resources. It was considered particularly important to know the dimension of the underemployed group and their distribution in the different sectors of the economy, such information being essential in the formulation of a sound, efficient, and balanced economic development program.

II. SOURCES OF DATA

The statistical data presented herein were taken from the results of the sample surveys of households taken in October 1956, in March and May 1957 and in May and November 1958, by the Philippine Statistical Survey of Households which is now the Division of Surveys of the Bureau of the Census and Statistics.

III. CONCEPTS USED IN MEASURING UNDEREMPLOYMENT

In the PSSH surveys, employed persons working forty hours or more during the week are considered full-time workers and those working less than forty hours are classified as part-time workers. The forty hours' work a week as the minimum for full-time employment was arbitrarily adopted because of the lack of uniformity in what may be considered as the normal duration of work in the different occupations

and industries.

Employed persons whether working part-time or full-time, who expressed a desire for additional work are considered to be underemployed, on the assumption that such persons are able and willing to do more work than what their jobs provide. If the person wanting additional work is a part-time worker, he is considered **visibly underemployed** but, if he is a full-time worker, he is considered **invisibly underemployed**. It should be borne in mind, however, that not all part-time workers can be considered underemployed since many of them are voluntary part-time workers who do not want or are not in a position to take additional work. In this category are students and housewives doing some kind of work only as a secondary activity, those who are limited in their work activities by youth or advanced age or by physical defects or handicaps, those who do not have much interest in their work or lack the inclination to work on a steady basis, or those who are not compelled by economic necessity to have full-time employment. If an employed person already working full-time still wants additional work, his underemployment is said to be of the **invisible** type because it is not apparent, although it can be inferred that his desire for more work springs from his need for additional income or his lack of opportunity to make full use of his occupational skills or abilities in his present job. It is obvious, therefore, that the **visibly underemployed person** is in a worse predicament from the economic standpoint than the **invisibly underemployed person**.

IV. ANALYSIS AND INTERPRETATION OF DATA

A. General Trend of Underemployment

The underemployment figures as shown in Table 1 are quite impressive and they cannot fail to command the attention and interest of the discerning reader. Evidently, there is an undercurrent of general dissatisfaction on the part of the working population which cannot be ignored, and this feeling is brought about by the serious lack of opportunities for additional or full-time employment. The estimated total number of underemployed persons, i.e., those wanting additional work, ranged from slightly over 1.4 million in May 1957 to about 1.9 million in May 1958. The table further shows that roughly one-fifth of all employed workers were underemployed — 21.4

Table 1

DISTRIBUTION OF PERSONS IN THE LABOR FORCE BY EMPLOYMENT STATUS AND DISTRIBUTION OF THOSE EMPLOYED BY DESIRE FOR ADDITIONAL WORK AND THOSE WANTING ADDITIONAL WORK BY HOURS WORKED DURING THE SURVEY WEEK, FOR THE PHILIPPINES: OCTOBER 1956; MARCH, MAY AND OCTOBER 1957; MAY AND NOVEMBER 1958.

Employment Status and Hours Worked by Employed Persons Wanting Additional Work	Number (in thousands)						Percent of the Labor Force						Percent of the Total Employed					
	1956 Oct.	1957			1958		1956 Oct.	1957			1958		1956 Oct.	1957			1958	
		Mar.	May	Oct.	May	Nov.		Mar.	May	Oct.	May	Nov.		Mar.	May	Nov.	May	Nov.
In the Labor Force	8,561	8,561	8,922	8,829	9,659	8,976	100.0	100.0	100.0	100.0	100.0	100.0						
Total Employed (Fully & Partially)	7,702	7,960	8,149	8,199	3,782	8,329	90.0	93.0	91.3	92.9	90.9	92.8	100.0	100.0	100.0	100.0	100.0	100.0
Not wanting additional work	6,052	6,372	6,713	c	6,925	6,546	70.7	74.4	75.2	c	71.7	72.9	78.6	80.1	82.4	c	78.9	78.6
Wanting additional work (Underemployed)	1,650	1,588	1,435	c	1,857	1,783	19.3	18.5	16.1	c	19.2	19.9	21.4	19.9	17.6	c	21.1	21.4
Worked 1 to 39 hours (Visibly underemployed)	1,089	1,009	936	c	1,097	1,037	12.7	11.8	10.5	c	11.4	11.6	14.1	12.5	11.5	c	12.5	12.5
Worked 40 hours and over (Invisibly underemployed)	556	574	498	c	760	745	6.5	6.7	5.6	c	7.9	8.3	7.2	7.2	6.1	c	8.7	8.9
Hours not reported	5	5	1	c	a	1	0.1	0.1	b	c	b	b	0.1	0.1	b	c	b	b
Totally Unemployed	859	601	773	630	878	647	10.0	7.0	8.7	7.1	9.1	7.2	—	—	—	—	—	—

a—Less than one thousand.

b—Less than 0.1 percent.

c—Information not obtained in this survey.

The absolute figures are rounded to the nearest thousand without being adjusted to give the group totals which are also independently rounded. Percentages are computed from actual absolute figures and may not always add to exactly 100.0 percent because of rounding, although the total percent is always shown in the table as 100.0.

percent in October 1956; 19.9 percent in March and 17.6 percent in May of the following year; and 21.1 percent in May and 21.4 percent in November of 1958. It can also be seen from the data that from 16.1 percent to 1.9 percent of the total labor force was composed of underemployed persons.

Admittedly, the prevalence of underemployment poses a serious problem with economic as well as social implications. Although there was a gradual decline in 1957 in the number of the underemployed as well as in the ratio of the underemployed to the total employed population, the figures showed an upward trend in 1958. It is obvious that the increase in employment or work opportunities cannot keep pace with the rapid growth of the population and the labor force.

B. Visible Underemployment

The number of visibly underemployed persons, i.e., those who were on part-time employment during the survey week who expressed a desire for additional work, exceeded one million in four survey rounds although the number went below but still remained close to the one-million mark in May 1957. Effective means should be found to utilize fully the unused labor potential of such a great number of part-time workers for the economic development of the country. This being a democratic country, it is not out of place to state that there is no need for regimentation to put these workers to work, for they are able and willing and they have the time to do a greater amount of work than what they are doing now.

Results of five surveys reveal that from one-ninth (11.5 percent) to one-seventh (14.1 percent) of employed persons were in a state of visible underemployment. The fact that visibly underemployed workers constituted from about three-fifths (November 1958) to nearly two-thirds (October 1956) of the total underemployed and that their need for additional work is apparently greater than that of the rest of the underemployed should spur the government and private enterprise to take positive steps and adopt necessary measures to provide these workers with increasing opportunities for full-time employment.

Survey results also show that employed workers in a condition of visible underemployment comprised from one-tenth to one eighth of the total labor force. They constituted

THE PROBLEM OF UNDEREMPLOYMENT

a greater proportion of the labor force than the totally unemployed.

C. Invisible Underemployment

For survey purposes, as was explained earlier, employed persons, working 40 hours or more a week are considered to have worked full-time. Survey results show, however, that a significant proportion of such full-time workers still want additional work and are, therefore, considered to be in a state of invisible underemployment. The number underemployed among full-time workers ranged from about half a million in May 1957 to about four-fifths of a million in May 1958, and they comprised from 6.1 percent to 8.9 percent of all employed workers or from 5.6 percent to 8.3 percent of the total labor force. The fact that these workers, though employed more or less full-time were dissatisfied and discontented is quite significant, for in an economy with limited employment opportunities they are actually competing with the visibly underemployed (involuntary part-time workers) as well as with the totally unemployed for full-time or part-time job openings.

The number of invisibly underemployed persons could even be greater than what was reported because there are full-time workers who, in spite of abnormally low incomes and their desire to increase their earnings, would find it physically impossible to accept additional work and for that reason would not report themselves as wanting more work. For example, such would be the situation of most domestic servants who, as a rule, work long hours but are poorly paid, of workers in farms with low production yields because of the use of antiquated farm implements or inefficient methods of farming, and of unpaid family workers who would like to shift to wage or salary work but find no opportunity to do so.

D. Underemployment by Industry

Table 2 shows the industrial distribution of underemployed workers and the incidence of underemployment among agricultural and nonagricultural workers.

The data presented in the table reveals that roughly one million persons employed in agriculture and related indus-

tries were underemployed and their number represents from three-fifths to two-thirds of the total underemployed in all industries taken together. This is a positive indication of the existence of chronic underemployment, especially in agricultural areas where an increase in the acreage of land under cultivation is no longer possible and the number of people depending on agriculture for a living keeps on increasing because of population growth. The sub-standard living conditions resulting from such a situation can be relieved only by providing satisfactory outlets for surplus labor found in these areas through the development of existing industries other than agriculture, if there are any, or the development of new ones; through improved methods of farming and diversification of productive farm activities; through the adoption of measures that will make it possible and profitable for farm workers to utilize the land for production for a longer period during the year than what is now possible; and through migration of the excess population to the less populated areas of the country..

V. CONCLUSION

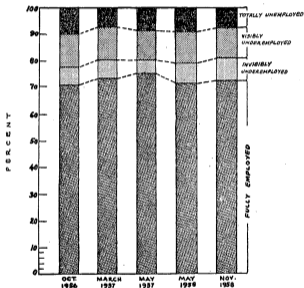
Table 1 shows a disturbing economic situation — that is, underemployment is more widespread and affects a much greater number of persons in the labor force than total unemployment. It can be readily seen that the total number of underemployed persons was almost twice the number of the totally unemployed in October 1956 and in May 1957, and more than twice in March 1957 and in May and November 1958. The nation is thus faced not only with the problem of creating job openings for the totally unemployed but also with the seemingly more serious and pressing problem of providing enough work or work that is more profitable or remunerative for the underemployed workers of the country.

Table 2.—PERCENT OF EMPLOYED PERSONS IN AGRICULTURE AND IN NONAGRICULTURAL INDUSTRIES WANTING ADDITIONAL WORK, FOR THE PHILIPPINES: OCTOBER 1956; MARCH AND MAY 1957; MAY AND NOVEMBER 1958.

Type of Industry and Desire for Additional Work	Number (in thousands)					Percent				
	1956	1957		1958		1956	1957		1958	
	October	March	May	May	Nov.	October	March	May	May	Nov.
Total Employed (Both Sexes)	7,702	7,960	8,149	3,782	8,329					
Agriculture	4,548	4,579	4,938	5,325	5,276	100.0	100.0	100.0	100.0	100.0
Not wanting additional work	3,505	3,614	3,977	4,212	4,097	77.1	78.9	80.5	79.1	77.6
Wanting additional work (Underemployed)	1,043	966	961	1,113	1,180	22.9	21.1	19.5	20.9	22.4
Nonagricultural industries	3,154	3,381	3,211	3,457	3,052	100.0	100.0	100.0	100.0	100.0
Not wanting additional work	2,547	2,759	2,737	2,713	2,450	80.8	81.6	85.2	78.5	80.2
Wanting additional work (Underemployed)	607	622	474	744	603	19.2	18.4	14.8	21.5	19.8

See footnote in Table 1.

**PERCENT DISTRIBUTION OF PERSONS IN THE LABOR FORCE
BY EMPLOYMENT AND UNDEREMPLOYMENT STATUS,
FOR THE PHILIPPINES: 1956-1958**



Total Labor Force:

OCT. 1956	... 8,561,000
MARCH 1957	... 8,561,000
MAY 1957	... 8,922,000
MAY 1958	... 8,659,000
NOV. 1958	... 8,976,000

PROBLEMS OF DEVELOPING URBAN AND RURAL DEFINITIONS FOR PHILIPPINE POPULATION STATISTICS*

By *BERNARDINO A. PEREZ*

One objective of a national system of statistics is to provide specific information on certain areas. Statistical agencies must equate the types and kind of areas for which they report to the needs of the users of the data and to the costs of operations. Continuous demand for different ways of presenting area totals goes on in response to various public needs. Government planners, market analysts, population researchers, business firms and hosts of individuals and groups want basic data not only in the conventional area divisions but also according to a great variety of socio-economic areas. Thus, there are requests for data for nearly a dozen different kinds of statistical areas such as the municipalities, islands, provinces, congressional districts, geo-economic regions, urban-rural areas, and several administrative areas of the Bureau of Internal Revenue, the Department of Agriculture and Natural Resources, the Department of Labor, the Philippine National Bank and of other agencies.

In the enumeration and presentation of population data, there has been an increasing need for a set of statistical areas to be used as a general compromise. For many statistical purposes, geo-economic regions and administrative areas are too large and often heterogeneous in their composition; whereas individual barrios or municipalities are too small and too numerous to be usable. Provinces are being cut up and created, rather for political considerations, a little too often to serve as stable basis. The tabulations for each of these individual areas would be costly and more detailed than needed for most national purposes.

Provinces and regional areas designed for purposes of administration, being subdivisions hardly based on factors other than political, prove to be unsatisfactory because of their arbitrary determination, limited-purpose use and inflexibility of boundary. Dr. Amos Hawley has observed that what the functionally delineated community area lacks in stability, the administrative area boundary possesses in excessive degree. The

* Paper read before the Seventh Annual Conference of the Philippine Statistical Association held on July 11, 1969, Manila.

inflexibility of political boundaries are due less to their irresponsiveness to growth and development than to the immutability of vested interests. Adjustments of boundaries may be sometimes made but these are likely to be tardy having to wait upon legislations and depending upon shifts of political power.

In general, whenever it is not imperative by law that totals be reported for some of these areas (i.e., population of congressional districts) the presentation of data only for urban and rural area seem to possess the greatest possibilities for expanded use. Especially in the face of meager budgetary support for statistical activities, urban-rural classification may be useful for presenting a concise body of statistics on major characteristics of the population for the entire country with considerable saving in publication space, tabulation costs, and clerical work.

Urban and rural statistical areas have been found to be of great value, especially for describing the spatial aspects of the structure and functioning of the economy. The distinction exists, with wide variations, in the statistics of practically all countries. As a measure of the process of urbanization, it reflects the progress of the concomitant social and economic development. Analytical studies of the trends of demographic, educational, health, family, and economic characteristics of the urban and the rural components of the population serve as valuable guide to planning and appraising economic and social development.

The increasing concentration of the population in urban centers have directed specialized attention to the problem of cities, large towns and sub-areas. On the other hand, the poverty and backwardness in many neglected rural areas have caught the awareness of political leaders more and more so that the functions and services of the administration is now being brought to the rural areas by having specific agencies organized to deal with them. Producers of statistics could contribute to any action on these problems by developing data best fitted for the particular requirements of the amelioration efforts in local areas.

Comparisons of urban-rural differences with respect to patterns of fertility, mortality, age and sex ratios are valuable in understanding the process of industrialization and urbanization. With the rise of these central places of trade and culture

DEVELOPING URBAN AND RURAL POPULATION STATISTICS

at the convergence of transportation and communication lines is their role in initiating cultural and economic progress which affects the country side as well

The general problem in regards to the development of valid urban-rural statistics is that of setting up objective and practical criteria with which to differentiate the "urban" and the "rural" population. While the distinction pertains to the people with respect to the character of the place in which they live, the concept is fundamentally a classification of areas from which come, as derived data, the urban and rural population. The object is primarily to identify stable areas for which data could be reported consistently over time¹ and be as closely comparable as possible with those of the countries.

The difficulties in the way of developing standard urban and rural definitions is shown by the wide differences in the definitions which exist among forty-nine countries included in the UN study, "Data on Urban and Rural Population in Recent Censuses". The different countries have followed different approaches, putting varying emphasis in size of place, type of administrative organization, density of settlements, or prevalence of agricultural occupation. The choice of characteristics, a locality must have singly or in combination in order to be considered urban are closely related to the political geography of the country concerned and once established tend to become permanent.

In the Philippines the usage of the term urban as that which pertains to the city (or town) and rural as that which pertains to the country or to areas outside the city, dates far back into the Spanish regime.² The definition of the urban area as used in the 1939 and 1948 censuses is "Manila and poblaciones (administrative center of municipality) of all sizes". The remainder of the territory not encompassed by the definition for urban area is the rural. The urban areas in 1948 have population of 4,630,758 (24.1 of the total) and the

¹ During the ten year period 1948-1957 there were 218 municipalities created or converted from municipal districts and 12 which suffered minor changes thru legislation or executive order.

² The Urbana Tax first imposed in 1870 by Loyal Decree of the Spanish throne recognized individual taxability based on the rental value of urban property classified according to the kind of building material used

rural areas, 14,603,424 (or 75.9) of the total population.

In the current Philippine Statistical Surveys of Household, the urban areas were classified into the following: the chartered cities and provincial capitals, and Metropolitan Manila. The latter metropolitan area includes the Manila city proper and its suburbs, namely, Quezon City, Pasay City and Caloocan, Makati, San Juan, Paranaque and Mandaluyong municipalities. All the rest of the barrios comprised the true rural areas and the poblaciones comprised an intermediate sector. According to the 1948 Census, there were 1,256 poblaciones and 17,603 in the country. An idea of the effect on the data of the change in the classification with regard to the 1948 population is shown in table 1.

Table 1
URBAN-RURAL POPULATION OF THE PHILIPPINES, 1948
(applying PSSH definitions)

Total population of the Philippines, 1948	19,234,182	100.0%
Urban population	6,757,304	35.1
Metropolitan Manila	1,366,340	
Manila proper	983,906	
Pasay City	88,728	
Quezon City	107,977	
Suburban towns	186,229	
Chartered cities (excluding Manila, Quezon City and Pasay City) and provincial capitals	2,562,366	
Poblaciones	2,828,098	
Rural population (barrios)	12,476,878	64.9

URBAN-RURAL POPULATION OF THE PHILIPPINES, 1948
(applying 1948 Census definitions)

Total population of the Philippines, 1948	19,234,182	100.0%
Urban Population	4,630,758	24.1
Poblaciones	3,646,852	
Manila	983,906	
Rural population (barrios)	14,603,424	75.9

DEVELOPING URBAN AND RURAL POPULATION STATISTICS

The 1948 Census classification has been based mainly on differentiating the smallest political division which is the seat of administration (the *poblacion*) as urban and the remainder of the surrounding divisions (*barrios*) as rural. These political entities have definite boundaries which could be identified with visible surface features by an informed enumerator. But the common problem in the enumeration of these areas is that of ascertaining the boundary parts around these areas with the use of old and inaccurate *barrio* maps. Manila as part of the urban sector is also included on the basis of its being the national capital. However, the level of its administration is different from all the *poblaciones*.

A variation of this approach is followed for the current surveys in which the whole population, *poblaciones* and *barrios* of varying political units such as the chartered cities and the municipalities where the seats of provincial administrations are located, is classified as urban. In this method, the basis of classification is the political entity having a special form of local autonomy and made up of several of the smallest units of *poblaciones* and *barrios*.

While the boundary limits of *barrios* may conform, by and large, with the natural agglomerations or clusters of population, the political boundaries of chartered cities and provincial capitals may be extended far beyond the community area *per se* so that much sparsely settled area is included. On the other hand, these boundaries may be so contracted as a result of historical causes that closely settled inhabitants are excluded outside the official boundary.

By the present definition of urban and rural areas under which their population could be classified in statistical terms, the capital city and a number of the chartered cities and suburban and capital towns are fairly well recognized urban areas occupying clearly their corresponding fixed boundaries. The trouble begins when the boundaries remain fixed as population changes take place. While the opposite is just as troublesome when administrative areas include much sparsely settled land, the main problem arises in defining, first, the many smaller cities and towns, and second, the great number of new municipalities whose population by any reasonable definition, should be classed as rural but which are large enough to warrant separate reporting of data.

For population of Manila and certain large cities and towns on one hand, and the population living in farm areas on the other, the problem is simple. The former are definitely and without much question to be counted as urban; and the latter are put or definitely to be classified as rural. The source of the difficulty is the rather numerous areas which lie in transition between the two extremes. Since there is no point in the continuum from small barrios to large cities at which rurality disappears and urbanity begins, it would seem desirable, therefore, to use a relatively objective criterion for drawing a line to distinguish urban from rural and to retain as nearly as may be the original meaning of "city" and "country".

No doubt the word "urban" conjures up a picture of closely spaced paved streets, flush toilet and bath facilities, electric lights and colleges just in a few blocks in addition to many people living in close proximity to one another. But the practical task must be in terms of a scheme to separate urban, uniformly defined from rural areas. A standard definition for

Table 2

NUMBER AND POPULATION OF LOCALITIES IN THE
PHILIPPINES CLASSIFIED BY NUMBER OF
INHABITANTS
October 1, 1948

Size of Locality	Number of Localities	Population
50,000 or more	33	3,381,279
20,000 to 49,999	254	7,310,293
10,000 to 19,999	402	5,813,926
5,000 to 9,999	293	2,220,053
2,000 to 4,999	120	425,964
1,000 to 1,999	29	47,013
Under 1,000	71	35,654
All Localities	1,202	19,234,182

DEVELOPING URBAN AND RURAL POPULATION STATISTICS

international adoption has not been attempted considering that at one extreme, in Denmark, localities of 250 or more inhabitants are considered urban, while in Netherlands an urban locality must have 20,000 or more inhabitants and in Korea, at least 40,00 inhabitants. The UN however, has recommended that countries obtain data by agglomerations or population clusters classified by size showing at least the distinction between places of 10,000 or more, 2,000 and under 10,000, and under 2,000.

It has been until only very recently that the definition adopted for "urban" in the U.S. and Canada includes all persons residing in cities, towns and villages of 1,000 and more inhabitants whether it is incorporated or not plus the population in all parts of the several especially created census metropolitan areas".

The elements of a practical criteria which are more easily determinable are that (1) there be some definite minimum figure base below which the population of an agglomeration may be classified as rural, (2) there be some definite density figures to separate urban from rural population in the sub-urban areas, (3) there be some definite number base to report rural communities and (4) there be established definite, findable boundaries which go completely around the urban or rural country.

The accurate determination of the boundary between urban and rural areas depends on good maps adjusted on the basis of actual field verification as regards visible surface marks. In order to ascertain the correct boundaries, it is advisable to exclude from the urban area some persons who with a strict application of a definition, would be rural or inversely, to include some persons who would be urban. Where there is no legal or accepted definition, the boundaries will probably be found in new locations at each successive censuses. The urban area should be defined at each new population census.

Changes in the relative size of the urban and rural components of the population may come from migration to cities from rural areas. The population of city dwellers in a country can, of course, also grow if the rates of natural increase from an excess of births over deaths are higher in the cities than in rural areas. Usually, however, they are lower. The process of natural increase in the country as a whole can, however,

lead to a significant expansion in greater urbanization on purely statistical grounds, without migration or rural-urban difference in rate of increase.

✓ The formidable difficulties in developing standard definitions for urban and rural areas heretofore on the basis of total population of the barrio or the municipality are many. Moreover, recent trends of concentration of population into cities, housing shortage of the old centers, increase of effective commuting distance due to expansion of traffic facilities, and so on, have resulted in the urbanization of surrounding urban areas. The main portion of the problem lies in these suburban areas. Exclusion of the barrios of lesser cities and the inclusion of municipalities surrounding the metropolis have been desirable for a long time.

✓ Under such circumstances, the establishment of objective criteria for the recognition of metropolitan areas is a promising solution. The question of what the character of a metropolitan area is, should be set first. This should consider the pattern of the central seat of trade, administration and culture in relation to the tributary areas surrounding them which have a strong character of urban area. The central city and the minor cities or towns keeping socially close relations with the central city is what is called the "metropolitan area". The metropolitan area of Manila has thus been recognized for some years. There are five or so more regional centers in the Philippines which may be considered, i.e., Cebu, Iloilo, Bacolod, Davao, Zamboanga, and Baguio.

The next step to consider is the data available for the determination work. The definition of individual areas involves two considerations: a city or cities of specified population to constitute the nucleus of the city; and the economic and social relationships with the adjoining areas which are urban in character so that the periphery of the specific metropolitan may be determined. For use as indicator of urban character the data on the density of population, the absolute numbers of inhabitants in the central area, newspaper circulation, telephone use, the number of wholesale and retail stores, bakeries, the extent of transportation facilities, the ratio of agricultural workers to the total labor force, etc. should be tested for applicability. The collection and evaluation of these data requires immense time and expense for all candidate towns, districts, and barrios of the country. Among these indicators

DEVELOPING URBAN AND RURAL POPULATION STATISTICS

of urbanization and social and economic relations there are those which certainly will prove to be weak in character. In many instances the determination can not be made owing to the absence of the data or the presentation by the subdivision area is not available. Some feasible indices based on existing data are shown in table 3.

Since the character of the area to be delineated changes with the standard for admitting a sector into the area, a group of criteria or principles has to be provisionally established as conditions to be satisfied. These are the following:

1. **Population Criteria** — each metropolitan area must indicate at least one natural community with a certain minimum number of inhabitants say, 2,000; 5,000, or 10,000.

2. **The adjoining territory must satisfy a minimum of population density** such as 150 per sq. km. or 300, or 500, or 1,000. Studies which analyzed the character of communities by population size group in Japan show that the character of a local city begins to be seen in a community populated by 10,000 to 20,000 inhabitants. Such conditions applied to the average area of all such localities yields the density criterion.

3. **Criteria of metropolitan character** — These relate primarily to the attributes of the surrounding area. (a) The ratio of farm household to total households, or of agricultural worker to total labor force should be under a certain figure, say, 50 percent. (b) The number of certain facilities per 100 or 1,000 residents must not be under a certain figure. These facilities include the number of vehicle units, telephone units, number of certain community services, etc. (c) The location should be contiguous with areas meeting all other criteria.

The identification of standard metropolitan areas plus the more careful identification of barrio and poblacion boundaries, it is hoped, will make up a statistical basis for rural-urban definition useful in the presentation as well as the estimation of Philippine population data.

Table 3

MAJOR CITIES AND TOWNS OF THE PHILIPPINES
WITH CERTAIN URBAN INDICES: 1948

Locality	Population	Number of Telephones in Operation	Number of Telephones per 100 Population	Number of Bakeries*	Number of Retail, & Wholesale Stores*
Cities					
1 Manila	1,160,670	53,039 ^a	4.6		
2 Cebu	197,596	3,462	1.76	41	155
3 Iloilo	180,580	2,437	1.86	27	84
4 Bacolod	119,655	2,033	1.71	17	40
5 Davao	131,252	1,904	1.46	22	90
6 Baguio	34,519	1,354	3.93	13	14
7 Zamboanga	121,878	746	.615	14	74
8 San Pablo	59,496	537	.901	14	3
9 Dagupan	51,714	509	.985	18	12
10 Tacloban	53,581	467	.87	10	48
11 Iligan	30,347	426	1.40	5	41
12 Cabanatuan	64,489	357	.55	15	11
13 Naga	66,341	354	.533	11	25
14 Dumaguete	30,300	301	1.03	3	25
15 Lipa	58,846	300	.51	12	4
16 Cagayan de Oro	54,578	238	.437	10	30
17 Cavite	41,349	200	.48	8	—
18 Butuan	37,310	177	.48	6	16
19 Ormoc	85,800	100	.117	4	8
20 Legaspi	92,990	100	.108	5	13
Towns					
1 Angeles, Pamp.	44,305	578	1.3	5	4
2 Lucena, Quezon	39,037	497	1.22	8	11
3 Tarlac	76,202	497	0.65	13	7
4 San Fernando, Pamp	46,654	380	.813	5	4
5 Batangas	70,286	309	.44	16	6
6 San Fernando, La U	33,906	403	1.19	4	5
7 Cotabato	24,023	285	1.19	10	42
8 Jolo, Sulu	21,566	239	1.1	6	13
9 Candelaria, Quezon	24,909	200	0.8	—	1
10 Tagbilaran	18,935	179	.95	6	16
11 Laoag, I. Norte	32,384	150	.285	6	15
12 Surigao Surigao	54,392	121	.22	3	1
13 Vigan, I. Sur	24,352	121	.49	6	3
14 Pasig, Rizal	41,763	118	.28	13	—
15 Oroquieta, Mis. Or.	26,940	113	.42	5	4
16 Bontoc	17,701	109	.62	1	1

* Establishments employing five or more employees

^a Quezon, Pasay City and suburban towns included in Manila.

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Incorporated

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Recording Year of Admission

September 30, 1959

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