

RURAL FERTILITY IN CENTRAL LUZON

By

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This paper analyzes certain fertility data that were gathered incidentally in the Philippine Rural Survey, of 1952, which was concerned primarily with problems of land tenure and land use.¹ The survey undertook a complete enumeration of all households in nine barrios located in the rice-producing provinces of the central Luzon plain.² Among the relevant items of information for fertility analysis that were carried on the interview schedule are the number of live births ever had by each woman who either was the wife of or was herself the head of a household, the age, sex, marital status, number of years of school completed, and occupation of each member of the household, and the size of the farm operated. Although the age of each child living in the household was reported, it is apparent from an inspection of the schedules that not all living offspring actually resided in their parental households at the time of the survey. Thus the most usable fertility data available in this particular source are those pertaining to the number of live births ever had. The number of children under one year of age offers a second, although somewhat less satisfactory, basis for the measurement of fertility. Despite a number of limitations in the data at hand, they make possible not only the measurement of rural fertility but also some observations of social-economic differentials in rural fertility.

The count of individuals in the survey yielded a total population in the nine barrios of 14,230. In Table 1, where the age and sex distribution of that population is shown, a marked concentration in the youthful years is observable. The median age of the total population was but 17.4 years. Such a low median age suggests the combination of a very high reproduc-

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tion rate with considerable migration losses in the adult ages. The replacement index³ was 1.96 indicating a reproduction rate sufficient to double the population within a generation. While that index probably exaggerates the reproduction rate by as much as 30 or more per cent, there nevertheless was probably a substantial excess of births over deaths.⁴

TABLE I
NUMBER AND PER CENT DISTRIBUTION OF BARRIO
POPULATION, BY AGE AND SEX

Age	Number			Per Cent		
	Total	Male	Female	Total	Male	Female
Total	14,230	7,079	7,151	100.0	49.7	50.3
0-4	2,417	1,240	1,177	17.2	8.8	8.4
5-9	2,135	1,074	1,061	15.0	7.5	7.5
10-14	1,837	944	893	12.9	6.6	6.3
15-19	1,524	726	798	10.7	5.1	5.6
20-24	1,218	586	632	8.5	4.1	4.4
25-29	1,005	503	502	7.0	3.5	3.5
30-34	791	368	423	5.6	2.6	3.0
35-39	787	370	417	5.5	2.6	2.9
40-44	604	307	297	4.3	2.2	2.1
45-49	501	255	246	3.5	1.8	1.7
50-54	398	198	200	2.8	1.4	1.4
55-59	242	121	121	1.6	.8	.8
60-64	239	111	128	1.7	.8	.9
65 and over	532	276	256	3.7	1.9	1.8

The 14,230 people were distributed in some 2,700 households. Of these 2,380 included married women who either were wives of heads or were themselves heads of households. The 2,380 married women constitute the study population in the following analysis. An important feature of this group is their homogeneity. Over 82 per cent have had 4 years of education or less and fewer than 3 per cent have spent 9 or more years in school. Their husbands are also concentrated in the lower levels of educational attainment: 72 per cent have had less than 4 years of formal schooling and about 6 per cent have had 9 years or more. As is to be expected, the amount of education declines with age. Approximately 60 per cent of the husbands had farming as their usual occupation, whereas only 3 per cent were engaged in white collar occupations of various sorts. And of the farmers over 92 per cent operated farms of less

than 5 hectares. The small range of variability in the characteristics of the study population severely limits the opportunity to observe associations between fertility and social-economic variables.

Thus only brief attention may be given to the fertility of a given calendar year. Adjusting the number of children under 1 year of age for an estimated infant mortality, the 1952 nuptial fertility rate for rural women under 45 years of age was 287. This rate compares closely with a similar rate observed in a small urban sample, as may be noted in Table 2. It would appear, on the strength of this comparison, that urban and rural fertility in the Philippines are not appreciably different. On the other hand, since both rates are for a single calendar year, the similarity may be a coincidence.

TABLE II
BIRTHS PER 1,000 MARRIED WOMEN, BY AGE, IN
BARRIO AND URBAN SAMPLES, 1952

Age	<i>Barrio Sample</i> ¹	<i>Urban Sample</i> ²
All Women	287	281
Under 25	407	320
25-29	341	485
30-34	269	325
35-39	230	137
40-44	98	135

¹ Based on the number of children under one year of age adjusted for mortality.

² From Amos H. Hawley, "Fertility in An Urban Population," *The Philippine Statistician*, Vol. II, No. 4, December, 1953, p. 274.

The age patterns of fertility however, differ in the two populations. In the rural population fertility is highest in the earliest marital ages and declines in each succeeding age group. But in the urban sample peak fertility occurs in the 25-29 age group and, while it declines with age thereafter, fertility remains relatively high in the advanced ages of the reproductive period.

It is unfortunate that the data on fertility in 1952 do not permit further analysis, for when a different measure of fer-

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tility is employed contrary results are obtained. As may be observed in Table 3, the number of live births per woman in the rural population exceeds the ratio in the urban population by 33 per cent.⁵ Nor is the difference due to differences in age composition: when the rates are adjusted to a standard age composition they remain unchanged. An inspection of the age specific fertility ratio in the two populations reveals that most of the rural excess is attributable to the two oldest age groups. In the 35-44 year and 45 year and over ages rural fertility is 56 and 33 per cent, respectively, greater than is urban fertility. The marked difference between the fertility ratios for rural women under 35 years of age and 35 years of age and over suggests that fertility may have declined abruptly within the past 5 to 10 years. It is not unlikely that the almost continuous military activity of the preceding 10 years resulted in many marriage postponements and separations of marriage partners.⁶ If so, the apparently lowered fertility may prove to be temporary. The ratios for rural women of completed fertility, however, i.e., women 45 years of age and over, indicate no decline of fertility during the years of their reproductivity.

TABLE III
LIVE BIRTHS EVER HAD PER MARRIED WOMAN,
BY AGE, IN BARRIO AND URBAN SAMPLES

<i>Age</i>	<i>Barrio Sample</i>	<i>Urban Sample¹</i>	<i>Per cent difference</i>
All women	5.2	3.9	.33
Under 25	1.8	1.6	.12
25-34	3.9	3.4	.13
35-44	6.7	4.3	.56
45 and over	7.2	5.4	.33
45-54	7.2	—	—
55-64	6.9	—	—
65 and over	7.3	—	—

¹ Amos H. Hawley, *op. cit.*, p. 273, of this Journal Vol. II, No. 4, December, 1953.

A further suggestion of fertility decline in recent years is presented in Table 4. It is clear in column 2 of that table

that the children under 1 year of age in 1952 were not sufficiently numerous to replace those in any age group above 2, and that the 1 to 2 year old children were even less able to replace the numbers in succeeding age groups. This is shown in column 4 in which the expected 1952 birth cohort is reduced by the mortality rates reported for 1948.⁷ On that basis the 1952 infants would fail to replace later age groups (exclusive of the 1 - 2 year age group) by 15 to 18 per cent. Using the same mortality rates to estimate the birth cohorts represented by each age group enumerated in 1952, as in column 3, it appears that the number of births may have declined, since 1948, by almost 17 per cent. The data in table 4, of course, apply only to the number of births and not to birth rates.

TABLE IV

ENUMERATED POPULATION 0-5 YEARS OF AGE, EXPECTED BIRTH COHORTS, AND EXPECTED SURVIVORS FROM 1952 BIRTH COHORTS

<i>Age (years)</i>	<i>Population enumerated</i>	<i>Expected birth Cohorts¹</i>	<i>Expected Survivors from 1952 birth Cohorts²</i>
(1)	(2)	(3)	(4)
Under 1	501	(1952) 541	(1952) 501
1 — 2	434	(1951) 523	(1953) 460
2 — 3	508	(1950) 640	(1954) 439
3 — 4	500	(1949) 650	(1955) 422
4 — 5	474	(1948) 631	(1956) 412

¹ 1952 enumerated population 0-5 years of age adjusted for 1948 mortality.

² 1952 expected birth cohort reduced by 1948 mortality.

The reported numbers of live births ever had makes possible some analysis of the association of fertility with social-economic position. In this connection it should be remembered that the data thins out very rapidly in the higher social economic positions. For example, in Table 5, in which the numbers of live births ever had are tabulated by occupation of husband, 1,384 women are represented in the farm operator and laborer group, 700 in the non-farm manual worker group and

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but 77 in the white collar and professional groups. Despite this fact, a consistent pattern of variation is observable. The number of live births ever had per married woman is highest in the farm operator and laborers class and lowest in the white collar and professional class in every age group. Assuming the three occupational classes constitute a scale of some sort, there seems to be clear evidence of an inverse relationship of fertility with occupational position.⁸

TABLE V
NUMBER OF LIVE BIRTHS PER MARRIED WOMAN, BY AGE OF WOMAN AND OCCUPATION OF HUSBAND

<i>Age of wife</i>	<i>All occupations</i>	<i>Farm Operators and laborers</i>	<i>Non-farm manual</i>	<i>White collar & professionals</i>	<i>No occupation</i>
All wives	5.2	5.7	4.5	4.3	5.0
Under 25	1.8	2.0	1.7	1.5	1.2 ^a
25-34	3.9	4.1	3.8	2.9	2.9
35-44	6.7	7.5	6.8	6.6	5.3
45-54	7.2	8.0	6.7	5.7	6.2
55-64	6.9	7.4	6.8	5.9 ^a	5.1
65 and over	7.3	7.6	7.1	4.5 ^a	7.0

^a Fewer than 10 married women represented.

The best measure of economic position available in the data at hand, apart from occupation, pertains to the farm operator group and is the size of farm operated. Since both tenants and owners are included among farm operators, size of farm may be regarded as an index of probable gross income. As may be observed in Table 6, fertility varies directly with size of farm.⁹ The direct association seem to obtain in all age classes, despite occasional irregularities. Although it might be expected that the frequency of ownership increases with size of farm and that the relationship of fertility with farm size is therefore a function of farm ownership, such is not the case. Actually, as Table 7 indicates, farm tenants have the highest fertility rates in all but the 35-44 year age group. Fertility ratios of farm owners compare more closely with farm laborers than with farm tenants.

TABLE VI

NUMBER OF LIVE BIRTHS PER WIFE OF FARM OPERATOR
BY AGE OF WOMAN AND SIZE OF FARM
OPERATED BY HUSBAND

Age of wife	All sizes of farm	Hectares				
		Under 1	1-1.9	2-2.9	3-3.9	4 and over
All wives	5.7	4.0	4.8	5.6	6.0	6.8
Under 25	2.0	1.6	1.8	2.1	2.1	3.0 ^a
25-34	4.3	3.4	4.0	4.3	4.5	4.4
35-44	6.9	4.8	6.2	7.2	7.7	7.0
45-54	7.7	4.2	6.6	8.0	8.6	8.5
55-64	7.2	6.5	6.4	7.6	7.0	7.8
65 and over	7.9	5.5 ^a	7.6	6.7	13.0	6.9

^a Fewer than 10 women represented.

TABLE VII

NUMBER OF LIVE BIRTHS PER MARRIED WOMAN, BY AGE
OF WOMAN * AND BY FARM TENURE OF HUSBAND

Age of wife	Total	Farm Laborers	Farm Tenants	Farm Owners
All wives	5.7	4.2	5.7	6.5
Under 25	2.0	2.0	2.1	1.7
25-34	4.1	3.6	4.2	3.8
35-44	7.5	6.3	7.0	9.8
45-54	8.0	6.9	8.6	7.1
55-64	7.4	7.8	7.9	6.7
65 and over	7.6	5.3 ^a	8.5	6.5

^a Fewer than 10 women represented.

As with occupation, fertility varies inversely with the number of years of school completed. The inverse relationship obtains whether the measure of education employed is that of the wife or that of the husband, as may be noted in Tables 8 and 9.¹⁰ Somewhat greater consistency is observable, however, in the relationship of fertility to wife's than to husband's education. In any case, the direction of the relationship suggests the practice of fertility control in the higher education levels.¹¹

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TABLE VIII

NUMBER OF LIVE BIRTHS PER MARRIED WOMEN, BY AGE AND YEARS OF SCHOOL COMPLETED BY WOMAN

Age of wife	All education classes	Years of School completed			
		None	1-4	5-8	9 and over
All wives	5.2	6.1	4.8	3.8	3.4
Under 25	1.8	2.1	1.9	1.6	.9
25-34	3.9	4.3	4.0	3.7	2.2
35-44	6.7	6.8	6.7	6.2	7.3
45-54	7.2	7.3	7.4	5.2	3.8 ^a
55-64	6.9	6.9	6.8	6.3 ^a	2.0 ^a
65 and over	7.3	7.2	7.8 ^a	—	—

^a Fewer than 10 women represented.

TABLE IX

NUMBER OF LIVE BIRTHS PER MARRIED WOMAN, BY AGE OF WOMAN AND NUMBER OF YEARS OF SCHOOL COMPLETED BY HUSBAND

Age of woman	All women	Years of school completed by Husband			
		None	1-4	5-8	9 and over
All women	5.2	6.0	5.1	4.3	4.0
Under 25	1.8	1.0	2.0	1.6	1.3
25-34	3.9	4.4	3.9	4.0	3.2
35-44	6.7	7.3	6.8	6.3	7.0
45-54	7.2	6.9	7.9	7.2	5.6
55-64	6.9	7.0	6.9	7.6	4.0 ^a
65 and over	7.3	7.4	7.9	10.0 ^a	—

^a Fewer than 10 women represented.

The similarity of the relationships of fertility with occupation and with education raises the question of which of the two variables exercises the stronger influence. The unstandardized ratios in the upper panel of Table 10 indicate that education exerts a greater influence on fertility than does occupation. But when the ratios are computed on a standard age composition interesting shifts in the pattern of differences occur. As may be observed in the lower panel of Table 10, the apparent effect of education on the fertility of wives of farm laborers and operators is largely a consequence of age dif-

ferences, i.e., standardization reduces the range of variation by education. Among wives of non-farm workers, however, education is found to have a greater effect than the unstandardized ratios revealed. Furthermore, the standardized ratios suggest that occupation exerts an appreciable differentiating effect only in the highest educational attainment group.

TABLE X
LIVE BIRTHS PER MARRIED WOMAN, BY NUMBER OF YEARS OF SCHOOL COMPLETED BY WIFE, AND HUSBAND'S OCCUPATION

<i>Occupation of Husband</i>	<i>Years of School completed by wife</i>	
	<i>Under 5 years</i>	<i>5 years and over</i>
Unstandardized		
Farm	5.7	3.9
Non-farm	5.4	3.6
Standardized ¹		
Farm	5.5	4.6
Non-farm	5.6	3.0

¹ Age composition of all married women in sample used as standard.

The direct association of fertility with size of farm operated appears, in the upper panel of Table 11, to be independent of education as is evidenced by the fact that the same pattern is repeated in each education level. Similarly, the inverse relationship of fertility with education is observable in every size of farm class. Some of the variation of fertility by size of farm is attributable to differences in age composition, however, for when age differences are eliminated, as in the adjusted ratios shown in the lower panel of Table 11, the range of variation is reduced somewhat. But the adjusted ratios reveals a larger effect of education on fertility in only the largest size of farm class. The actual age composition of that class favors high fertility ratios, i.e., it contains larger than average proportion of women of completed fertility. The adjustment of ratios does not alter the countervailing tendencies of fertility to vary directly with size of farm and inversely with education.

In summary, it appears that in the population under study rural fertility has declined within the past decade, and, in 1952, it tended to approximate urban fertility. But in ages above

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TABLE XI
LIVE BIRTHS PER WIFE OF FARM OPERATOR BY NUMBER
OF YEARS OF SCHOOL COMPLETED BY WIFE AND
SIZE OF FARM OPERATED BY HUSBAND

<i>Years of School Completed by Wife</i>	<i>Size of Farm (hectares)</i>		
	<i>Under 2</i>	<i>2-2.9</i>	<i>3 and over</i>
Unstandardized			
No years	5.5	6.7	7.1
1-4 years	4.2	5.0	6.3
5 years and over	3.0	3.6	4.8
Standardized			
No years	5.6	6.8	7.0
1-4 years	4.4	5.2	5.8
5 years and over	3.0	3.7	4.3

¹ Age composition of all married women in sample used as standard.

35 years there is no evidence of fertility decline. In all age groups fertility, as measured by the ratio of live births ever had per married woman, varies inversely with occupation of husband, education of husband, and education of wife, and directly with size of farm operated. These relationships are unchanged by the adjustment of ratios to a standard age composition. Of interest is the close similarity of rural fertility, as represented by that in the nine barrios, and urban fertility observed in a previous study.

APPENDIX TABLE A
ENUMERATED AND STATIONARY POPULATION OF THE
SURVEYED BARRIOS, BY AGE AND SEX

<i>Age</i>	<i>Enumerated Population</i>			<i>Stationary Population¹</i>		
	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>
Total	14,230	7,079	7,151	14,230	7,079	7,151
0-5	2,417	1,240	1,177	1,189	607	582
5-9	2,135	1,074	1,061	1,089	548	541
10-14	1,837	944	893	1,075	540	535
15-19	1,524	726	798	1,064	534	530
20-24	1,218	586	632	1,044	522	522
25-29	1,005	503	502	1,016	508	508
30-34	791	368	423	982	490	492
35-39	787	370	417	944	471	473
40-44	604	307	297	901	450	451
45-49	501	255	246	855	427	428
50-54	398	198	200	801	398	403
55-59	242	121	121	737	364	373
60-64	239	111	128	666	326	340
65 and over	532	276	256	1,867	894	974

¹ Based on 1948 life table.

APPENDIX TABLE B.

AMOUNT OF DIFFERENCE BETWEEN CONTIGUOUS AGE GROUPS IN THE ENUMERATED POPULATION AND THE DIFFERENCES EXPRESSED AS ANNUAL DECREASES PER 1000 POPULATION IN EACH EARLIER AGE GROUP

Age	Enumerated population		Mid-population		Difference between numbers in contiguous age groups		Difference expressed as annual decreases per 1,000 population in preceding age group	
	Male	Female	Male	Female	Male	Female	Male	Female
Total	7,079	7,151	—	—	1,228	1,143	34.7	32.0
0-4	1,240	1,177	1,273	1,208	—	—	—	—
5-9	1,074	1,061	1,145	1,131	128	77	20.1	12.7
10-14	944	893	1,021	965	124	166	21.6	29.4
15-19	726	798	800	881	221	84	43.3	17.4
20-24	586	632	659	712	141	169	35.2	38.4
25-29	503	502	556	556	103	156	31.2	43.8
30-34	368	423	417	481	139	75	50.0	27.0
35-39	370	417	371	418	46	63	22.0	26.2
40-44	307	297	354	342	17	76	9.2	36.4
45-49	255	246	281	271	73	71	51.2	41.5
50-54	198	200	223	227	58	44	51.3	32.5
55-59	121	121	160	160	60	67	53.8	59.0
60-64	111	123	111	129	49	31	61.2	38.8
65 and over	276	256	—	—	69	64	150.0	150.5

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APPENDIX TABLE C.

CUMULATIVE PERCENTAGE DISTRIBUTION OF MARRIED WOMEN, BY NUMBER OF LIVE BIRTHS,
AND BY AGE

Number of live births	No. of Women	Age of Married Women						
		Total	Under 25	25-34	35-44	45-54	55-64	65 and over
Total	2,380	—	—	—	—	—	—	—
0	137	5.8	14.2	4.4	3.0	3.9	4.7	7.4
1	198	14.2	43.1	11.4	4.5	6.7	10.0	13.1
2	266	25.0	74.6	23.5	9.1	10.9	15.3	17.2
3	278	36.6	90.8	41.2	15.5	17.4	22.1	25.3
4	283	48.5	96.7	63.7	23.6	25.0	27.9	30.2
5	226	58.1	97.7	79.5	34.0	32.3	35.8	34.3
6	199	66.5	100.0	89.2	44.3	41.9	43.7	40.0
7	192	74.6	—	95.1	58.2	51.2	57.1	47.5
8	176	82.9	—	98.3	71.7	63.5	68.4	54.9
9	146	88.2	—	99.8	82.5	75.0	75.0	68.0
10	108	92.8	—	100.0	90.6	83.7	82.6	80.3
11	59	95.3	—	—	95.2	87.6	87.9	86.9
12	45	97.2	—	—	97.4	92.4	92.1	92.6
13 and over	67	100.0	—	—	100.0	100.0	100.0	100.0

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REFERENCES

¹ The survey was conducted under the supervision of Mr. Generoso F. Rivera, Technical Assistant, Philippine Council for U.S. Aid, and Dr. Robert T. McMillan, Social Science Advisor, U.S. Foreign Operations Administration. The author is indebted to these men for permission to use their materials in the present paper.

² The provinces are Bulacan, Cavite, Nueva Ecija, Pampanga, Rizal, and Tarlac.

³ The replacement index is the percentage that the ratio of female children under 5 to females 15-44 years of age in the actual or enumerated population is of a similar ratio computed for the life table population. The only available life table for this purpose was based on 1948 reported mortality which doubtlessly under-states actual mortality. The stationary population for nine barrios is shown in Appendix Table A.

⁴ The inter-age groups difference, expressed as annual decrease per 1,000 population in each preceding age group, as shown in Appendix Table B, reveal extraordinary large losses incident to the process of aging. Among males 10 to 35 years of age and females 15 to 30 years of age the losses are 5 to 7 times greater than mortality alone could have produced. Hence it seems very probable that the barrios were experiencing net out-migration.

⁵ The numbers of married women by number of live births ever had, and by age, are shown in Appendix Table C.

⁶ The provinces in which the nine barrios are located have been the primary areas of dissidence and revolt. It is probable that many residents of the barrios included in the survey participated directly in the Hukbalahap movement. Moreover, the disorder, incident to military activities produced a considerable amount of refugee migration.

⁷ In view of a probable large under-registration of deaths, the 1948 rates may be assumed to under-state the frequency of mortality. On the other hand, there is some possibility that mortality may have improved in the years since 1948.

⁸ This finding is contrary to that from the urban sample referred to previously. In the urban sample fertility and occupation were directly associated (Amos H. Hawley, *op. cit.*, pp. 275, 278, and 280). of this Journal Vol. II — No. 4, December, 1953.

⁹ The number of women represented in each size of farm as shown in Table 6 are, respectively 95, 24, 332, 286, and 245.

The direct association of fertility with occupation was also observed in the urban sample (Amos H. Hawley, *op. cit.*)

¹⁰ The numbers of women in the wife's education classes are: no education — 994; 1-4 years — 983; 5-8 years — 343; and 9 years and over — 61. In the husband's education classes the numbers are: no education — 657; 1-4 years — 904; 5-8 years — 462; 9 years and over — 137; and unknown — 220.

The relationship of fertility to education was also inverse in the urban sample (Amos H. Hawley, *op. cit.*)

¹¹ The mean age at which women of completed fertility had their last births (based on women all of whose off-spring were living and present in the household) tends to decline with increase in the number of years of school completed.

