DEMOGRAPHIC FACTS OF COLOMBIA
The National Investigation of Morbidity

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Health programs are frequently hampered by insufficient demographic information. In Colombia, this type of information has been limited to population censuses and birth and death registration. Censuses are made only infrequently and the data from the registers are not always reliable because of incomplete coverage and inaccuracies. Therefore, special investigations of representative samples of the population are important instruments not only for demographic studies but also for evaluation of the registers.

The National Investigation of Morbidity included household interviews of a probability sample of the population of Colombia. A considerable amount of demographic data were incorporated into the study. Because it was a general investigation, however, the extent of the demographic material was limited.

The National Investigation of Morbidity had, among others, the following special characteristics:

1. The investigation encompassed a representative sample of the civil (not institutional) population of the Departments (political administrative divisions) equivalent to 98 per cent of the total population of the country.

2. Controlled procedures and techniques were used to assure the accuracy of information received. Information was collected under the supervision of public health physicians by means of household interview and clinical examinations. Data were collected between August, 1965, and June, 1966. Medical students performed household interviews of 8,669 families comprising 51,473 persons, which was 97.2 per cent of the sample selected for interview. Clinical examinations were made on 5,027 persons, or 95.6 per cent of the persons selected. The clinical examinations were performed by university residents of internal medicine and pediatrics, public health dentists, auxiliary and laboratory assistants.
3. The study permits basic data to be related to a series of demographic, social and economic variables, all of which were investigated simultaneously.
4. In contrast to the systematic register, the data gathered in this investigation refer to communities in which the events investigated actually occurred and not to the locale in which these events were recorded or received attention.

The National Investigation of Morbidity, however, is subject to the general limitations adherent to this type of inquiry. For example, the results obtained are not applicable to small population groups; some questions were answered only with difficulty by the respondents and it was not possible to establish the degree of truth of the responses; the questions required that the respondent recall events that occurred over a brief retrospective period, even though the rate of occurrence of those phenomena may well have differed over a longer period of time.

POPULATION

In the 1964 census of population Colombia had 17,484,508 inhabitants in 439,519 square miles. About 98.7 per cent of this population lived in the Departments, which take in 53.6 per cent of the national territory. Population density of the Departments is

about 73 inhabitants per square mile. The remaining 1.3 per cent of the population occupied the 46.4 per cent of the territory included in the Llanos Orientales of the east. Population density of that area is about one inhabitant per square mile.

Structure

According to the 1964 census, 49.3 per cent of the population was male and 50.7 per cent was female. Persons less than 15 years of age made up 46.6 per cent of the population, and persons between the age of 15 and 54 years made up a similar percentage. The remaining 6.8 per cent of the population comprised the age group 55 years and over.

As seen in Table 1, the proportion of urban female population was greater than that of the male from age ten upward. (The urban population is defined as those persons residing in the municipal county seats in the 1964 census. For all practical purposes, it includes all localities of 1,500 or more inhabitants.[1]) Among the rural population, on the other hand, males outnumbered females in all age groups up to 70 years of age. Of the urban population, 44.7 per cent was under 15 years of age and 48.4 per cent was between 15 and 54 years old. Of the rural population, 48.7 per cent was under 15 years of age and 44.5 per cent was between 15 and 54 years of age.

The last three censuses (1938, 1951 and 1964) have shown that the distribution of the population by sexes has not changed (Table 2). Some change is observed in the age distribution, however. The population less than 15 years of age has increased whereas the age group between 15 and 54 years old has decreased in proportion. The population over 55 years of age has remained at the same level.

As shown in Table 3, the urban population less than 15 years of age showed a considerable increase in the census of 1964 compared with that of 1951. Over the same period, a reduction took place in the proportion of persons aged 15 to 54 years. The rural population has changed in the same manner, but somewhat less sharply. Consequently, in 1964, the urban-rural differences persisted, although somewhat reduced.

TABLE 1. POPULATION OF COLOMBIA BY AGE AND SEX, URBAN AND RURAL, 1964

Per cent Distribution

Age in Years	*Urban*			*Rural*			*Total*		
	Male	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
Less than 1	1.8	1.7	3.5	1.9	1.8	3.7	1.8	1.8	3.6
1– 4	6.7	6.6	13.3	7.6	7.3	14.9	7.1	6.9	14.0
5– 9	7.6	7.6	15.2	8.7	8.3	17.0	8.1	7.9	16.0
10–14	6.2	6.6	12.8	6.9	6.2	13.1	6.6	6.4	13.0
15–19	4.7	6.2	10.9	4.9	4.4	9.3	4.8	5.3	10.1
20–24	3.8	4.8	8.6	3.9	3.7	7.6	3.8	4.3	8.1
25–29	3.1	3.9	7.0	3.2	3.2	6.4	3.2	3.5	6.7
30–34	2.9	3.3	6.2	2.8	2.7	5.5	2.9	3.0	5.9
35–39	2.4	2.9	5.3	2.7	2.6	5.3	2.5	2.8	5.3
40–44	1.9	2.2	4.1	2.2	1.9	4.1	2.1	2.0	4.1
45–49	1.5	1.8	3.3	1.8	1.6	3.4	1.7	1.7	3.4
50–54	1.4	1.6	3.0	1.6	1.3	2.9	1.5	1.5	3.0
55–59	0.9	1.0	1.9	1.0	0.8	1.8	1.0	0.9	1.9
60–64	0.8	1.1	1.9	1.1	0.9	2.0	0.9	1.0	1.9
65–69	0.5	0.6	1.1	0.6	0.5	1.1	0.5	0.6	1.1
70–74	0.3	0.5	0.8	0.4	0.4	0.8	0.4	0.4	0.8
75–79	0.2	0.3	0.5	0.2	0.2	0.4	0.2	0.3	0.5
80–84	0.1	0.2	0.3	0.2	0.2	0.4	0.1	0.2	0.3
85 and over	0.1	0.2	0.3	0.1	0.2	0.3	0.1	0.2	0.3
Total	46.9	53.1	100.0	51.8	48.2	100.0	49.3	50.7	100.0

TABLE 2. POPULATION OF COLOMBIA BY AGE AND SEX, 1938, 1951 AND 1964

Per cent Distribution

Age in Years	*1938*			*1951*			*1964*		
	Male	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
Less than 1	1.7	1.6	3.3	1.9	1.8	3.7	1.8	1.8	3.6
1– 4	6.0	6.0	12.0	6.6	6.4	13.0	7.1	6.9	14.0
5– 9	7.2	7.1	14.3	7.1	6.8	13.9	8.1	7.9	16.0
10–14	6.3	6.0	12.3	6.1	5.9	12.0	6.6	6.4	13.0
15–19	4.9	5.4	10.3	4.8	5.4	10.2	4.8	5.3	10.1
20–24	4.7	4.8	9.5	4.7	4.9	9.6	3.8	4.3	8.1
25–29	3.9	4.1	8.0	3.6	4.0	7.6	3.2	3.5	6.7
30–34	3.0	3.1	6.1	3.1	3.0	6.1	2.9	3.0	5.9
35–39	3.1	3.0	6.1	2.8	3.0	5.8	2.5	2.8	5.3
40–44	2.3	2.3	4.6	2.2	2.1	4.3	2.1	2.0	4.1
45–49	1.8	1.7	3.5	1.7	1.8	3.5	1.7	1.7	3.4
50–54	1.6	1.6	3.2	1.6	1.6	3.2	1.5	1.5	3.0
55–59	0.9	0.9	1.8	1.0	0.9	1.9	1.0	0.9	1.9
60–64	1.0	1.1	2.1	1.0	1.0	2.0	0.9	1.0	1.9
65–69	0.4	0.5	0.9	0.6	0.6	1.2	0.5	0.6	1.1
70–74	0.4	0.5	0.9	0.4	0.5	0.9	0.4	0.4	0.8
75–79	0.2	0.2	0.4	0.2	0.2	0.4	0.2	0.3	0.5
80–84	0.1	0.3	0.4	0.2	0.2	0.4	0.1	0.2	0.3
85 and over	0.1	0.2	0.3	0.1	0.2	0.3	0.1	0.2	0.3
Total	49.6	50.4	100.0	49.7	50.3	100.0	49.3	50.7	100.0

TABLE 3. POPULATION OF COLOMBIA BY AGE AND SEX, URBAN AND RURAL

Per cent Distribution

Age in Years	*1951*						*1964*					
	Urban			*Rural*			*Urban*			*Rural*		
	Male	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
Less than 15	19.4	19.7	39.1	23.1	21.7	44.8	22.2	22.5	44.7	25.0	23.7	48.7
15–54	23.7	29.6	53.3	25.4	23.1	48.5	21.7	26.7	48.4	23.1	21.4	44.5
55 and over	3.1	4.5	7.6	3.5	3.2	6.7	3.0	3.9	6.9	3.7	3.1	6.8
Total	46.2	53.8	100.0	52.0	48.0	100.0	46.9	53.1	100.0	51.8	48.2	100.0

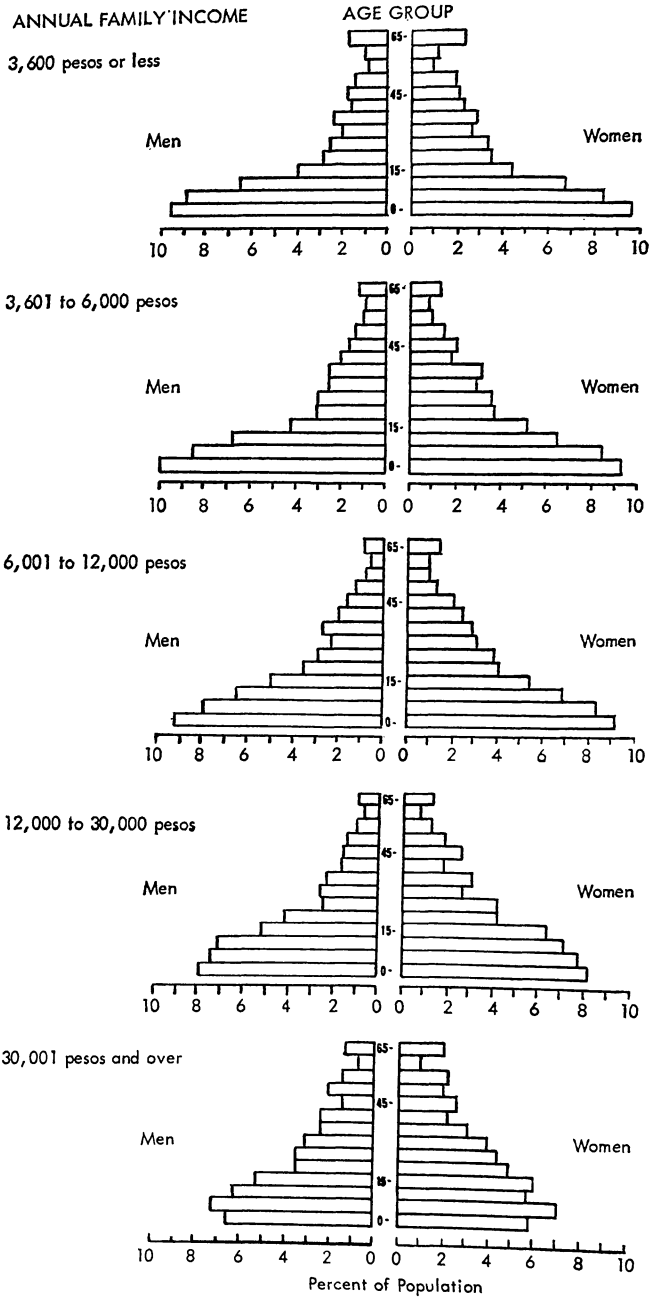
Comparison by family income. To analyze the structure of the population according to annual family income, the data of the National Investigation of Morbidity have been used, adjusted to the total population of the Departments of the country as of January 1, 1968. The family economic income was estimated as "the value of all the incomes in actual money and in goods that have been received in the form of pay or produced by the farm or business proper." The family was defined as "the group of persons that share the same dwelling and foods, forming a unit."[2]

Although the National Investigation of Morbidity considered the family from an epidemiologic point of view, for the purpose of this analysis the servants and companions not bound by kinship with the head of the family were excluded.

As family income increases the percentage of persons less than 15 years of age decreases, from 49.6 per cent in the group with low incomes to 38.5 per cent in the group with higher incomes. As can be seen in Figure 1, the differences were greatest in the group under five years of age. Conversely, the population aged 15 to 54 years, which represents 42 per cent of the lower-income group, increases consistently to 52.6 per cent of the higher-income group. Whether these changes in the structure by age are cause or consequence of the economic variations between the groups could not be determined. A family with more members at a productive age, of course, has a greater potential for increasing its income.[3]

Female population aged 15 to 54. The maximum age of reproduction in the woman has generally been fixed at 44 or 49 years of age. However, it has been decided in this study to observe the prin-

FIGURE I. STRUCTURE OF THE COLOMBIAN POPULATION BY AGE AND SEX, AND BY ANNUAL FAMILY INCOME



cipal indicators of fecundity and fertility in the female population up to 54 years of age.

The female population aged 15 to 54 years was 4,375,000 as of January 1, 1966. This figure represents 24.2 per cent of the total population of the country. Of that number, 56.5 per cent lived in the urban areas.

Of the women aged 15 to 54 years, 22.1 per cent were between 15 and 19 years of age, slightly more than half are between 15 and 29, and three-fourths are less than 40 years of age. As age advances, the percentage of women in the respective age groups diminishes, as shown in Table 4.

Females aged 15 to 54 years make up a greater proportion of the urban population than they do rural. The distribution of the smaller age groups between the zones shows no significant differences, the urban zone showing slightly greater proportions of each age group than does the rural.

Socioeconomic characteristics. Approximately one-third of the women of child-bearing age belong to families with annual incomes of less than 3,600 pesos (about $240 U.S.); only one-fifth belong to families with incomes over 12,000 pesos.[4] The proportion of women of fertile age increases as income increases. In addition, as seen in Table 5, the proportion of women with higher incomes is greater in the urban zone.

Some 22.7 per cent of the women between the ages of 15 and 54 years have not attended school, and only 16.1 per cent have attended intermediate or higher educational levels. (Intermediate studies require a primary [elementary] education and precede university studies.[2]) Younger women have a higher level of education than do women of greater age; the percentage of younger women with intermediate or higher education is two to three times greater than older women with similar educational level. In addition, the percentage of women without schooling increases as age increases, as seen in Table 6. These figures give some indication of the advances that have occurred in education in recent years.

Approximately one of every four women performs remunerative work. The most frequent occupations are, in order of frequency:

TABLE 4. FEMALE POPULATION AGE 15–54, BY AGE GROUPS, URBAN AND RURAL

				Per cent Distribution					
	Urban			Rural			Total		
Age in Years	Number	Per Cent	Cumulative Per Cent	Number	Per Cent	Cumulative Per Cent	Number	Per Cent	Cumulative Per Cent
15–19	559,886	22.7	22.7	408,647	21.5	21.5	968,533	22.1	22.1
20–24	412,795	16.7	39.4	298,495	15.7	37.2	711,290	16.3	38.4
25–29	368,003	14.9	54.3	281,797	14.8	52.0	649,800	14.9	53.3
30–34	284,176	11.5	65.8	217,663	11.4	63.4	501,839	11.5	64.8
35–39	286,015	11.6	77.4	231,558	12.2	75.6	517,573	11.8	76.6
40–44	218,055	8.8	86.2	160,319	8.4	84.0	378,374	8.6	85.2
45–49	188,261	7.6	93.8	172,747	9.1	93.1	361,008	8.3	93.5
50–54	154,018	6.2	100.0	132,120	6.9	100.0	286,138	6.5	100.0
Total	2,471,209	100.0		1,903,346	100.0		4,374,555	100.0	

TABLE 5. FEMALE POPULATION AGES 15–54, BY ANNUAL FAMILY INCOME, URBAN AND RURAL

	Urban		Rural		Total	
Income (pesos)*	Number	Per Cent**	Number	Per Cent	Number	Per Cent
3,600 or less	441,266	21.1	931,794	58.7	1,373,060	37.3
3,601– 6,000	388,236	18.5	379,061	23.9	767,297	20.9
6,001–12,000	619,060	29.6	188,160	11.9	807,220	21.9
12,001 and over	644,939	30.8	87,386	5.5	732,325	19.9
Income unknown	377,708		316,945		694,653	
Total	2,471,209	100.0	1,903,346	100.0	4,374,555	100.0

* In 1965–1966, 1,000 pesos = U.S. $67.

** Percentages computed on basis of those with known income.

TABLE 6. FEMALE POPULATION OF COLOMBIA, AGES 15–54, BY AGE GROUP AND EDUCATION

	Schooling Completed				
Age Group (years)	None	1–8 Years	High School	Beyond High School	Total
15–19	14.0	63.9	21.0	1.1	100.0
20–24	18.0	61.0	19.1	1.9	100.0
25–29	20.6	62.6	15.4	1.4	100.0
30–34	22.9	63.8	12.3	1.0	100.0
35–39	28.4	61.0	10.2	0.4	100.0
40–44	29.2	59.6	10.4	0.8	100.0
45–49	32.0	57.3	10.4	0.3	100.0
50–54	39.2	51.5	8.9	0.4	100.0
Total	22.7	61.2	15.1	1.0	100.0

service workers, artisans, unclassified laborers, saleswomen and clerks. One-third of the women of child-bearing age belong to households in which the head of the household is a farmer; only 4.6 percent belong to households in which the head of the household is a professional, a technician or a similar worker. As seen in Table 7, 8.2 per cent of the heads of households are housewives.

PREGNANCIES

Rate of Pregnancies

Mechanisms do not exist to evaluate fecundity directly because this term irrelevantly introduces the idea of the potential capacity to reproduce. Therefore, it is necessary to utilize indirect mechanisms such as the rate of pregnancies or "number of pregnancies terminated in a period of one year for each thousand women from 15 to 54 years of age."

In the household interview, the questions on pregnancies refer to a retrospective period of approximately one year, so the number of pregnancies terminated and the number of women who have been pregnant is quite similar. Of these two sets of data, the first was used because it permits greater accuracy in measuring the risk of pregnancy.

Region and zone. During the period in which the study was carried out, 867,467 pregnancies were terminated, which is a rate of 198.3 pregnancies for every 1,000 women of fertile age. The pregnancy rate is higher in the rural zone (237.7) than in the urban zone (168.0).

The marked differences in the pregnancy rates seen among the various regions of Colombia are shown in Table 8. Bogotá, with 161.2 pregnancies per 1,000 women aged 15 to 54 years, shows the lowest rate, as would be expected of a totally urban area. The Atlantica region shows the highest pregnancy rate, 224.9, with the other regions presenting intermediate rates.

By age. Women between the ages of 15 and 24 years report a pregnancy rate of 179.0 per 1,000. The pregnancy rate increases

TABLE 7. FEMALE POPULATION, AGES 15–54, BY OCCUPATION OF HEAD OF THE FAMILY, URBAN AND RURAL

Occupation	Urban		Rural		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Farmers, fisherman, hunters, forest workers and similar occupations	235,516	9.5	1,360,394	71.5	1,595,910	36.5
Craftsmen and manufacturing workers	546,650	22.1	108,429	5.7	655,079	15.0
Sales workers	378,138	15.3	46,242	2.4	424,380	9.7
Housewives	234,857	9.5	123,015	6.4	357,872	8.2
Service workers, athletes and entertainers	253,408	10.3	84,872	4.7	338,280	7.7
Professional and technical workers	175,196	7.1	26,726	1.4	201,922	4.6
Transportation workers	169,510	6.9	29,836	1.5	199,346	4.5
Clerical workers	153,212	6.2	6,543	0.3	159,746	3.6
Laborers not otherwise classified	109,080	4.4	33,950	1.8	143,030	3.3
Administrators, managers and directors	100,279	4.0	25,585	1.3	125,864	2.9
Students	3,930	0.2	219	—	4,149	0.1
Other	22,949	0.9	20,392	1.1	43,341	1.0
No occupation	63,629	2.6	28,510	1.5	92,139	2.1
Unknown	24,855	1.0	8,642	0.4	33,497	0.8
Total	2,741,209	100.0	1,903,346	100.0	4,374,555	100.0

to a maximum of 322.2 at 25 to 34 years of age and then declines with increasing age to 23.4 for women 45 to 54 years of age.

By socioeconomic characteristics. In all age groups the women of low incomes present higher pregnancy rates than do the women with higher incomes. As seen in Table 9, in women aged 15 to 24 years the pregnancy rate is five times higher in the low-income group than in the high-income group. In the group from 25 to 34 years of age, however, the pregnancy rate is barely twice as high in the lower-income group.

In like manner, the pregnancy rates drop as education improves. The pregnancy rate in women who have not attended school is 53 per cent higher than that of women with some secondary education or more. The pregnancy rate for uneducated urban women, shown in Table 10, is 30 per cent higher than that of urban women with a secondary education or more. Uneducated rural women have preg-

TABLE 8. PREGNANT WOMEN IN ONE YEAR, BY REGION, URBAN AND RURAL

Rate per 1,000 women aged 15–54

Region	Urban		Rural		Total	
	Number	*Rate*	*Number*	*Rate*	*Number*	*Rate*
Atlantic	91,082	205.7	82,080	250.9	173,162	224.9
Oriental	46,734	137.1	143,467	242.7	190,201	204.1
Bogotá, D.E.	81,956	157.1	3,580	*	85,536	161.2
Central	120,812	167.8	144,467	248.2	265,279	203.8
Pacific	74,468	167.1	78,821	200.1	153,289	182.6
Total	415,052	168.0	452,415	237.7	867,467	198.3

* Rate not shown when based on small number of cases.

TABLE 9. PREGNANT WOMEN IN ONE YEAR, BY AGE AND ANNUAL FAMILY INCOME

*Income (in pesos)**

Age in Years	*3,600 or Less*		*3,601–6,000*		*6,001–12,000*		*12,001–30,000*		*30,001 and Over*		*Unknown*		***Total***	
	Number	*Rate*	*Number*	*Rate*	*Number*	*Rate*	*Number*	*Rate*	*Number*	*Rate*	*Number*	*Rate*	*Number*	*Rate*
15–24	113,061	237.8	58,959	199.9	51,400	160.7	23,862	110.5	5,799	50.1	47,609	184.6	300,690	179.0
25–34	126,383	348.2	73,256	353.4	66,599	301.2	33,292	295.4	11,355	179.9	60,185	326.4	371,070	322.2
35–44	76,283	249.2	36,351	230.6	35,497	218.5	9,154	109.1	3,530	90.4	19,751	134.6	180,466	201.6
45–54	6,939	30.4	2,400	22.3	499	4.8	1,884	26.3			3,419	32.4	15,141	23.4
Total	322,666	235.0	170,966	222.8	153,995	190.8	68,192	140.8	20,684	83.4	130,964	188.6	867,467	198.3

* In 1965–1966, 1,000 pesos = U.S. $67.

TABLE 10. NUMBER OF PREGNANCIES AND RATES PER 1,000 WOMEN AGED 15–54, BY EDUCATION AND ZONE

Education	Urban		Rural		Total	
	Number	Rate	Number	Rate	Number	Rate
None	60,040	187.0	156,222	255.4	220,262	230.9
1–8 years	248,251	173.1	266,392	234.2	514,643	200.1
High school	89,803	143.9	13,790	211.8	103,593	150.3
No information	12,958	184.1	16,011	179.2	28,969	181.3
Total	415,052	168.0	452,415	237.7	867,467	198.3

TABLE 11. PREGNANT WOMEN AGED 15–54, BY OCCUPATION OF FAMILY HEAD, URBAN AND RURAL

Occupation	Number and rate per 1,000 women aged 15–54					
	Urban		Rural		Total	
	Number	Rate	Number	Rate	Number	Rate
Farmers, fishermen, hunters, forest workers and similar occupations	47,484	201.6	329,640	242.3	377,124	235.3
Craftsmen and manufacturing workers	95,146	174.1	23,712	215.7	118,858	181.4
Sales workers	56,322	148.9	8,754	189.3	65,076	153.3
Housewives	22,497	95.8	18,756	152.5	41,253	115.3
Service workers, athletes and entertainers	44,452	175.4	19,027	224.2	63,479	187.7
Professional and technical workers	21,318	121.7	5,149	192.7	26,467	131.1
Transportation workers	36,968	218.1	7,131	239.0	44,099	221.2
Clerical workers	27,071	176.7	2,202	337.0	29,273	183.2
Laborers, not otherwise classified	23,950	219.6	8,978	264.4	32,958	230.2
Administrators, managers and directors	5,676	56.6	8,189	320.1	13,865	110.2
Other	6,289	274.0	5,900	289.3	12,189	281.2
No occupation	8,307	130.6	3,968	139.2	12,275	133.2
Unknown	5,236	210.7	2,192	253.6	7,428	221.8
Total	400,716	162.2	433,598	233.1	844,314	193.0

nancy rates that are 20 per cent greater than rural women with a secondary education.

When pregnancy rates are computed on the basis of the husbands' occupations, as shown in Table 11, the highest rates, more than 200 per 1,000 women, are found among women in homes in which the head of the household is a farmer, transport worker or laborer. The lowest rate is attributed to women of households in which the

head of the household is a professional or technical worker or administrator. As may be expected, one of the lowest pregnancy rates was obtained in a group of housewives who are heads of households. Of course, their being without husbands and being of relatively greater age than the other women helps to explain this fact.

Length of Pregnancy

For practical purposes the length of pregnancy has been defined as the interval between the first day of the previous menstruation and the expulsion or complete extraction of the fetus or of the fetal tissue, placenta or decidua. The two points of reference do not correspond strictly to the real length of gestation. In fact, the first day of menstruation precedes conception and, on the other hand, the expulsion of the placental or fetal tissue may occur after the death of the fetus in the uterus. Therefore, the reported length of the gestation is artificially increased in relation to the true length.

With this definition, the gestation at term has been calculated as 39 weeks, or slightly longer than nine calendar months. The information in the National Investigation of Morbidity was obtained on the basis of calendar months completed, which gave more consistent data.

In the present investigation the monthly figures have been converted to weeks in keeping with standard definitions and to enable comparisons with other studies in which the time is expressed in weeks. In the conversion of monthly figures to weekly it was assumed that the pregnancies that began in a given month were distributed equally in the two halves of the month. This procedure has appeared to be the most acceptable although it may have introduced slight error of measurement.

Stage of termination. Table 12 indicates the outcome of pregnancy at various stages of gestation. Pregnancies are grouped by length into three periods.

1. Early fetal period includes pregnancies terminated before the 20th week (less than 4½ months). In this stage 11.7 per cent of all pregnancies are terminated, the product having no viability.

TABLE 12. COMPLETED PREGNANCIES IN ONE YEAR BY LENGTH AND OUTCOME*

Length of Pregnancy	Total		Live Births			Fetal Deaths		
	Number	Per Cent	Number	Per Cent	Rate per 1,000 Pregnancies	Number	Per Cent	Rate per 1,000 Pregnancies
Less than 4½ months	98,407	11.7	0	0	0	98,407	70.8	116.4
Less than 1 month	9,581	1.1	0	0	0	9,581	6.9	11.3
Less than 2 months	42,424	5.0	0	0	0	42,242	30.4	50.0
Less than 3 months	39,390	4.7	0	0	0	39,390	28.3	46.6
4 to 4½ months	7,194	0.9	0	0	0	7,194	5.2	8.5
4½ to less than 6½ months	16,961	2.0	765	0.1	0.9	16,196	11.6	19.2
4½ to less than 5	7,194	0.9	0	0	0	7,194	5.2	8.5
5 months	7,104	0.8	0	0	0	7,104	5.1	8.4
6 to less than 6½	2,663	0.3	765	0.1	0.9	1,898	1.3	2.3
6½ months and over	730,002	86.3	705,542	99.9	834.6	24,460	17.6	28.9
6½ to less than 7	2,663	0.3	766	0.1	0.9	1,897	1.3	2.2
7 months	16,140	1.9	11,316	1.6	13.4	4,824	3.5	5.7
8 months	59,814	7.1	54,166	7.7	64.1	5,648	4.1	6.7
9 months and over	651,385	77.0	639,294	90.5	756.2	12,091	8.7	14.3
Total	845,370	100.0	706,307	100.0	835.5	139,063	100.0	164.5

* Does not include 22,097 pregnancies with unknown length and outcome.

2. Intermediate fetal period includes pregnancies terminated between the 20th week of gestation (4½ months) and the 27th week (less than 6½ months). Two per cent of pregnancies terminate in this stage and the products have little chance for survival inasmuch as nearly all die before or immediately upon delivery.
3. Late fetal period includes pregnancies terminated from the 28th week of gestation (6½ months) on. It is in this stage that 86.3 per cent of all pregnancies terminate, their products having a great degree of viability. The late fetal period may itself be divided into two stages: the time from the 28th week (6½ months) to the 38th week (less than nine months), the premature stage. Pregnancies terminating from the 39th week on are called normal term. In this study 9.3 per cent of the pregnancies terminated prematurely and 77 per cent reached normal term.

On examining these results it must be remembered that in the

early stages of gestation an unknown proportion of pregnancies may be interrupted with the mother being unaware of her condition. Therefore, these figures cannot be complete for pregnancies of short duration. Because of this difficulty, the National Investigation of Morbidity has not considered pregnancies terminated prior to one month.

Outcome of Pregnancy

The length of pregnancy is the most important factor in determining the viability or capacity of the product of conception to exist independently of the mother. A pregnancy may terminate in a live or dead product, and its length, in turn, may be classified in any of the three fetal periods: early, intermediate or late. Death of the fetus in the early or intermediate periods is called abortion; death of the fetus in the late period is called stillbirth.[5]

As shown in Table 12, of every 100 pregnancies reported in Colombia, 83.5 resulted in live births and 16.5 in fetal deaths. Nearly all live births occurred in the late fetal period and only 0.1 per cent occurred between 6 and 6½ months.

Of the fetal deaths, 82.4 per cent occurred in the early and intermediate periods, and so are abortions. The remaining 17.6 per cent occurred in the late fetal period and are, therefore, stillbirths.

FERTILITY

Fertility is based on the number of live births and is an important factor in the increase of the population. To measure fertility in a community various indicators are used, of which the following have been selected for the present study: birth rate, proportion of women with live children, average number of live children per woman, ratio of children to women, specific fertility rates, total or overall fertility rate and crude rate of reproduction.

The number of births not reported in the information from the household interview, of course, cannot be established. Therefore, the rates that use births as the numerator may be underestimates.

Birth Rate

The live birth rate is not a sensitive indicator of fertility because it relates live births to the entire population rather than to women of fertile age. A high or low natality, therefore, may be the result of a relatively greater or lesser number of women of childbearing age in the population rather than of differing fertility rates. Excluding births to mothers less than 15 years of age and more than 54 years of age in the National Investigation of Morbidity does not affect the indicator; such births amount to less than one per 1,000.

Zone and region. The estimated total of 721,948 live births indicates a birth rate of 40.0 per 1,000 population. Urban and rural natality rates are 34.4 and 45.9, respectively. Birth rates vary from 34.9 in the Pacific region to 43.4 in the Oriental region. Bogotá and the Central region each have a rate of 39.1, and the Atlantic region has a rate of 42.7. The high birth rate of Bogotá may be explained by the greater proportion of women of fertile age. The rate adjusted to the population of the country is 31.6 per 1,000.

In each of the regions the birth rate in the urban zone is lower than in the rural zone. The urban rates vary between 28.1 and 40.1, and the rural rates vary from 41.3 to 49.3. As shown in Table 13, the least difference in birth rates between the urban and rural zones is seen in the Atlantic region; the greatest difference between urban and rural rates is found in the Oriental region. Because a greater proportion of the women live in the urban area, the difference between the rates would be even greater if the urban and rural zones

TABLE 13. BIRTHS

Region	*Urban*		*Rural*		*Total*	
	Live Births	*Rate per 1,000 Population*	*Live Births*	*Rate per 1,000 Population*	*Live Births*	*Rate per 1,000 Population*
Atlantic	73,743	40.1	73,067	45.7	146,810	42.7
Oriental	37,638	30.4	135,527	49.3	173,165	43.4
Bogotá D.E.	69,393	38.0	3,580		72,973	39.1
Central	93,102	33.6	118,791	44.9	211,893	39.1
Pacific	45,936	28.1	71,171	41.3	117,107	34.9
Total	319,812	34.4	402,136	45.9	721,948	40.0

Rate not shown when based on small number of cases.

TABLE 14. BIRTH RATES BY ANNUAL FAMILY INCOME AND URBAN-RURAL DISTRIBUTION

Income (in pesos)	*Urban*	*Rural*	*Total*
3,600 or less	38.4	49.3	46.1
3,601 to 6,000	37.3	48.9	43.5
6,001 to 12,000	35.1	42.7	37.1
12,001 and over	27.3	28.8	27.5
Total	34.4	45.9	40.0

In 1965–1966, 1,000 pesos = U.S. $67.

TABLE 15. WOMEN WHO HAVE HAD LIVING CHILDREN BY AGE GROUP, URBAN AND RURAL

Age (in years)	*With Children*	*No Children*	*Total*	*Per Cent*
Urban				
15–24	732,518	240,163	972,681	24.7
25–34	153,810	498,369	652,179	76.4
35–44	82,902	421,168	504,070	83.6
45–54	63,611	278,668	342,279	81.4
Total	1,032,841	1,438,368	2,471,209	58.2
Rural				
15–24	435,390	271,752	707,142	38.4
25–34	69,831	429,629	499,460	86.0
35–44	36,366	355,511	391,877	90.7
45–54	34,723	270,144	304,867	88.6
Total	576,310	1,327,036	1,903,346	69.7
Total				
15–24	1,167,908	511,915	1,679,823	30.5
25–34	223,641	927,998	1,151,639	80.6
35–44	119,268	776,679	895,947	86.7
45–54	98,334	548,812	647,146	84.8
Total	1,609,151	2,765,404	4,374,555	63.2

were adjusted to the same structure for sex and age. In fact, adjusting the population by sex and age to the population of the country yields adjusted natality rates of 31.3 for the urban zone and 51.6 for the rural zone.

Socioeconomic conditions. In all regions of the country birth rates decrease as income increases. Natality rates in the urban zones are lower than those in the rural zones at all income levels, but the difference between the urban and rural rates is smaller in the higher income levels, as shown in Table 14. Inasmuch as the proportion

of women increases as income increases, the differences according to economic conditions would be even greater if the birth rates were adjusted to the distribution by age and sex of the population.

Proportion of Women with Live Children

As an indicator of fertility, the proportion of women with live children is defined as "the ratio of women who have had live children to the number of women 15 to 54 years of age." Of the female population of procreative age, 63.2 per cent has had live children. By age, the proportion of women that has had live children increases from 30.5 per cent in women 15 to 24 years of age to 84.8 per cent in women 45 to 54 years of age (see Table 15).

Zone and region. In the age group of 15 to 24 years the proportion of women with live children is one-third lower in the urban zone than in the rural zone. Over the age of 35 years, however, the proportions become quite similar. The percentage of women with live children is greatest in the Atlantic region; 92.7 per cent of the women between 35 and 44 years of age in that region have had live children.

Socioeconomic conditions. Income is inversely related to the percentage of women who have had live children. Of the women in low-income groups, 70.3 per cent have had live children; of the women in families with incomes more than 12,000 pesos, 48.3 per cent have had live children. When the sample is adjusted by age the differences diminish only slightly. Table 16 shows the proportion of women calculated according to age and income who have had live children.

Average Number of Live Children per Woman

The average number of live children per woman is calculated for women aged 15 to 54 years who have had live children, and not for women past the age of 54 years as has been recommended.[6] Therefore, these data should be analyzed separately by age groups; the total figures are obviously lower than those yielded by computing the average number of children per woman in women who have completed child bearing.

TABLE 16. PROPORTION OF WOMEN WITH LIVING CHILDREN BY AGE AND ANNUAL FAMILY INCOME

Age (years) and Income (pesos)	*With Children*	*No Children*	*Total*	*Per Cent*
3,600 or less				
15–24	290,121	185,254	475,375	39.0
25–34	51,361	311,618	362,979	85.8
35–44	34,607	271,515	306,122	88.7
45–54	31,702	196,882	228,584	86.1
Total	407,791	965,269	1,373,060	70.3
3,601–6,000				
15–24	199,196	95,754	294,950	32.5
25–34	30,838	176,455	207,293	85.1
35–44	21,336	136,326	157,662	86.5
45–54	14,141	93,251	107,392	86.8
Total	265,511	501,786	767,297	65.4
6,001–12,000				
15–24	231,604	88,288	319,892	27.6
25–34	56,754	164,354	221,108	74.3
35–44	20,795	141,667	162,462	87.2
45–54	16,333	87,425	103,758	84.3
Total	325,486	481,734	807,220	59.7
12,001 and more				
15–24	278,497	53,103	331,600	16.0
25–34	54,057	121,794	175,851	69.3
35–44	26,013	96,971	122,984	78.9
45–54	20,348	81,542	101,890	80.0
Total	278,915	353,410	732,325	48.3
Unknown and without information				
15–24	168,490	89,516	258,006	34.7
25–34	30,631	153,777	184,408	83.4
35–44	16,517	130,200	146,717	88.7
45–54	15,810	89,712	105,522	85.0
Total	231,448	463,205	694,653	66.7

In 1965–1966, 1,000 pesos = U.S. $67.

The average for all women aged 15 to 54 years was 5.1 children; the average was higher in the rural zone (5.4) than in the urban (4.7). In women aged 15 to 24 years the average was 2.2 children; for women aged 25 to 34 years, 4.4; for those 35 to 44, 6.5 and for women aged 45 to 54 years the average was 6.9.

Ratio of Children to Women

The ratio of children to women is defined as "the ratio between the number of children less than five years of age and the number

of women of childbearing age." The ratio includes the survivors of births that have occurred during the past five years; therefore, it is inevitably affected by the mortality of those under five years of age. Another of the restrictions of this indicator is the bias caused by internal migration that, in the urban zone, results in a higher percentage of women and a lower percentage of children.[7]

The ratio of children to women for Colombia is 0.742, with the rural value of 0.874 and the urban value of 0.642. When correlated with income, the ratio is 0.827 in the lower-income group and tapers off to 0.479 for those with incomes of more than 12,000 pesos a year. The highest children to women ratio is found in the resident population of Bogotá who have an annual income of less than 3,600 pesos. This high value may be attributed to high fertility with relatively low infant mortality (see Table 17).

Specific Fertility Rates

The specific fertility rate is defined as the "number of live births per 1,000 women of childbearing age." The specific fertility rate for Colombia is 165.0 (the urban rate is 129.4 and the rural rate is 211.3). The specific fertility rate, as are other indicators, is higher in the Atlantic and Oriental regions, intermediate in the Central region and lowest in the Pacific region and Bogotá (see Figure 2). This rate has an inverse relation to annual family income, with a high rate of 200.8 in women of lower incomes and descending to a low of 71.5 in women of higher incomes, as shown in Table 18.

TABLE 17. NUMBER OF LIVING CHILDREN UNDER FIVE YEARS PER WOMAN OF CHILDBEARING AGE, BY REGION AND ANNUAL FAMILY INCOME

	Income (Pesos)				
Region	*3,600 or Less*	*3,601 to 6,000*	*6,001 to 12,000*	*12,001 or More*	*Total*
Atlantic	0.963	0.989	0.846	0.530	0.835
Oriental	0.803	0.911	0.729	0.613	0.793
Bogotá D.E.	1.037	0.885	0.701	0.356	0.605
Central	0.854	0.712	0.678	0.530	0.741
Pacific	0.730	0.711	0.737	0.425	0.691
Total	0.827	0.819	0.733	0.479	0.742

In 1965–1966, 1,000 pesos = U.S. $67.

FIGURE 2. FERTILITY RATES BY REGION

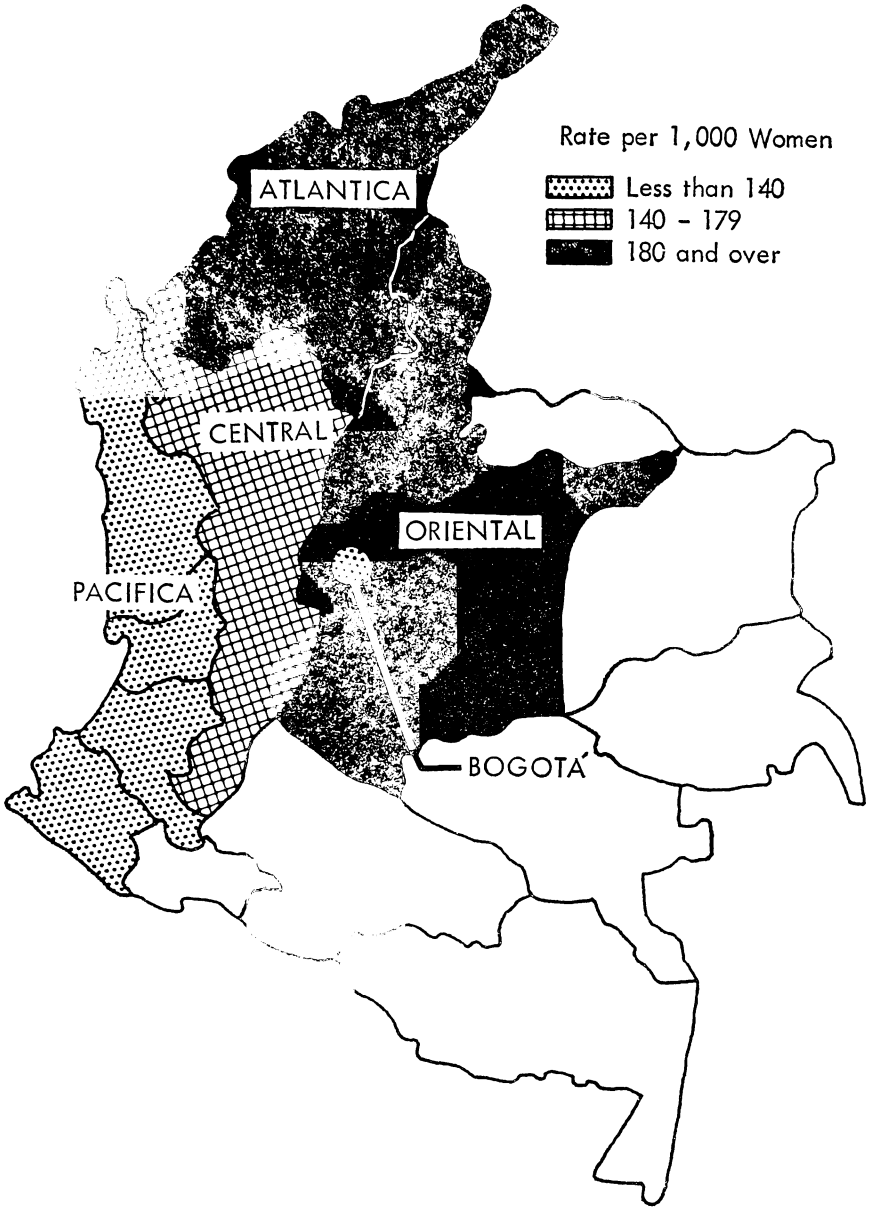


TABLE 18. SPECIFIC FERTILITY RATE BY AGE, ZONE AND ANNUAL FAMILY INCOME

Age (years) and Zone	*Income (pesos)*											
	3,600 or Less		*3,601 to 6,000*		*6,001 to 12,000*		*12,001 to 30,000*		*30,001 and More*		*Unknown or no Information*		*Total*	
	Number	*Rate*	*Number*	*Rate*	*Number*	*Rate*	*Number*	*Rate*	*Number*	*Rate*	*Number*	*Rate*	*Number*	*Rate*
Urban														
15–24	26,042	172.7	17,996	121.1	26,488	110.1	16,076	83.8	4,736	45.4	16,203	120.4	107,541	110.6
25–34	25,703	237.4	28,618	267.5	40,472	232.7	19,237	199.3	9,277	158.4	28,262	261.8	151,569	232.4
35–44	15,337	138.3	10,158	131.1	18,491	144.0	5,033	72.8	1,811	52.2	7,897	94.6	58,727	116.5
45–54														
Total	67,800	153.6	57,165	147.2	85,451	138.0	41,210	97.9	15,824	70.6	52,362	138.6	319,812	129.4
Rural														
15–24	74,785	231.8	32,921	224.9	15,735	198.5	2,828	117.1	598	52.7	25,306	113.3	152,173	215.2
25–34	86,690	340.3	33,415	333.1	13,231	280.3	5,732	354.2	1,094	238.6	23,182	303.2	163,344	327.0
35–44	42,327	216.8	19,405	242.0	7,679	225.4	1,458	98.3	218	50.5	8,993	142.1	80,080	204.3
45–54	4,057	25.5									1,151	21.4	6,539	21.4
Total	207,859	223.1	86,573	228.4	37,144	197.4	10,018	157.9	1,910	79.7	58,632	185.0	402,136	211.3
Total														
15–24	100,827	212.1	50,917	172.6	42,223	132.0	18,904	87.5	5,334	46.1	41,509	160.9	259,714	154.6
25–34	112,393	309.6	62,033	299.3	53,703	242.9	24,969	221.5	10,371	164.3	51,444	279.0	314,913	273.4
35–44	57,664	188.4	29,563	187.5	26,170	161.1	6,491	77.3	2,029	52.0	16,890	115.1	138,807	154.9
45–54	4,775	20.9	1,225	11.4							1,151	10.9	8,514	13.2
Total	275,659	200.8	143,738	187.3	122,595	151.9	51,228	105.8	17,734	71.5	110,994	159.8	721,948	165.0

In 1965–1966, 1,000 pesos = U.S. $67.
Rates not shown when based on small number of cases.

The specific fertility rates rise to a maximum of 273.4 between the ages of 25 and 34 years and then decline in the older age groups. This pattern holds for the urban and rural zones and for each income category. In each age group the specific fertility rates diminish as the income increases and are higher in the rural zone (see Table 18 and Figure 3).

Total Fertility Rate

The total fertility rate is "the sum of specific fertility rates for each year of age;" therefore, it is equivalent to a specific fertility rate adjusted by age. Divided by 1,000, this indicator gives an

FIGURE 3. FERTILITY RATES BY AGE, FAMILY INCOME AND ZONE

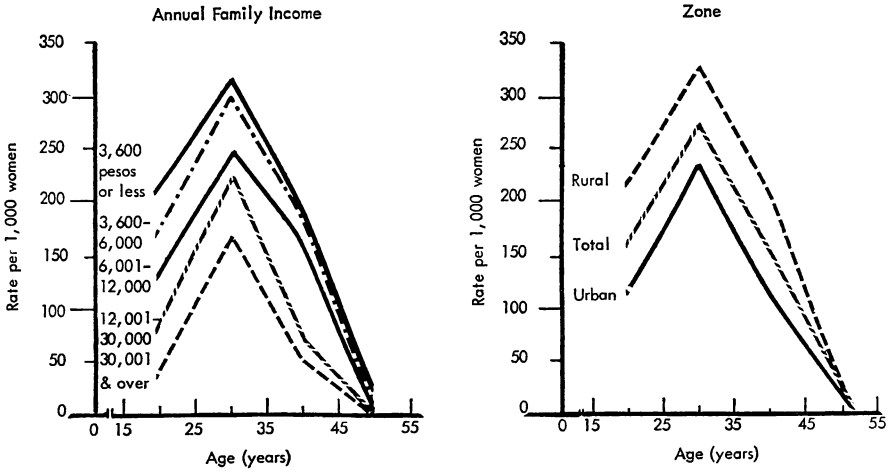


TABLE 19A. FERTILITY INDICATORS BY REGION AND ZONE

Region	*Live Births per 1,000 Population*		*Live Births per 1,000 Women*		*Total Fertility**		*Gross Reproduction Rates***		*Ratio of Children Under 5 Years to Women 15–54*	
	Urban	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*
Atlantic	40.1	45.7	166.5	223.4	5.8	8.1	2.8	3.9	0.756	0.941
Oriental	30.4	49.3	110.4	229.3	4.2	8.8	2.0	4.2	0.595	0.908
Central	33.6	44.9	129.3	204.1	4.9	7.2	2.4	3.5	0.653	0.849
Pacific	28.1	41.3	103.1	180.7	3.5	6.4	1.7	3.1	0.590	0.806
Total	34.3	45.9	130.4	210.4	4.7	7.7	2.3	3.7	0.642	0.874

* An approximation of the number of children a woman would have by the end of her reproductive life, at present age-specific fertility rates.

** An approximation of the number of female children a woman would have by the end of her reproductive life.

approximation of the number of children a woman might have throughout her reproductive life, assuming that she has the average level of fertility at each year of her age.[8] The total fertility rate for Colombia is 6.0 children per woman. In the urban zone the index is 4.7 and in the rural zone it is 7.7 (see Table 19A). When correlated with income, the index is found to be 7.3 children for women with low incomes and 3.5 children for women with high incomes.

Crude Fertility Rate

The crude fertility rate differs from the total fertility rate in that the numerator includes only female births. The rate is, therefore, approximately half of the total fertility rate. When computed according to age, zone, region and annual family income the tendencies of the crude fertility rate are similar to those described for the total fertility rate, as is the direction of the differences when measured by these variables.

Differential Analysis of Fertility

Urban-rural differences. Table 19A presents five indicators of fertility. The average fertility as measured by any one of the indicators is consistently lower in the urban zone. This is true for the country as a whole as well as for the different regions within it. The greatest differentials are seen in the general rate of fertility, the total fertility rate and the crude fertility rate, in which the urban fertility is shown to be about 38 per cent lower than the rural fertility. The differentials in the birth rate and the ratio of children to women are lower because of the biases inherent in these indicators. For example, the birth rate is affected by the sex and age of the urban and rural populations. When this indicator is adjusted for sex and age the difference between the two zones jumps from 25.1 per cent to 39.3 per cent. The urban-rural differences in the ratio of children to women are biased simply because of the higher proportion of women in cities.

Differences by annual family income. Table 19B compares the fertility of the two extreme groups of annual income. As was the case with urban-rural differences, the greatest differences in fertility

TABLE 19B. FERTILITY INDICATORS BY REGION AND ANNUAL FAMILY INCOME

Region	Live Births per 1,000 Population		Live Births per 1,000 Women 15–54		Total Fertility		Gross Reproduction Rates		Ratio of Children Under 5 Years to Women 15–54	
	3,600 or Less	12,001 and More	3,600 or Less	12,001 and More	3,600 or Less	12,001 and More	3,600 or Less	12,001 and More	3,600 or Less	12,001 and More
Atlantic	50.9	30.6	239.5	114.6	8.8	4.1	4.2	2.0	0.963	0.538
Oriental	46.3	29.3	202.2	110.1	7.8	4.5	4.1	2.2	0.803	0.613
Bogotá	66.5	30.6	269.1	90.2	8.8	3.2	4.2	1.5	1.037	0.356
Central	47.6	24.1	208.5	88.4	7.3	3.4	3.5	1.6	0.854	0.530
Pacific	39.2	23.5	163.8	74.5	5.9	2.6	2.8	1.2	0.730	0.425
Total	46.1	27.5	207.6	94.2	7.3	3.5	3.5	1.7	0.827	0.479

In 1965–1966, 1,000 pesos = U.S. $67.

of income groups is seen in the total fertility rate, the crude fertility rate and the general fertility rate. According to these three indicators the fertility of women with low incomes is at least 50 per cent higher than in women with high family incomes. The differences are even more marked in Bogotá, where, for four of the five indicators, the fertility in women of low incomes is at least 63 per cent higher than that of women of high income.

Differences by region. Fertility is consistently higher in the Oriental and Atlantic regions. It is lowest in the Pacific region and Bogotá, and is intermediate in the Central region.

FETAL MORTALITY

Approximately 16.5 per cent of pregnancies terminate with a product of conception that presents no signs of life. Fetal deaths are high between the second and fourth month, diminish in number between the fifth and eighth months and increase slightly at about nine months (see Table 12). Fetal deaths in the early period of gestation are 116.4 per 1,000 pregnancies; in the intermediate period they are 19.2 per 1,000 pregnancies and in the late period they are 28.9 per 1,000 pregnancies. Thus, the risk of fetal mortality is four to six times greater in the early fetal period. Even within that period the maximum number of fetal deaths occurs

TABLE 20. FETAL DEATHS BY LENGTH OF PREGNANCY AND AGE OF MOTHER

Length of Pregnancy	Age in Years: 15–24 Number	15–24 Per Cent	25–34 Number	25–34 Per Cent	35–44 Number	35–44 Per Cent	45–54 Number	45–54 Per Cent	Total Number	Total Per Cent
Less than 4½ months	27,019	72.2	35,852	65.9	29,998	73.5	5,538	86.1	98,407	70.8
4½ to less than 6½ months	4,456	11.9	7,163	13.2	3,842	9.4	734	11.4	16,195	11.6
6½ months and over	5,929	15.9	11,378	20.9	6,992	17.1	162	2.5	24,461	17.6
Total	37,404	100.0	54,393	100.0	40,832	100.0	6,434	100.0	139,063	100.0

TABLE 21. TOTAL DEATHS BY LENGTH OF PREGNANCY AND URBAN-RURAL DISTRIBUTION

Length of Pregnancy (months)	Urban Number	Urban Per cent	Rural Number	Rural Per cent	Total Number	Total Per cent
Less than 4½	69,043	76.4	29,364	60.3	98,407	70.8
1	8,448	9.4	1,133	2.3	9,581	6.9
2	29,369	32.5	12,873	26.4	42,242	30.4
3	27,228	30.1	12,162	25.0	39,390	28.3
4 to less than 4½	3,998	4.4	3,196	6.6	7,194	5.2
4½ to less than 6½	10,174	11.3	6,021	12.4	16,195	11.6
4½ to less than 5	3,999	4.4	3,195	6.6	7,194	5.2
5	4,894	5.5	2,210	4.5	7,104	5.1
6 to less than 6½	1,281	1.4	616		1,897	1.3
6½ months and over	11,174	12.3	13,287	27.3	24,461	17.6
6½ to less than 7	1,282	1.4			1,898	1.4
7	1,904	2.1	2,920	6.0	4,824	3.5
8	2,382	2.6	3,266	6.7	5,648	4.0
9 and over	5,606	6.2	6,485	13.3	12,091	8.7
Total	90,391	100.0	48,672	100.0	139,063	100.0

* Excludes 1,579 pregnancies without information regarding length.
Rate not shown when based on small number of cases.

from the second to the third month of gestation, a period when half of all fetal deaths take place.

The distribution of fetal deaths according to the length of pregnancy shows some variations associated with the characteristics of the mother. A higher proportion of early fetal deaths occurs in mothers of greater age (Table 20), in women in the urban zone (Table 21) and in women with higher family incomes (Table 22).

In the intermediate period the fetal deaths occur in similar proportions. Fetal deaths in the late period are higher in women of lower age who live in the rural zone and have lower family incomes.

Early and Intermediate Fetal Loss (Abortions)

The National Investigation of Morbidity found an abortion rate of 117.4 per 1,000 pregnancies among women aged 15 to 54 years. That is 82.4 per cent of fetal deaths and corresponds to a rate of 136.1 abortions for each 1,000 pregnancies or one abortion for every six live births. The abortion rate may well be underestimated because a fraction of the abortions that have really occurred was not reported to the interviewer. No doubt, a number of pregnancies were not disclosed, but it is probable that the number of abortions concealed was greater than the number of pregnancies concealed.

The number of women, 110,303, aged 15 to 54 years who abort in one year is 2.5 per cent of the women of fertile age and 13.1 per cent of the women who terminate pregnancy (see Table 23).

The information obtained on only one year in the life of the woman measures only the annual incidence of abortions, but not the total number of abortions for women, which can be obtained only from a complete obstetric history. Therefore, the number of abortions produced and the number of women who have aborted are similar; the average number of abortions per woman in the nine to 15 months, of the survey was 1.06. In further discussion, as a measure of risk of abortion, the number of abortions per 1,000 pregnancies terminated will be used.

Age and number of live children. The risk of abortion increases with the age of the woman. In women aged 15 to 24 years, 11 per cent of pregnancies end in abortion; in women aged 35 to 54 years the percentage is double that (see Table 24).

Variations are equally significant if groups of women are compared according to the number of live children they have had. During the period of one year, women without live children reported 683 abortions for each 1,000 pregnancies; women who have had seven or more live children reported 143 abortions for every 1,000 pregnancies, as shown in Table 24. The individual effect of

TABLE 22. FETAL DEATHS BY LENGTH OF PREGNANCY AND ANNUAL FAMILY INCOME

Length of Pregnancy (months)	*Income (pesos)**							
	3,600 or less		*3,601–6,000*		*6,001–12,000*		*12,001–30,000*	
	Number	*Per Cent*	*Number*	*Per Cent*	*Number*	*Per Cent*	*Number*	*Per Cent*
Less than 4½	29,839	65.7	17,940	67.7	22,082	77.2	11,045	66.9
4½ to less than 6½	4,799	10.5	4,050	15.3	3,302	11.5	1,891	11.5
6½ and over	10,818	23.8	4,495	17.0	3,221	11.3	3,572	21.6
Total	45,456	100.0	26,485	100.0	28,605	100.0	16,508	100.0

	30,001 and over		*No Information*		*Total*	
	Number	*Per Cent*	*Number*	*Per Cent*	*Number*	*Per Cent*
Less than 4½	2,294	85.4	15,206	78.7	98,407	70.8
4½ to less than 6½	224	8.3	1,929	10.0	16,195	11.6
6½ and over	169	6.3	2,187	11.3	24,461	17.6
Total	2,687	100.0	19,322	100.0	139,063	100.0

* In 1965–1966, 1,000 pesos = U.S. $67.

TABLE 23. WOMEN OF CHILDBEARING AGES WHO COMPLETED PREGNANCIES AND WHO ABORTED, AND NUMBER OF ABORTIONS, BY AGE, URBAN AND RURAL

	Women 15–54 (1)	*Women Who Completed Pregnancies (2)*	*Women Who Aborted (3)*	*Number of Abortions (4)*	*3/1* Per cent (5)*	*3/2** and (6)*	*4/3*** Average (7)*
Urban							
15–24	972,681	129,162	21,857	23,098	2.2	16.9	1.06
25–34	652,179	183,998	29,234	32,627	4.5	15.9	1.12
35–44	504,070	84,041	23,689	24,637	4.7	28.2	1.04
45–54	342,279	3,515	1,176	1,154	0.3	33.4	0.98
Total	2,471,209	400,716	75,956	81,516	3.1	19.0	1.07
Rural							
15–24	707,142	160,705	9,653	9,885	1.4	6.0	1.02
25–34	499,460	178,468	10,665	10,969	2.1	6.0	1.03
35–44	391,877	93,808	9,782	9,751	2.5	10.4	1.00
45–54	304,867	10,617	4,247	5,280	1.4	40.0	1.24
Total	1,903,346	443,598	34,347	35,885	1.8	7.7	1.04
Total							
15–24	1,679,823	289,867	31,510	32,983	1.9	10.9	1.05
25–34	1,151,639	362,466	39,899	43,596	3.5	11.0	1.09
35–44	895,947	177,849	33,471	34,388	3.7	18.8	1.03
45–54	647,146	14,132	5,423	6,434	0.8	38.4	1.19
Total	4,374,555	844,314	110,303	117,401	2.5	13.1	1.06

* Ratio of women who aborted to women age 15–54.

** Ratio of women who aborted to women who completed pregnancy.

*** Approximate average number of abortions per women who aborted.

TABLE 24. ABORTION RATES PER 1,000 PREGNANT WOMEN, BY NUMBER OF LIVING CHILDREN AND BY AGE

Number of Living Children	*Unadjusted Rate*	*Adjusted Rate*
0	682.8	432.7
1–3	112.2	165.3
4–6	129.3	125.9
7 and over	143.1	81.1
Age (years)		
15–24	110.6	72.0*
25–34	118.0	121.3*
35–54	209.5	267.3*

* Adjusted by the number of live children born previously, for the total number of pregnant women in the country.

these two variables may be better seen when the rates are adjusted to the total number of pregnancies in the country (see Table 24). When the abortion rates for women of different ages are adjusted according to the number of live children, the risk of abortion is increased as age increases. On the other hand, when the abortion rates for women with different numbers of live children are adjusted according to age, the risk of abortion is highest in women without live children, but decreases as the number of children increases.

Zone and region. The number of abortions per 1,000 pregnancies varies considerably with the size of the locality in which the women interviewed live. The abortion rates are lowest among women who live in the rural areas (79.6), increase to 204.2 among women who live in small and intermediate localities and decline again to 159.9 among women who reside in large cities. The rate for women in large cities is intermediate to the rates given in other studies.[9,10] Bogotá, the largest city in Colombia, had an even lower rate (101.0). Urban-rural differences are persistent for each age group and are maintained in the different socioeconomic groups as well.

Abortion rates by region show significant differences, ranging from 61 abortions per 1,000 pregnancies in the Oriental region to 212 in the Pacific region. In all regions the rates are higher in the urban zone than in the rural. The maximum difference is found

in the Pacific region, which has the highest urban rate (369.0) and next to the lowest rural rate (62.5). The least difference in abortion rates is found in the Central region, which has the highest rural rate (140.1) and second highest urban rate (203.9), although the latter is still well below that of the Pacific region.

Socioeconomic conditions. The risk of abortion is least in the lowest economic groups (110 per 1,000 pregnancies), increases in the intermediate economic groups (131.3 to 201.5) and tapers off in the higher economic group (120.6). In each of the income groups the abortion rates are two to four times higher in the urban zone. In the urban zone the rate is about equal for women of lower and average incomes, and drops to almost half in the higher-income group. In the rural zone the rates are similar in the lower-income groups, but are doubled in the group with average income.

When abortion rates are calculated according to education of the women the lowest rates are found among women with no education (113.1 abortions per 1,000 pregnancies). The rate rises to 144.8 among women with some degree of primary education and declines again to 128.4 in women with secondary or higher education.

In each of the education groups—women with no education, with primary education or with secondary education or more—the abortion rates in the urban zone surpass those of the rural zone. As with income, the tendencies differ in each zone. In the urban zone the women with the highest education have the lowest rates; women with primary education have the highest rates and women with no education are intermediate. In the rural zone the opposite pattern is seen. Women with secondary education or above have the highest abortion rate and women with primary education have the lowest.

Because the annual income and level of education are directly related to the zone of residence—whether urban or rural—of the population, it is important to establish whether or not the variations in the abortion rates according to income and education are real or are an indirect effect of the urban or rural location. Therefore, the rates obtained in each zone were adjusted, applying to them the distribution by income or education of the total popula-

tion of the country. Inversely, the rates obtained in each income or education group were adjusted by applying to them the urban-rural distribution of the total population. The adjusted figures continue to indicate the differences in the abortion rates between urban and rural areas, which appears to indicate that the differences are independent of income or education. On the contrary, when abortion rates are adjusted by zone according to income or education the differences decrease, which would seem to confirm that the urban-rural location is of greater significance in the determination of abortion rates.

Although the heterogeneity of each group rendered difficult the study of abortion rates by occupation, those rates were computed. The highest rates (200 and more) are found among women in homes in which the head of the family is employed in an occupation of intermediate category, such as office employees or service and transportation workers. The lowest rates are observed among women in homes in which the head of the family is in an occupation of higher category—professional worker or technician—and among women in homes in which the head of the family is occupied in a lower category—farmer or unclassified farm worker.

To summarize, the zone, urban or rural, is a decisive factor in determining the abortion rate inasmuch as the rate is always less for rural inhabitants than for urban. The abortion rate is independent of family income, level of education and occupation of the head of the family. Those variables do, however, determine the tendency of the rate within each zone; thus the woman who is better educated and has a higher income and whose husband is employed in one of the higher occupation categories shows an increased rate of abortion in the rural zone and a rate lower than the average in the urban zone.

Estimates of Induced Abortion

In general, abortions are of two types: the unintentional or spontaneous abortion and the intentional abortion, legally or illegally induced. The distinction between the two types is generally based on the history given by the patient, and for that reason the relative

number of spontaneous to induced abortions cannot be determined objectively. In Colombia, induced abortions are not legal and for that reason the present analysis is limited to spontaneous abortions and abortions illegally induced. In the National Investigation of Morbidity the information concerning abortions was collected without differentiating between spontaneous and induced abortions. It was assumed that women interviewed would hesitate to report induced abortions and, therefore, the general information on abortions would be more accurate if the circumstances of their occurrence were not investigated. Despite the lack of direct information the magnitude of induced abortions can be estimated.

Procedure. In estimating the rate of induced abortions it is assumed that (1) the minimum rate of abortions observed in the country for a certain group[11] is approximately the real rate of spontaneous abortions; (2) the rate of spontaneous abortions varies little between women of different socioeconomic conditions or place of residence if age is kept constant; (3) consequently, the difference between the abortion rates obtained in the interview and the minimum rate encountered would correspond to the rate of induced abortions.

The unknown variations in the rate of spontaneous abortions and in the degree of truth of the responses for the different groups affect the precision of the estimates. For that reason, the estimates given are of greater value in the evaluation of tendencies than in the quantification of induced abortion.

Region and zone. The rate of induced abortions for Colombia, then, would be the difference between the total rate of abortions (136 per 1,000 pregnancies) and the minimum observed rate (60 per 1,000 pregnancies); an estimated rate of 76 induced abortions per 1,000 pregnancies. Induced abortions, therefore, would be 56 per cent of all abortions or 65 per cent of abortions that occurred before 20 weeks gestation, a period in which virtually all induced abortions are performed.

The rate of induced abortion varies from 20 per 1,000 pregnancies in the rural zone to 144 in the urban zone of intermediate sized cities and to 100 in the principal cities of the countries. In

TABLE 25. ESTIMATES OF INDUCED ABORTIONS BY ZONE, REGION, ANNUAL FAMILY INCOME AND EDUCATION

Zone	*Total Rate* Observed*	*Rate* of Induced Abortions (Observed Minus 60)*	*Induced as Per Cent of Observed*
Urban I	159.9	99.9	62.5
Urban II	204.2	144.2	70.6
Rural	79.6	19.6	24.6
Total	136.1	76.1	55.9
Region			
Atlantic	118.3	58.3	49.3
Oriental	60.8	0.8	1.3
Bogotá, D.E.	101.0	41.0	40.6
Central	169.1	109.1	64.5
Pacific	211.6	151.6	71.6
Total	136.1	76.1	55.9
*Income (pesos)**			
3,600 or less	110.0	50.0	45.5
3,601 to 6,000	131.3	71.3	54.3
6,001–12,000	174.4	114.4	65.6
12,001–30,000	201.5	141.5	70.2
30,001 and over	120.6	60.6	50.3
Total	136.1	76.1	55.9
Education			
None	113.1	53.1	47.0
1–8 years	144.8	84.8	58.6
High school and beyond	128.4	68.4	53.3
Total	136.1	76.1	55.9

* In 1965–1966, 1,000 pesos = U.S. $67.

Bogotá, the estimated rate is 41 per 1,000 pregnancies or 40 per cent of the abortions in that area (see Table 25).

When computed according to region the rate of induced abortion increases from near zero in the Oriental region to 152 in the Pacific region, where induced abortions are estimated to be 71 per cent of the abortions occurring.

Social and economic conditions. In the procedure adopted to estimate the abortion rate, the minimum observed rate of 60 abortions per 1,000 pregnancies was taken as the constant and the excess was considered to be the induced abortion rate. The induced rate, then, has the same pattern as the total abortion rates in the different economic and social groups. The induced abortion rate thus

FIGURE 4. FECUNDITY, FERTILITY AND FETAL MORTALITY, URBAN AND RURAL AREAS

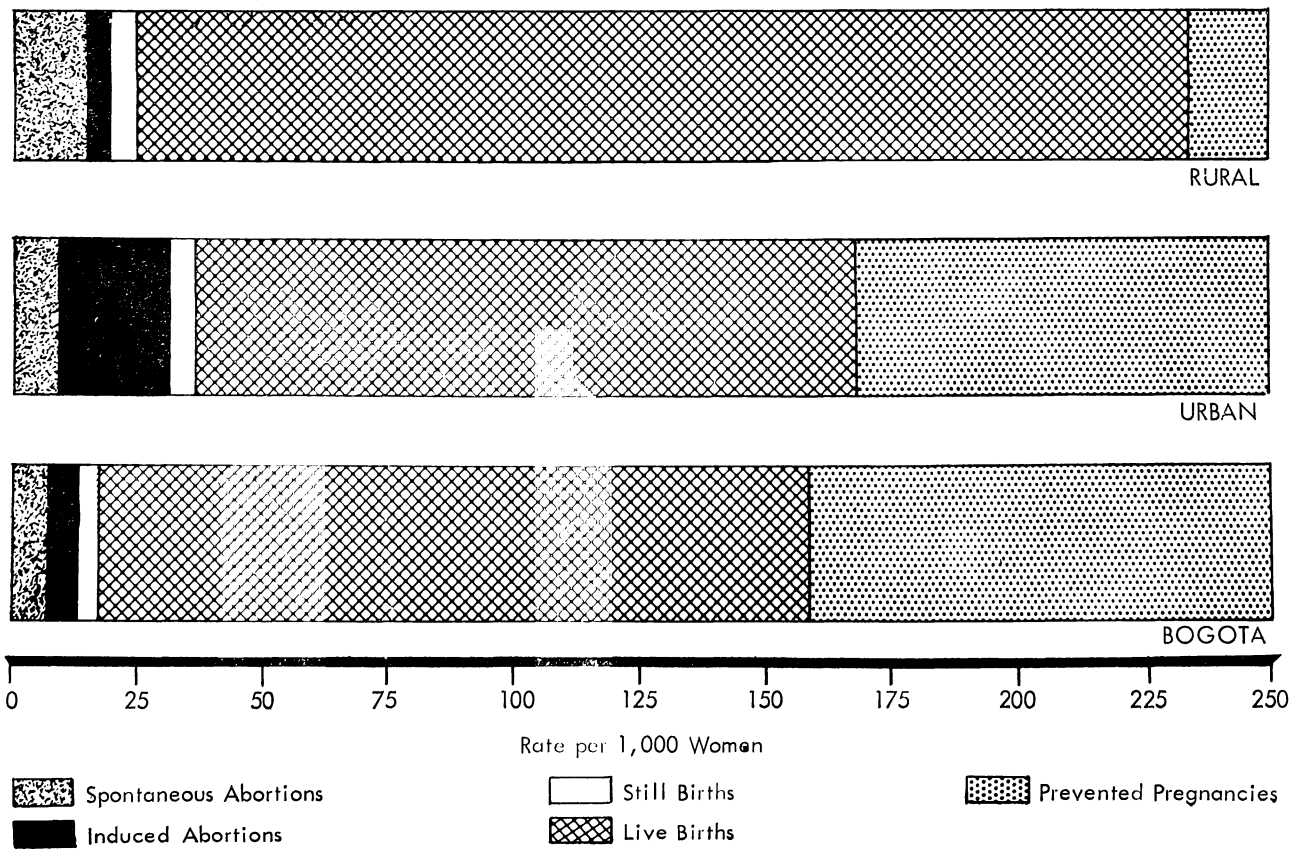
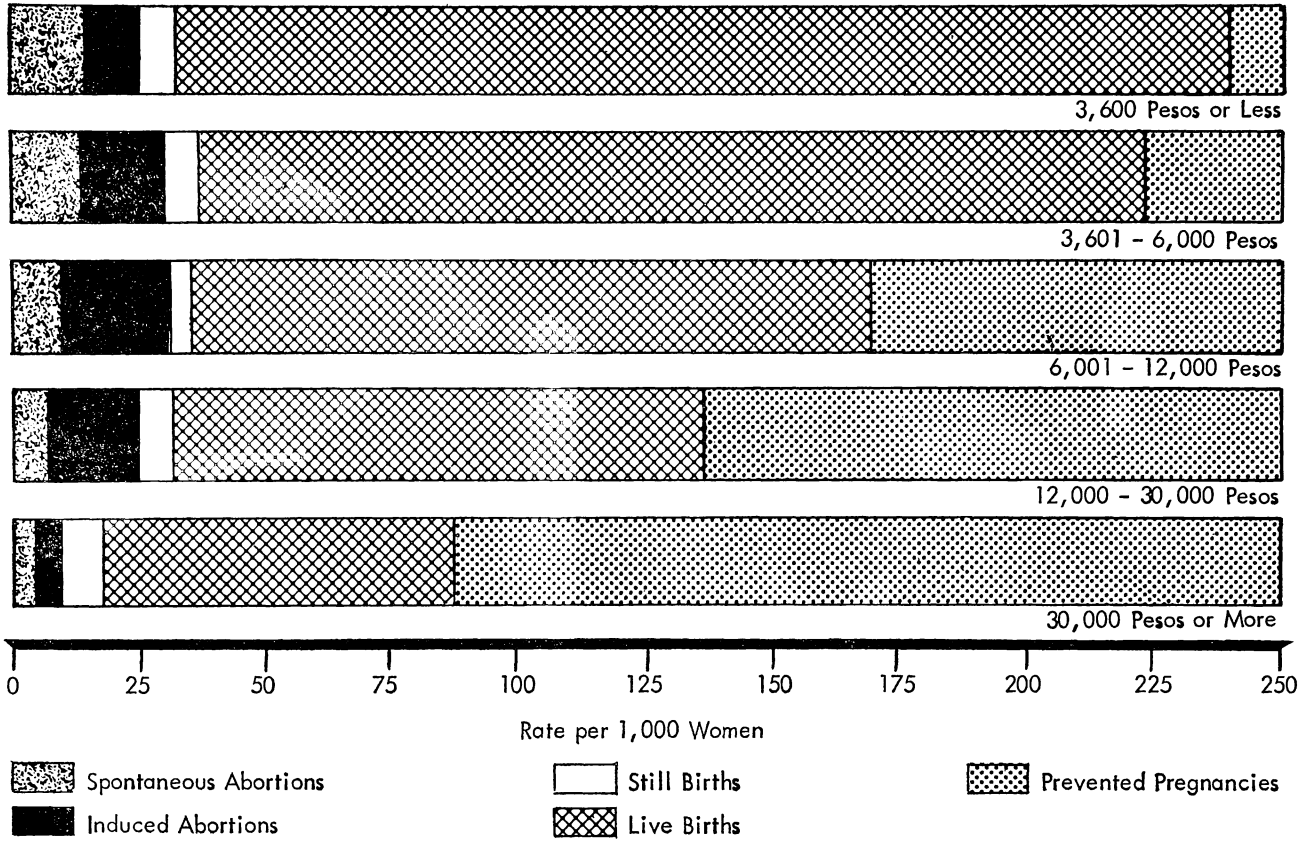


FIGURE 5. FECUNDITY, FERTILITY AND FETAL MORTALITY BY ANNUAL FAMILY INCOME



rises from the group with less income or no education to the intermediate group and declines in the group with higher income or with higher education, as shown in Table 25.

Relation between fecundity and fertility. Mechanisms that control fertility do so by preventing pregnancy or causing fetal death, the latter of which has been discussed. The relative importance of the mechanisms that prevent pregnancy may be estimated using the method of Requena.[12] In this method, the effect of preventive measures is estimated by deducting live births and fetal deaths from the maximum fecundity. In the case of the National Investigation of Morbidity, such a procedure was facilitated by the fact that the data were obtained from a single source and could easily be combined and compared.

Maximum fecundity is difficult to determine, but can be approximated as the highest rate of pregnancies observed in the country for a certain group,[13] assuming that the potential to intervene in reproduction does not fluctuate in the different groups if age is kept constant.

Applying Requena's method results in a series of variations in the employment of induced abortion and in the prevention of pregnancy as mechanisms that control fertility. High fertility exists in the rural population, attributable to a low number of induced abortions and prevented pregnancies. Fertility is lower in the urban zone because of the proportional increase in induced abortion and avoided pregnancies. In large cities such as Bogotá, fertility is similar to that of the urban population of the rest of the country, except that the proportion of induced abortions is lower and the proportion of prevented pregnancies is higher in the large cities (Figure 4).

When compared according to annual family income (Figure 5) and level of education, similar differences are seen:

1. In the low socioeconomic group a greater proportion of pregnancies terminates in live births; the rates of induced abortion and prevented pregnancies are lower.
2. The middle socioeconomic group shows a reduction in the proportion of pregnancies that terminate in live birth; this

group shows the highest rate of pregnancies interrupted by induced abortion and an increase over the lower group in the number of pregnancies prevented.

3. The high socioeconomic groups show the lowest rate of pregnancies that terminate in live births. A considerable decline is seen in the proportion of induced abortions and an increase is seen in the proportion of births prevented.

Although the prevention of pregnancy may be related to voluntary and involuntary factors, in Colombia, the differences observed among the socioeconomic groups might be attributed to differences in the use of voluntary mechanisms, among which contraceptives would be the most important.

Stillbirth and Late Fetal Death

Stillbirth and late fetal death include the fetal deaths that occurred after six and one-half months of pregnancy. A total of 23,241 stillbirths was estimated from the findings of the National Investigation of Morbidity, which is 17.6 per cent of the fetal deaths and 26.9 stillbirths for every 1,000 pregnancies (Table 26). These figures agree with those obtained from countries with "good" vital statistics,[14] which report between 20 and 50 stillbirths per 1,000 live births.

Age. Women between the ages of 15 and 24 years have the lowest rate of stillbirths, 18.5 per 1,000 pregnancies. The rate increases to 29.9 per 1,000 pregnancies in women between 25 and 34 years of age, and is even higher (37.2) in women between 35 and 44.

Socioeconomic conditions. Analyzing stillbirths according to socioeconomic conditions is difficult because of the low frequency of stillbirths. The study, therefore, must be presented with less detail.

The mortality rates for residents of the urban zone are similar to those of rural residents. The rates are likewise similar in the five geographical regions, fluctuating between 20 and 30 stillbirths per 1,000 pregnancies. No significant differences are observed between the economic and social groups. To arrive at any major conclusions is impossible using existing data, which seem to indicate that

TABLE 26. STILLBIRTHS IN ONE YEAR, BY AGE OF MOTHER, EDUCATION, ANNUAL FAMILY INCOME AND ZONE

Age (years)	*Stillbirths*	*Rate*
15–24	5,504	18.5
25–34	11,044	29.9
35–44	6,693	37.2
45–54		
Total	23,241	26.9
Education		
None	5,804	26.5
1–8 years	14,217	27.7
High school and beyond	3,057	29.8
No information		
Total	23,241	26.9
*Income (pesos)**		
6,000 or less	14,744	30.0
6,001 or more	6,310	26.3
No information		
Total	23,241	26.9
Zone		
Urban	10,205	24.8
Rural	13,036	28.9
Total	23,241	26.9

* In 1965–1966, 1,000 pesos = U.S. $67.
Rate not shown when based on small number of cases.

social and economic conditions impinge less on stillbirths resulting from involuntary causes. Despite these findings, however, the general assumption remains that the risks of stillbirth are increased in the lower socioeconomic groups because of the unfavorable biological conditions of the mother, by the lesser ability of the mother to seek early care or the failure to space pregnancies.[15]

SUMMARY

The Colombian population is young; 46.6 per cent is less than 15 years of age and only 6.8 per cent is more than 54 years of age. A lower proportion of women less than 15 years old lives in the urban zone; a higher proportion of women between 15 and 54 years of age lives in the urban zone. In the lower-income group 49.6

per cent of the population is less than 15 years of age; in the higher-income group 38.5 per cent is that age. Inversely, the population between 15 and 54 years old amounts to 42 per cent and 52.6 per cent of the lower- and higher-income groups, respectively. The female population aged 15 to 54 years is 24.2 per cent of the total population of Colombia. Of that group, 22.7 per cent has not attended school at all and only 16.1 per cent has attended some years of intermediate or higher education.

The annual rate of pregnancies is 198.3 per 1,000 women of fertile age. The rate is higher in the rural zone (237.7) than in the urban zone (168.0), and diminishes as social and economic conditions improve.

Of each 100 pregnancies 11.7 terminate during the early fetal period, 2.0 in the intermediate fetal period and 86.3 in the late fetal period, 77 of which end at normal term. Fetal deaths account for 16.5 per cent of the products of pregnancy.

The overall birth rate of the country is 40.0 per 1,000 inhabitants, a figure 8.6 per cent higher than that obtained through the record of baptisms. The urban and rural birth rates, adjusted to the population of the country by age and sex, are 31.3 and 51.6 per 1,000 inhabitants, respectively.

The general fertility rate is 165.0 per 1,000 women aged 15 to 54 years; the urban rate is 129.4 and the rural rate is 211.3. The highest fertility by age is among the women aged 25 to 34 years, with a rate of 273.4. According to the specific fertility rates of the country, a woman might have six children during the course of her reproductive life. That figure would vary from 4.7 children in the urban zone to 7.7 in the rural zone. The different indicators of fertility consistently show that the fertility of rural women is 38 per cent higher than that of urban women. In addition, fertility is 50 per cent higher in women of lower incomes than in those of higher incomes; and fertility is higher in the Atlantic and Oriental regions, intermediate in the Central region and lowest in the Pacific region and Bogotá. The differences are maintained in all age groups by zone and economic income, although the differences are more accentuated in the extreme age groups.

The estimated 117,401 abortions among women aged 15 to 54 years amount to a rate of 136.1 abortions per 1,000 pregnancies, or one abortion for every six live births. The risk of abortion increases with age, is higher in women without children and is reduced as the number of children previously borne increases. The abortion rate is lower in women of rural areas with lower economic conditions or little education. The rate is intermediate among women, urban or rural, who have more education or higher income. The highest abortion rate is found in women of the urban zone with a low level of education or low incomes.

The estimated number of induced abortions is 65,600 in one year. That figure corresponds to a rate of 76 per 1,000 pregnancies and is 65 per cent of all abortions that occurred before 20 weeks gestation.

Rural women and women of low socioeconomic level have a high fertility rate, probably attributable to their limited use of methods to control fertility. Urban women and women of intermediate socioeconomic level have a lower fertility rate achieved by increased rates of induced abortions and prevented pregnancies. Women of high socioeconomic level have the lowest fertility rate, a low rate of induced abortion and the highest rate of prevented pregnancies. The comparison by regions reinforces the inverse relation between the fertility rates and abortion rates.

A total of 23,241 stillbirths were reported; a rate of 26.9 per 1,000 pregnancies or 32.9 per 1,000 live births. The risk of stillbirth increased with age, but no significant differences could be found related to socioeconomic level of the mother.

APPENDIX

The Study of Human Resources for Health and Medical Education in Colombia was started in 1964 by the Ministry of Public Health and the Colombian Association of Faculties of Medicine. The study encompassed medical care institutions (hospitals and health centers), health conditions (morbidity and mortality), institutions of medical education (medical build-

ings and infirmaries), human resources (physicians and nurses), the national health plan and health education. The study was directed into three principal fields: the measurement of the conditions of health, the identification of the resources necessary to meet them and the determination of the changes required in the teaching of the health sciences.

To fulfill these aims, the following aspects were investigated: population characteristics and trends; health status in terms of morbidity and mortality; the structure, yield and utilization of the institutional resources; the availability, functions and efficiency of human resources and, finally, the related social and economic factors. One of the purposes of the study was to develop methods and procedures that would help other countries in their investigations of the problems and planning of human resources for health.

The directors of the Study of Human Resources for Health and Medical Education in Colombia were:

Carlos Agualimpia M., M.D., who was Head of Clinical Evaluation until August, 1967, and was Codirector after that time.

Alfonso Mejía V., M.D., who was Codirector until August, 1967. Raul Paredes M., M.D.

Collaborators in the study were:

Ricardo Galán M., M.D.; Aldemar Gómez A., M.D., who was Head of Home Interviews until December, 1966; Aurelio Pabón R., M.D.; Pablo Solano I., M.D.; Guillermo Torres C., M.D.; Helver Barriga R., statistician; Luis Carlos Gómez S., statistician; Luis E. González R., statistician; and Wilson Rodríguez Q., statistician.

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[4] During the period of investigation the value of the peso fluctuated between 11 and 19 pesos per dollar with an average of 15 pesos per dollar. *Ibid.*

[5] The National Investigation of Morbidity adopted the definitions recommended by the Third World Health Assembly in 1950. It considered as live birth "the complete expulsion or extraction from the mother a product of conception, the length of pregnancy does not matter, when, after such separation, it breathes or shows some other evidence of life such as palpitation of the heart, pulsation of the umbilical cord or actual contraction of some muscle subjected to the action of the will."

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[10] Llanos G., Estudio sobre la Epidemiología del Aborto en Cali, *Boletin del Segundo Seminario sobre Demografía,* 143–146, November, 1965.

[11] The lower limit is set at 60.0 abortions per 1,000 pregnancies, the rate encountered in a rural group of low income. The induced abortions, deduced from this figure by difference, may be underestimated inasmuch as the figure accepted as the lower limit may include some induced abortions.

[12] Douglas, C. A. INFANT AND PERINATAL MORTALITY IN SCOTLAND, Washington, National Center for Health Statistics, Series 3, No. 5, 1966.

[13] The maximum rate of fecundity is accepted as 250 pregnancies per 1,000 women of fertile age, a rate encountered in a rural lower-income group. Inasmuch as this figure may correspond to a group that prevents pregnancies in some unknown proportion, the prevented pregnancies would be underestimated.

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