

## HUMAN FERTILITY IN PUERTO RICO

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### ABSTRACT

The gross reproduction ratio of Puerto Rico has remained unchanged at a level of 2.5 from 1899 to 1940. This has resulted from a decline of marital fertility of about 25 per cent, balanced by an increased frequency of the married state. The decline of marital fertility has been greater in urban than in rural areas. Many Puerto Ricans are aware of population pressure in their island, and for the last twelve years a number of governmentally or privately sponsored contraceptive services have been in operation. Voluntary sterilization is also widely practiced.

Puerto Rico was discovered by Christopher Columbus in 1493. Four hundred years later, after Spain had ceded the island to the United States, a census conducted by the War Department reported 953,000 inhabitants.

During the following four decades the population almost doubled. The average an-

nual rate of increase in each intercensal period, Janer has been able to demonstrate that the birth rate of Puerto Rico has remained virtually unchanged during the period of administration by the United States at a level of about 40 per 1,000. The percentage of births registered increased from 75.2 in the intercensal period 1899-1910, through 90.5 and 94.3 in the following decades, to 98.2 in 1930-40. This last figure would indicate a completeness of birth registration attained only in the more advanced sections of the continental United States.

Three premises must be fulfilled if Janer's estimated number of births for 1930-40 is to be accepted as correct: The census of 1940 must be as complete as that of 1930, there must be no unrecorded emigration, and death registration must be virtually complete. No evidence has been presented to suggest that the population of Puerto Rico was less thoroughly enumerated in 1940 than in 1930, and migration to and from an island is obviously easily supervised. With reference to the third premise, Janer is quite emphatic: "Whoever is familiar with the customs and religious beliefs of the vast majority of our population, as well as with the accessibility of cemeteries, will have no difficulty in understanding the relative accuracy of death registration in our island even prior to the enforcement of the law of 1931." Others familiar with local conditions seem to share his opinion and insist that people would not dare to bury anyone without a permit.

From Janer's estimated numbers of births and his life-tables it is possible, substituting age-specific fertility rates available

TABLE 1  
POPULATION OF PUERTO RICO AND  
ANNUAL RATE OF INCREASE  
1899-1940

Census Year	Population	Annual Intercensal Rate of Increase (Per Cent)
1899.....	953,000	1.54
1910.....	1,118,000	1.56
1920.....	1,230,000	1.69
1930.....	1,544,000	1.93
1940.....	1,869,000	

nual rate of increase in each intercensal period has been larger than in the preceding one (Table 1). The vital statistics of Puerto Rico have been competently analyzed by José L. Janer.<sup>1</sup> The crude birth rate, as recorded, rose from 30.5 per 1,000 in 1899-1910 to 38.9 in 1930-40, a highly improbable development. By studying population increase from census to census, migration, and

<sup>1</sup> "Population Growth in Puerto Rico and Its Relation to Time Changes in Vital Statistics," *Human Biology*, XVII (1945), 267-313.

for later years, to compute a series of gross and net reproduction ratios for the period from 1899 to 1940 (Table 2). The gross reproduction ratio, like the crude birth rate, remains unchanged, whereas the net reproduction ratio shows a steady and accelerated increase. This increase is, of course, due to the decline of mortality and a vigorous public health program.

TABLE 2  
GROSS AND NET REPRODUCTION RATIO  
PUERTO RICO, 1899-1940

Period	Gross Reproduction Ratio	Net Reproduction Ratio
1899-1910.....	2.47	1.43
1910-20.....	2.51	1.46
1920-30.....	2.50	1.50
1930-40.....	2.46	1.62

Differential reproduction by residence and color can be most conveniently studied in terms of what has been called the "fertility ratio," that is, the number of children under 5 years of age per 1,000 women aged from 15 to 49. Such data are presented in Table 3. A very regular and familiar pattern is apparent. The fertility ratio is lowest in the city of San Juan (population, 169,000 in 1940) and reaches its maximum in the strictly rural areas where it is just twice as high as in the capital. In all classes of communities the ratio is higher for the colored than for the white population, the difference being largest in the smaller cities. It should be noted that colored people in Puerto Rico, as in the United States, are more heavily concentrated in the lower socioeconomic classes.

From the number of children 0-4 years old per 1,000 women aged 15-49 the net reproduction ratio of the period can be estimated. Under the conditions of mortality prevailing from 1935 to 1940 a fertility ratio of 378 was necessary for replacement. Allowing for 5 per cent underenumeration of young children, the net reproduction ratio for the total population was approximately 1.0 in San Juan, 1.1 in the other larger

cities, 1.3 in the smaller cities, 1.4 in the rural towns, and 2.0 in the remaining rural territory—where two-thirds of the Puerto Rican people live. This estimate makes no allowance for urban-rural differentials either in mortality or in underenumeration of children. Little is known about these things, but it is believed that mortality is higher in the cities and underenumeration of children higher in the country and that the apparent differential in net reproduction ratios is, therefore, somewhat understated.

The gross reproduction ratio in the strictly rural territory of Puerto Rico during the five years preceding the census of 1940 must have been about 3.0 and even more in certain sections of the island.

Turning our attention to the past, to 1899, we find fertility ratios as shown in Table 4. For Puerto Rico as a whole the number of children under 5 years of age per

TABLE 3  
CHILDREN UNDER 5 YEARS OF AGE PER 1,000  
WOMEN, AGED 15-49, BY RESIDENCE AND  
COLOR, PUERTO RICO, 1940

Residence	White	Colored	Total
City of San Juan.....	352	393	365
Cities, 10,000-100,000.....	395	460	411
Cities, 2,500-10,000.....	426	549	454
Rural territory.....	693	818	719
Rural towns.....	.....	.....	507
Other rural territory.....	.....	.....	731
Puerto Rico.....	588	668	606

1,000 women aged 15-49 was a little higher than in 1940, but the difference is not large enough to be in serious conflict with the picture of almost unchanged fertility. The fertility ratios for the two largest cities, San Juan and Ponce (population, 32,000 and 28,000 in 1899), are identical and surprisingly low, even if the higher infant mortality of the period is taken into account. What is more, in both cities the ratios are higher for the white than for the colored population. The census of 1899 includes no tabulations by sex and age for the total urban and rural

territory of Puerto Rico or for smaller towns individually. As, however, the population of the *barrios* (other rural territory) was such a large part of the "remainder of the Island," it is possible to make a reasonably close estimate for this group. The resulting figure, 730, is about the same as was found in the corresponding territory in 1940. The estimate for the "other cities and towns" is less reliable.

TABLE 4

CHILDREN UNDER 5 YEARS OF AGE PER 1,000 WOMEN, AGED 15-49, BY RESIDENCE AND COLOR, PUERTO RICO, 1899

Residence	White	Colored	Total
City of San Juan.....	355	333	343
City of Ponce.....	364	321	344
Remainder of island.....	647	681	660
Other cities and towns.....			400*
Other rural territory.....			730*
Puerto Rico.....	630	643	635

\* Estimate.

All this makes a pretty little mystery! A high and unchanging gross reproduction ratio for the total population combined with a large urban-rural differential, apparently existing over a period of forty years, seems incompatible with all our ideas on the diffusion of cultural patterns. The mystery is immediately resolved when we begin to think in terms of marital fertility. The percentage of married women—including those living in consensual union—among the female population 15-49 years old increased from 46.1 in 1899 to 54.4 in 1910, to 56.4 in 1920 and to 56.8 in 1930, and reached 58.3 when the census was taken in 1940. This increase seems to have been brought about by a reduction of the permanently single and by earlier marriages among those who married. Even in 1940, however, the proportion married was lower, age group for age group, than in southern United States. In Puerto Rico as a whole the number of children under 5 years of age per 1,000 married women aged 15-49—including those living

in consensual union—was 1,377 in 1899, fell to 1,233 in 1910, to 1,119 in 1920, to 1,042 in 1930, and was 1,040 ten years later. This series indicates a drop in marital fertility of 25 per cent over forty years, especially if the improved mortality of infants and young children is taken into consideration. Table 5, the making of which required some heroic estimation, suggests that the decline was greatest in San Juan and smallest in the strictly rural territory. At the same time there was a considerable increase of the urban portion among the total population.

The low fertility ratios in San Juan and Ponce in 1899 and the "reversed" relationship between the ratios for the white and colored population are likewise explained by the peculiarities of the two cities with regard to marital status. In San Juan only 34.2 per cent of all women aged 15-49 were married and in Ponce 34.0 per cent. This includes women living in consensual union. The pro-

TABLE 5

CHILDREN UNDER 5 YEARS OF AGE PER 1,000 LEGALLY OR CONSENSUALLY MARRIED WOMEN, AGED 15-49, BY RESIDENCE, PUERTO RICO, 1899 AND 1940

Residence	1899	1940	Per Cent of Decline
City of San Juan.....	1,002	705	30
City of Ponce.....	1,010	786	22
Remainder of island.....	1,399	1,089	22
Other cities and towns.....	1,100*	849	23*
Other rural territory.....	1,450*	1,171	20*
Puerto Rico.....	1,377	1,040	25

\* Estimate.

portion married was much higher for white (38.6 and 37.6 per cent) than for colored women (30.8 and 30.1 per cent). It is worth noting that in 1899 about two-fifths (38 and 43 per cent) of the colored women of reproductive age in San Juan and Ponce were gainfully employed in domestic and personal service. Apparently, there was a large group of unmarried servant girls, of rural origin

and mostly colored, who lived in the households of their employers. When they became pregnant, as undoubtedly happened from time to time, they were probably sent back to their own homes; and if they returned to work in the city, the child was left—and later enumerated—with the grandparents in the country.

It has been shown that the gross reproduction ratio has remained virtually unchanged in Puerto Rico during the first four decades of the twentieth century due to a combination of slowly decreasing marital fertility with increasing frequency of the married state. The crude birth rate recorded for the period 1941-45 was 40.5 per 1,000. The past few years were prosperous ones for the island, and it seems likely that a crop of war babies masks what may be already a trend toward lower reproduction ratios. It is not possible to verify this hypothesis at the present time. The annual rate of marriages per 1,000 of the population has been high during the past years, but this means less than it would elsewhere, because the same factors which would tend to stimulate marriage would also encourage the legalization of consensual unions long in existence. One such factor would be the large sums paid as family allowances to the dependents of Puerto Rican servicemen. During the fiscal year 1944-45 such allowances amounted to \$30,000,000.

Whereas the birth rate has remained at its previous level, the crude death rate has dropped from 18.4 to 14.0 per 1,000 during the last five years. The population of the island is now increasing at an annual rate of 2.2 per cent (1941-45) and is rapidly approaching 2,200,000. With over 600 inhabitants per square mile, Puerto Rico has become one of the most densely populated areas in the world. Among countries with a population of more than 1,000,000 it is surpassed only by highly industrialized England, Belgium, and the Netherlands and by the island of Java. A more meaningful comparison can be made in terms of persons per acre of arable land. Because of the mountainous character of the island, only about

1,000,000 of Puerto Rico's 2,176,000 acres are considered suitable for cultivation, and the number of inhabitants per acre is a little over 2. This is about the same as in Java and Korea and is exceeded only in Egypt and Formosa with 3, and in Japan with 5, persons per acre of arable land. Japan is, of course, much more highly industrialized and urbanized than Puerto Rico and the other countries in the series. In terms of per capita income, our poorest state, Mississippi, is about twice as wealthy as Puerto Rico.

That the population problem lies at the root of many of the island's difficulties has been recognized for a long time.<sup>1</sup> Community leaders in Puerto Rico are intensely aware of it. Most of them recognize that the question is a complex one and that no simple solution can be expected. It is generally felt that equilibrium between resources and population can be attained only by an energetic and well-balanced program which includes improvement of agricultural methods, resettlement, industrialization, emigration, education, and birth control. The importance of the population problem for the island was high-lighted by a public forum, sponsored by the Puerto Rico Public Health Association and held at the School of Tropical Medicine in San Juan in July, 1946. Public interest was aroused by the discussion of various aspects of the population problem and possible solutions. The Office of Information of the Insular Government has released an abstract of the forum on records, for use on the radio or in public meetings, with an introduction by the president of the Senate, Luis Muñoz Marín, by far the most puissant political figure in Puerto Rico.<sup>2</sup> To carry on the work of the forum and to promote public discussion of the population problem, the Asociación de Estudios Poblacionales

<sup>1</sup> For reference see Frederick P. Bartlett, "Population and Resources in Puerto Rico," *Puerto Rico Journal of Public Health and Tropical Medicine*, XIX (1943), 9-34.

<sup>2</sup> A printed summary has also been prepared by the Puerto Rico Office of Information: *El Problema Poblacional de Puerto Rico*. San Juan, P.R.: Oficina de Información de Puerto Rico, 1946.

cionales was founded in San Juan in October, 1946.

Earlier in this paper it has been shown that large and increasing differentials in marital fertility have existed in Puerto Rico for several decades. It is known that contraceptive materials, especially condoms, have been imported and sold for a long time. Their use has, however, spread only slowly beyond the ranks of the more prosperous and the better educated. Organized efforts to promote birth control among the masses are a comparatively new development in Puerto Rico.

The history of contraceptive services in Puerto Rico makes interesting reading. The present author is fortunate in having at his disposal an unpublished manuscript by Mrs. Carmen Rivera de Alvarado, who has been identified with the movement for more than ten years. Most of this report is based upon her paper, supplemented by information collected during a recent visit to the island.

The earliest Puerto Rican organization devoted to the idea of birth control was a Liga para el Control de la Natalidad, founded in 1925 in Ponce. This group, under the leadership of Dr. José A. Lanauze Rolón, did not operate a clinic but devoted itself to education and propaganda. Vigorous opposition on the part of the Catholic church was immediately encountered, and the organization soon ceased to function. Seven years later the first contraceptive clinic was launched by the Birth Control League of Puerto Rico. This organization had been founded by a group of public spirited citizens in San Juan, including a prominent lawyer and his wife, Mr. and Mrs. Carlos J. Torres, who have played a leading role in the movement to the present day. The clinic was under the direction of a physician and a registered nurse; but, unfortunately, no record of its activities has been preserved. In the same year (1932) a clinic was also opened in Mayagüez. Both undertakings were short-lived. Public opinion was apparently not yet willing to accept birth control.

In 1935, Puerto Rico had a visitor from

the mainland, Miss Gladys Gaylord, executive secretary of the Cleveland Maternal Health Association. Miss Gaylord, a woman of great energy, was able to prevail upon leading functionaries of the Puerto Rico Emergency Relief Administration (P.R.E.R.A.) to include a contraceptive program in the scope of their activities. This program was initiated by the establishment of a pilot clinic at the School of Tropical Medicine in San Juan. This clinic was placed under the direction of Dr. José S. Belaval, a highly respected obstetrician and the most vocal advocate of birth control among the physicians of Puerto Rico. The results obtained at the pilot clinic were considered so encouraging that after six months the P.R.E.R.A. decided to launch an island-wide program as a part of its social services. Two capable and enthusiastic women were put in charge: Cándida Campos de Córdova and Carmen Rivera de Alvarado. Soon a network of fifty-three clinics, manned by physicians, nurses, and social workers, was established. This project lasted from December, 1935, to the middle of the following year. Then came a severe setback. The P.R.E.R.A. was discontinued on June 30, 1936, and its staff disbanded. One month later the Puerto Rico Reconstruction administration (P.R.R.A.) appeared upon the scene to take up where the P.R.E.R.A. had left off. The P.R.R.A. appropriated \$225,000 for purposes of maternal health, and the service was again organized. At this juncture, stiff opposition developed in Catholic circles which had political repercussions in the United States, and shortly before the national elections the maternal health services of the P.R.R.A. were abruptly stopped.

After it had become apparent that the federal agencies had permanently withdrawn from birth-control work in Puerto Rico, the initiative passed once more into private hands. In December, 1936, the Asociación Pro Salud Maternal e Infantil de Puerto Rico was founded in San Juan with the courageous Mrs. Torres as president and Mrs. Alvarado as executive secretary. Dr. Belaval was—and still is—the leading medi-

cal member of this organization. Supported by private contributions from philanthropists in the United States as well as in Puerto Rico, the Asociación went to work. From early 1937 to June, 1939, more than 5,000 women were advised in twenty-three clinics. Valuable research work has been undertaken in connection with these services.<sup>4</sup> In 1940, after the Insular Health Department had undertaken its own program of maternal health, the activities of the Asociación could be curtailed, and at present it maintains only a single clinic in San Juan under the personal direction of Dr. Belaval.

After several unsuccessful attempts the legislature of Puerto Rico in 1937 passed a bill expressly legalizing the teaching and practice of contraception under certain conditions. Law 136 empowered the Commissioner of Health to establish contraceptive clinics in public health units and hospitals and to license physicians and nurses for such services, the latter only when working under the direction of a doctor. The law enumerated the reasons for which instruction in contraceptive methods could be given, including not only a long list of medical indications but also "economic poverty and bad social conditions." Opponents of birth control held that the new law was in conflict with federal legislation. Because this accusation interfered with the opening of clinics by the Health Department, the Asociación Pro Salud Maternal e Infantil asked for a test case in the courts, and the president, Mrs. Torres, insisted that she be indicted. Judge Robert A. Cooper on January 19, 1939, upheld Law 136 with the exception of that section which recognized the economic and social indication. The legal standing of contraception in Puerto Rico has thus been limited to those cases where it is justified by reasons of health. The medical profession, however, has universally and consistently interpreted the law in a most liberal manner.

After the legal situation had been clarified

<sup>4</sup> Gilbert W. Beebe and José S. Belaval, "Fertility and Contraception in Puerto Rico," *Puerto Journal of Public Health and Tropical Medicine*, XVIII (1942), 3-52.

by Judge Cooper's decision, the then commissioner of health, Dr. Eduardo Garrido Morales, proceeded to establish a contraceptive service within the framework of the Health Department. The executive secretary of the Asociación Pro Salud Maternal e Infantil, Mrs. Alvarado, and several nurses of that organization were transferred to the Department of Health, and clinics were eventually organized in all public health units and rural subunits of the island. In 1946 the number of such clinics was one hundred and sixty-one. The medical direction of this program has been—and is—in the able hands of Dr. Belaval. During the war years the prematernal health service, as it has come to be called in Puerto Rico, had to contend with great difficulties. The submarine blockade from time to time interrupted the supply of contraceptive materials, and on other occasions transportation tie-ups within the island had the same effect. Unsympathetic administrative practices added to the discouragement. The specially trained and enthusiastic nurses inherited from the Asociación were relieved, and the work was assigned to the general public health nurses in addition to their other numerous duties. Physicians as a rule were not interested in birth control and tended to leave it entirely in the hands of their assistants. Personnel shortages resulted in a severe curtailment of all follow-up activities. Nevertheless, the program continued. Since the inauguration of the service in 1939 almost 50,000 women have passed through the contraceptive clinics of the Health Department, about 10 per cent of the adult female population. In 1945 the number of patients was 14,120, including 3,762 new admissions, but the turnover of patients was heavy and the average case load throughout the year probably less than 7,500. Among contraceptive materials dispensed in 1945, condoms occupied the leading position with forty thousand dozens. Some two thousand tubes of Cooper Crème and seven hundred diaphragms were issued, while sponge and foam powders were prescribed in 345 cases. Only 511 pregnancies of clinic patients were re-

ported during the year, but many more probably occurred among the 3,613 women who failed to return to the clinics and were not contacted again.

No discussion of the population problem in Puerto Rico would be complete without mentioning voluntary sterilization. According to the testimony of competent observers, the possibility of avoiding further parenthood by an operation is more widely known among the Puerto Rican people than are more orthodox methods of contraception. Furthermore, more women seem to be willing to submit to the operation than are ready or able to practice birth control with any degree of regularity. During the past few years a large number of women have been sterilized in public and private hospitals, ostensibly for health reasons. The operation is usually performed twenty-four to forty-eight hours after delivery and does not prolong the period of hospitalization. In most cases the mothers have been multiparous. In each instance the woman and her

husband are required to give their consent in writing. Statistics on the subject are scanty. In a group of seven hospitals—five public and two private, located in different parts of Puerto Rico—about 1,200 sterilizations were performed annually during the last three years. The total number for the whole island may be considerably larger. Very few men have been sterilized so far because of an unfounded but widely spread fear of an unsexing effect of the operation.

The present author is not enthusiastic about this development. He likes the people of Puerto Rico, and he is unhappy about the apathy and frustration he senses behind the preference for "planned sterility." He admits, however, that the low level of general education prevailing in many parts of the island and the desperately poor living conditions may make voluntary sterilization a necessary weapon in the struggle against excessive population growth.

BALTIMORE