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ABSTRACT

A profile of Chile is sketched in this paper. Emphasis is placed on the nature, scope, and accomplishments of population activities in the country. Topics and sub-topics include: location and description of the country; population (size, growth patterns, age structure, urban/rural distribution, ethnic and religious composition, migration, literacy, economic status, future trends); population growth and socio-economic development (relationships to national income, size of the labor force, agriculture, social welfare expenditures); history of population concerns; population policies; population programs (objectives, organization, operations, research and evaluation); private efforts in family planning; educational and scientific efforts in population; and foreign assistance for family planning activities. (RH)

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Country Profiles

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CHILE

THIS report has been prepared by Alfredo Goldsmith, M.D., M.P.H., Héctor Gutiérrez, and Hernán Sanhueza, M.D., all of the Faculty of Medicine of the University of Chile. They wish to express their appreciation to Dr. Thomas L. Hall, Public Health Advisor, Agency for International Development, Chile; to Dr. Ozzie G. Simmons, Program Advisor in Population and in the Social Sciences, The Ford Foundation, Chile; and to Miss Jacqueline Weinstein, Faculty of Economics, University of Chile, for their substantial assistance in the writing and editing of this report. This report is published with the approval of the Ministry of Public Health of Chile.

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Location and Description

Chile extends almost 2,700 miles to the southernmost tip of South America. It lies between the Andes and the Pacific, and does not exceed 250 miles in width at any point. Its total area is 286,396 square miles. The northern part of the country is a desert region, with Antofagasta as the major port. This region contains the world's largest nitrate deposits. Central Chile, from Santiago and Valparaíso south to Puerto Montt, contains the bulk of the population, the major cities, the largest and richest farms, and the industrial centers of the country. Copper, nitrate, iron, and other minerals constitute more than 80 per cent of the total value of Chile's exports; the main nonmineral exports are wine, beans, lentils, and wool. Mining ranks first in the national economy, agriculture second, and manufacturing third.

Population

Size

Estimates of the size of the indigenous population of Chile at the time of the arrival of the Spaniards in the mid-sixteenth century range from 400,000 to 1,500,000. Approximately 1,000,000 is considered the best estimate. This figure and approximations for subsequent periods up to the time of the first census (1831–1835) have been obtained from the review and critical appraisal of various historical documents. They serve to suggest the fluctuation in growth of the total population. There was a rapid and constant decrease in the indigenous population during the latter half of the 16th and the 17th centuries; while extensive migration from Europe took place in the seventeenth and eighteenth centuries. In 1570 the total population is estimated to have been 620,000, of whom 600,000 were indigenous, 10,000 white, and 10,000 Negro, mestizo (mixed Indian and European), and mulatto. The population is estimated to have been 638,000 in 1600; 550,000 in 1650; 590,000 in 1700; and 600,000 in 1800.

Between 1835 and 1960 there have been 13 population counts of a national character. On the basis of the censuses of 1843 and 1854, the population is estimated to have been 1.3 million in 1850. Subsequent censuses indicated a population of 3 million in 1900; 4.4 million in 1930; 6.1 million in 1950; and 6.6 million in 1965. As is evident, the growth of the population accelerated considerably in the twentieth century.

Total number and average size of households. The total number of households in Chile was 1,322,896, according to the 1960 census, and was estimated at 1,814,600 in 1968. The mean household size, based on unofficial estimates of the Census Service in 1968, is 5.1 persons.

Total number of women of reproductive age. Approximately 2,100,000 women are of reproductive age (15–44), and about 13 per cent deliver a liveborn infant each year.

Age at marriage. According to 1960 estimates, the mean age at marriage for women is 23 years.

Growth Patterns

The population growth rate in Chile is not as high as in most of the rest of Latin America. It is estimated that fertility decreased slowly from 44 births per 1,000 women of reproductive age in 1900 to 35 per 1,000 in 1950. The rate increased to 36.5 per 1,000 (corrected for underregistration) in 1960, but decreased to 29.2 per 1,000 in 1968. The present birth rate fluctuates between 28 and 29 per 1,000.

The mortality rate has decreased considerably during the course of this century. In 1938 the rate was 22.9 per 1,000 but by 1968 it had dropped to 9 per 1,000, a decrease of 61 per cent. Improvements in the standard of living have increased life expectancy. Thus, for example, the percentage of deaths caused by infectious and parasitological diseases, which was 41.5 in 1940, declined to 25.1 in 1960, primarily as a result of improvements in medical care. Although infant mortality is still moderately high, it too has shown a substantial decrease. In 1930 the infant mortality rate was 212 per

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1,000 live births, in 1960 it was 122 per 1,000, and in 1968 it dropped to 83 per 1,000.

Age and Sex Structure

According to the 1960 census, about 40 per cent of the total population were less than 15 years old, 42 per cent between 15 and 44, 11 per cent between 45 and 60, and only 7 per cent over 60. At present, about 104 boys are born for every 100 girls. Due to a higher male mortality rate, however, the sex ratio becomes equal at age 15 and by age 90 the ratio is only 50 men for every 100 women.

Rural-Urban Distribution

Although international immigration has been negligible in recent years, internal migration and growth of the urban population have increased considerably. The urban population was 49 per cent of the total population in 1930 and rose to 74 per cent in 1968. Between 1952 and 1960 the population in urban areas increased approximately 60 per cent. The growth of Santiago is quite notable. In 1952 Greater Santiago included 24 per cent of the total population in Chile; in 1960, 26 per cent; and in 1968, 28 per cent. At present, its annual rate of increase is about 4 per cent; if this remains constant, its population will double in 18 years.

Ethnic and Religious Composition

The population of Chile is quite homogeneous. White persons of Spanish descent constitute 75 to 80 per cent of the total population, and persons of other European origin, descendants of immigrants during the nineteenth and twentieth centuries, make up 15 to 18 per cent. The present Araucanian indigenous population, estimated at 250,000 to 300,000, comprises 2 per cent or less of the total, and lives mainly on reservations in the south of Chile. The inhabitants of Easter Island, a Chilean possession, are of Polynesian descent; they comprise a fraction of 1 per cent of the total. There are virtually no Negroes.

Between 80 and 90 per cent of the population declare themselves to be Roman Catholic. The various Protestant churches, according to their leaders, comprise about 14 per cent of the population. Other religious groups form very small minorities.

Literacy

In the population over age 15, the literacy rate was 80.2 per cent in 1952 and increased to 89 per cent in 1968 according to unofficial estimates of the Census Service. In 1960, of the total population aged five or older, 16.9 per cent had no schooling, 54.5 per cent had completed one or more years of primary education, 23.9 per cent one or more years of secondary education, and 1.8 per cent one or more years of higher education.

Economic Status

The average per capita GNP (gross national product divided by population) in 1968 was US$606 per year. According to figures released by the National Planning Office in 1969, Chile's active labor force in 1967 was 2,800,000 persons. Of this number, 760,000 were employed in agriculture, 534,500 in industry, 734,800 in services, 370,000 in commerce, 156,000 in transportation and communications, and the rest in mining, construction, and utilities.

Future Trends

A good short-term population projection is obtained by simple extrapolation of the trend observed in the preceding period. The estimate thus obtained for Chile for 1975 is 11.3 million persons. It is interesting, however, to project the probable effects of the modification of the components of population growth over a longer period of time. The Latin American Demographic Center (CELADE)[1] and the United States Bureau of the Census have recently made long-term projections of the Chilean population. In CELADE's projection, according to the "moderately rapid" fertility decline hypothesis, the population would be 15,103,900 in 1990 and 18,357,800 by the year 2000.

The U. S. Bureau of the Census considers three possible developments in Chile after 1967, as follows:

- A Series: Constant fertility, declining mortality
- B Series: Moderately declining fertility, declining mortality
- C Series: Rapidly declining fertility, declining mortality

The population estimate for 1991 is 15,563,000 based on the A Series; 14,050,000 based on the B Series; and 12,545,000 based on the C Series.

Population Growth and Socioeconomic Development

Population limitation is not considered a matter of immediate economic necessity in Chile as it is in many other underdeveloped countries. It is anticipated that the economy and the work force could accommodate a population that continued to increase at the present fertility rate for a number of years. Thus, while a reduced birth rate would be economically advantageous in ways which the following discussion will indicate, there is no immediate pressure on the government to begin to limit the size of the population.

Relationship to National Income

It is possible to compare the changes that would occur in per capita income if the present fertility rate were maintained with the changes that would occur under a constantly declining fertility rate, such as that which has been observed during the last few years. The gross reproduction rate was 2.21 in 1963 and had declined to 1.95 by 1968.[2] If the rate of reproduction is maintained at the level of 1.95, the per capita income, at constant prices, will be US$738 in 1985 and US$1,042 in the year 2000. On the other hand, a declining fertility rate

[1] CELADE was founded by a United Nations resolution in 1957 for the purpose of establishing centers for the study of population and for the teaching of techniques of demographic analysis in underdeveloped regions of the world. CELADE provides consulting services in Latin America on aspects of population to the different governments or to their agencies. Its headquarters are in Santiago de Chile, according to an agreement signed between the United Nations and the Government of Chile the same year.

[2] Both the maintenance of the present level hypothesis and the declining fertility hypothesis were applied by Herrick, an American economist, to the study of population in Chile. This report will also use these hypotheses in studying the effects of different growth rates on the size of the labor force and on the demand for certain public services, such as education and health. Herrick uses a third hypothesis of population growth to study the comparative effects of different population sizes and growth rates, a hypothesis which he calls "fertility of 1960." It will not be considered here because actual fertility levels in Chile have been much lower than those indicated in this projection, and thus the hypothesis does not seem applicable.

reaching 1.11 in 1976, and maintained at this level until the end of the century, would result in a per capita income substantially higher than the former: US$866 in 1985 and US$1,437 in the year 2000, at constant prices.[3] The estimated changes in per capita income are attributable only to variations in the size of the labor force resulting from different levels of fertility. For Chile, it has been demonstrated that declining fertility affects neither the formation of capital nor the amount of taxes or expenditures.

Relationship to Size of Labor Force

The two latest population censuses taken in Chile show that the rate of participation in the labor force was about 37 per cent in 1952 and 32 per cent in 1960. That is to say, in 1960, 63 out of 100 Chileans depended on the work of the other 32. A young age structure—the effect of high fertility rates—increases the proportion of the population that depends on the product of the working population.

Declining fertility rates will increase the overall participation in the labor force both because the number of children under working age will be less and because the reduced child-caring task of smaller families will induce a substantial increase in the number of females in the labor force. Unpublished data of the Instituto de Economía y Planificación (University of Chile) have shown that women's participation in the labor force drops approximately 3 per cent for every additional family member under 14 years of age. For these reasons the absolute size of the labor force in 1985 will be larger if the fertility rate continues to decline than it would be if the current rate were maintained. By the year 2000, however, the greater labor force participation of the population with declining fertility rates will not be enough to compensate for the reduced labor force stemming from a slower population growth, thus resulting in a labor force 10 per cent smaller than that projected if present levels of fertility were to continue. The 10 per cent larger labor force that would exist in the year 2000 if the present fertility rates were maintained, however, would have nearly 50 per cent more dependents per worker than would be the case with lower fertility rates. Moreover, the smaller labor force resulting from lower fertility rates will be of a substantially higher quality than the labor force under the higher fertility rate, if the amounts budgeted for health and training are the same in both cases.

Relationship to Agriculture

During the first 15 years (1945–1959) following World War II, Chilean agricultural production, including fishing, grew at a slower pace than did the population. During the past decade the situation has been improving, due in part to the decrease in fertility rates observed since 1963. During the 1945–1959 period the agriculture and cattle production increased at an annual cumulative rate of only 1.83 per cent while the population increased 2.2 per cent annually.[4] For the 1961–1968 period, estimates indicate that physical agricultural production increased at an annual average rate of about 2.50 per cent, in contrast to a population growth of approximately 2.31 per cent for the same period. But the country continues to allocate substantial amounts of money to the import of food and raw materials related to agricultural products.

After taking into account some very cautious hypotheses about the possibilities of increasing the number of irrigated areas and the productivity per hectare of the different soil categories, it has been concluded that a 100 per cent growth in production is quite possible in 20 years.[5] It appears that, even if present fertility rates are maintained, there is no need to fear that the deficit of foreign trade on foodstuffs will increase. But declining fertility would insure that this deficit would decrease or be overcome in the long run, allowing the greater supply of foreign currency thus obtained to be spent in the acquisition of other goods essential to the development of the country.

Relationship to Social Welfare Expenditures

Education. In order to raise the level and quality of education in Chile, the government increased the budget for education from 15 per cent of the total national budget in 1964 to 20 per cent in 1968. The progressive increase in educational expenditures should become more pronounced in the future due to expected increases in the school-age population. Estimates by the Ministry of Public Education for the next 15 years suggest that if present levels of fertility are maintained, the school-age population (7 to 18 years) will be 24 per cent larger than at present, and some 30 per cent larger than if fertility rates were to decline from now on.

Health. At present there are substantial deficits in the number of health services and medical and paramedical personnel available to the population. Government awareness of this situation is reflected in President Frei's 1969 report to the National Congress which stated that per capita expenditure by the National Health Service (NHS) increased by 48.6 per cent between 1964 and 1968. In 1968 the NHS spent approximately 11.1 per cent of the national budget and in 1969, approximately 13.2 per cent. In view of the national elections in September, it is not possible to foretell the possible developments in the period ahead, for important changes are likely to result no matter which candidate becomes President.

History of Population Concerns

Induced abortion is illegal in Chile for both the agent and the patient. Nonetheless the incidence of abortion is high and has become an important public health problem. Hospital discharge records show a constant increase in incomplete or complicated abortion cases from 12,963 in 1937 to 56,391 in 1964. The number was reduced to 54,213 in 1967—a 4 per cent decrease, but this 1967 figure accounted for 19.6 per cent of total obstetrical discharges. In 1968 the maternal mortality rate per 10,000 livebirths was 21.2, of which 8.4 were

[3] Herrick estimates the different per capita incomes assuming that the total income increases at an average annual rate of 4.73 per cent, a likely figure since it increased at an annual average of 4.57 per cent in the 1960–1968 period. For further details the reader is referred to Herrick's work, listed in the references.

[4] CIDA (Comité Interamericano de Desarrollo Agrícola) report, "Chile, Tenencia de la Tierra y Desarrollo Socio-Económico del Sector Agrícola."

[5] Nathaniel Wollman, "Los Recursos Hidráulicos de Chile: Un Modelo Económico."

deaths due to abortion. This means that 39.7 per cent of all maternal deaths were due to abortion. Epidemiological studies on abortion in Chile indicate that there is at least one induced abortion for every two births.

Chilean physicians first recognized the potential of family planning programs for reducing the abortion rate. In 1962 a group of physicians, heads of the services of obstetrics and gynecology and professors of preventive medicine, created the Chilean Committee for the Protection of the Family. The aim of this committee was to organize and coordinate action and research programs in family planning which were being carried out in an isolated manner.

In May 1963 the Chilean Association for the Protection of the Family was founded, an agency with a wider scope which replaced the old committee and established international relations with the International Planned Parenthood Federation (IPPF) and national relations with the National Health Service. The primary aim of the Association was the prevention of the spread of induced abortion.

In the beginning, action programs were implemented through the unofficial use of physical and human resources of the National Health Service all over the country. In 1965 the Chilean government decided to include birth control in its general health plan, integrating it with the maternal and child health program. Although the NHS did not establish a formal family planning program with specific goals and priorities until 1967, it began to offer family planning services to the population in April 1966. The contraceptives that have proved most effective have been the intrauterine device (IUD) and progestins. The former, especially advisable due to advantages of price and convenience of use, have been most frequently used.

Population Policies

Direct

The Chilean government has never attempted to sponsor a population policy to cope with problems of population growth. The earliest formal statements by the National Health Service (NHS) on family planning explicitly state that its program is not aimed at birth control. In the document published by the NHS in 1967 relating to its policy and programs on fertility regulation,[6] the aims specified are essentially health aims and include the following: (1) A decrease in maternal mortality rates, caused to a large extent by induced abortion; (2) a decrease in child mortality, caused mainly by the low standards of living of a substantial sector of the population; and (3) promotion of the welfare of the family by favoring responsible reproduction which will allow, through adequate information, the exercise of the duties and rights of responsible parenthood.

Indirect

Universities. In Chile, the three most important schools of medicine are those of the University of Chile, the University of Concepción, and the Catholic University The first two are favorably disposed toward family planning. The latter, due to its religious affiliation, has maintained a position in accordance with Catholic postulates with respect to birth control. Nevertheless, a number of research and service activities related to the population field have been and are presently being carried out at the Catholic University.

Professionals. In the group of professionals who have been responsible for the development of family planning—that is, medical and paramedical personnel—there is of course a high level of motivation. Attitudes toward family planning among other professional or educated groups are also favorable. It should be noted that there are certain individuals and groups within the medical profession who, for a variety of reasons, have either not participated, shown themselves reluctant, or have even opposed efforts in this field. For some it has been a matter of religious considerations, while for others it has been a question of disagreement with the methods employed, either the contraceptives themselves (especially the IUD) or the way they are applied or publicized. Some have sought other solutions to the abortion problem. For example, in 1969, an important group of physicians, politicians, and intellectuals launched a systematic campaign, through press articles, parliamentary discussions, and so on, for the modification of legislation regarding induced abortion. In all, there have been three projects to modify the laws, two of them initiated in the legislature, but at present none of the projects has been implemented.

Labor Unions. A 1969 report by the Chilean Association for the Protection of the Family summarizes the union position on family planning. The Central Union of Workers, which includes the majority of labor unions in Chile, has participated in discussions and seminars on health and family planning organized by the Chilean Association with the assistance of the Population Reference Bureau. The Union has issued a public statement which accepts family planning as "an educational and action program, placed at the disposal of every couple, who will have the right to decide, with full protection of their dignity and freedom, about family size and the spacing of their children." The Union supports efforts to reduce the incidence of criminal abortion through the use of contraceptives and through the legalization of abortion in special cases. The organization is, however, opposed to any program that would promote limitation of births for political or economic ends.

Religious Groups. Within the Catholic Church (80 to 90 per cent of all Chileans declare themselves to be Catholic), the ecclesiastical authorities are in agreement with the Papal Encyclical *Humanae Vitae* which opposes the use of all contraception with the exception of the rhythm method. Apart from the hierarchy, however, the criteria applied at the community level by parish priests and priests in general tend to be much more tolerant. The Protestant groups appear to have been, for the most part, indifferent to the problem.

The Press. The newspapers and some popular magazines have frequently featured articles on contraception and the problem of induced abortion. These articles have not been part of a systematic campaign for educational purposes. However, there has been a proliferation especially in the women's magazines of articles on sex education clearly intended for educational purposes. This campaign in sex education has intensified since the inception of a program in the Ministry

[6] NHS General Direction, "Política y Programa de Regulación de la Natalidad en el S.N.S. de Chile."

of Education for development of curriculum content in sex education and family living for the public schools. In general, the Chilean press has not adopted a negative attitude toward family planning and accepts the idea that excessive population growth is a problem in other parts of the world, although not necessarily in Chile.

Population Programs

Objectives

As indicated above, in 1967 the authorities of the National Health Service began to define a formal program of activities relating to regulation of births. It should be emphasized that the justification for family planning programs in Chile has been the need to cope with the pervasiveness and severity of induced abortion as a public health problem rather than the need to curb rapid population growth. In accord with this objective the following priorities have been established for family planning coverage:

1) 100 per cent of women receiving hospital attention due to complications arising from induced abortion.
2) 40 per cent of women who are admitted to hospitals for delivery, giving preference in this group to multiparous women with severe socioeconomic problems and associated severe chronic pathological problems, such as tuberculosis, cardiac disorders, or nephropathy.
3) 10 per cent of women of childbearing age who are attended in outpatient clinics of the Service, giving preference in this group to those with the characteristics indicated above.

The National Health Service issued instructions in a circular letter dated 8 October 1968 to the effect that this program should not cover in total more than 15 per cent of the women of childbearing age in the country.

Type

The program in Chile is based mainly on the provision of family planning services and education through the maternal and child health clinics of the National Health Service. Nongovernment organizations such as the Chilean Association for the Protection of the Family use the physical and human resources of the NHS. At this point, other government efforts related to population control are limited to the Ministry of Education program for the development of courses in sex education and family living scheduled for national implementation in primary and secondary schools by 1971. It is expected that 2,000 primary and secondary school teachers will be trained to introduce the new curriculum into the public school system. The overall objective of this project is to aid in the preparation of Chilean youth to assume their responsibilities in the adult world; it does not, at least at this time, contemplate the incorporation of any information relevant to "population awareness" or to ideal family size.

Organization

The National Health Service is by far the largest provider of health care in Chile. It operates over 80 per cent of the nation's hospital beds, and employs about half of all health personnel. The NHS is responsible for providing curative care to that 70 per cent of the population who are not covered by private health programs. In 1969, it operated approximately 31,000 beds in 240 hospitals, 130 professionally-staffed clinics independent of hospitals, and over 600 rural health posts and first-aid stations. The administrative division of the NHS is located in Santiago. Its functions include overall direction, supervision, policy-making, and preparation of standards. A division in each of 13 health zones coordinates and provides general supervision for the activities undertaken in the hospital areas that enter into its jurisdiction. In all there are 54 hospital areas in which programs are executed. Within the 54 areas are about 300 health facilities with sufficient staff to justify local program administration.

In 1968, the number of NHS maternal and child health clinics offering family planning services was 138; by 1969 it had increased to 170.[7] It is estimated that an additional 80 clinics operated by other institutions also offer family planning. These institutions include the health services of the armed and police forces, and the National Medical Service for Employees, which provides care through the private sector for about 1,800,000 insured persons and dependents. Although these institutions collectively cover over one-fifth of the population, they are of minor importance for family planning because of the more limited nature of the care they provide and the relatively high socioeconomic level of their clientele.

[7] T. Monreal and R. Armijo, "Evaluación del Programa de Prevención del Aborto y Planificación Familiar en la Ciudad de Santiago."

Operations

Character of program. The vast network of facilities—buildings, equipment, and personnel—that the NHS has at its disposal makes possible both the distribution of contraceptives and the potential diffusion of birth control methods and their application to large sectors of the population. Organized family planning services were first introduced in a small number of NHS clinics in Santiago as early as 1962, but the number of NHS clinics offering family planning did not gain significant proportions until 1965. In the hospitals, only post-abortion insertion of the IUD was practiced in the beginning, since, according to various studies, women who had recently had an abortion were most likely to have another. Subsequently, the postpartum insertion of the IUD was begun in the Western Health Area of Santiago, leading to a considerable rise in the number of IUD acceptors. This new stage was part of a pilot study sponsored by the Population Council in maternity services of 14 countries. Now postpartum insertion has been extended to the rest of Chile.

Personnel. A standard family planning clinic is staffed by a physician, usually part-time, a midwife, and a statistical clerk who is also in charge of locating those cases who do not come in for later visits. It is difficult to measure the effect of the clinic programs. Apart from the fact that some clinics send in no information at all to the NHS, many of the clinics consider their reported figures to be substantially underestimated while others consider them overestimated. The biggest problem in reporting has been with patients lost to follow-up.

Methods. The IUD and progestin orals are supplied to the NHS by the Chilean Association for the Protection of the Family (the local IPPF affiliate) and by the Department of Pre-

ventive Medicine, University of Chile, in the Western Health Area of Santiago, which runs a family planning program supported by the Rockefeller Foundation. The NHS data for 1968 demonstrate almost a four to one preference for the IUD over the orals among contraceptors attending NHS clinics. The number of NHS contraceptors using methods other than the IUD and the orals is negligible.

Budget. Although the NHS analyzes the costs of its major health programs in some detail, this information is not yet available for family planning services as distinguished from general maternal care. Moreover, there is almost a two-year lag between the completion of a fiscal year and publication of the corresponding data, a lag too long for a rapidly expanding program such as family planning. It is possible, however, to make very rough estimates of direct operating costs of the program based on various sources of information. Such estimates exclude capital expenditures, depreciation, cost of drugs and IUDs, and all foreign contributions other than those that go into direct salaries. On this basis, and assuming approximately 200,000 active contraceptors under the care of the NHS and other organized family planning clinics, the average annual minimal cost is likely to be in the range of $4.15 to $4.65 per contraceptor.

Research and Evaluation

In Chile extensive research on family planning and other population-relevant problems is being conducted by the Program on Health and Population in the Department of Public Health and Social Medicine of the University of Chile, by CELADE, and by the NHS. Some of the subjects investigated by these organizations are the epidemiology of induced abortion in Santiago; use-effectiveness of different contraceptive methods; and follow-up studies of IUD acceptors.

The Department of Public Health and Social Medicine, University of Chile, is presently carrying on the following studies: a national evaluation survey of family planning programs; a national survey of women designed to determine the incidence of abortion, the degree of knowledge, attitudes, and practice of family planning, and the major determinants of the recent decline in fertility in Chile; a study to measure the effect of the NHS rural health program on the indices of abortion, infant mortality and morbidity, and fertility, and to measure the acceptance and continued use of contraceptives; an evaluation of the effects of the family planning and abortion control programs in the cities of Concepción and Antofagasta; and a study designed to determine the change in fertility rates in metropolitan Valparaíso since 1959, and to analyze the relationship between fertility and educational level.

Among the more important studies now being conducted by CELADE are the following: a comparative study of the relationships between economic development and manpower absorption; comparative studies of fertility; comparative studies of induced abortion; a three-city (Caracas, Lima, and Santiago) study of immigration to metropolitan areas; comparative analyses of population census data; and several evaluation studies of family planning programs.[8]

The NHS issues reports on its family planning programs; although, as mentioned earlier, it is handicapped by inadequate reporting procedures. For the year 1968, of the 138 NHS clinics offering family planning, information on the number of contraceptors was received from only 86. Although this latter number includes most of the larger clinics, the NHS statisticians in these clinics qualify the figures they report as probably subject to considerable error. Information on contraceptors according to method employed is published by two different sources, the NHS and the Chilean Association for the Protection of the Family, which has no clinics of its own but works through the NHS as well as other agencies. Usually there are wide discrepancies in the national figures reported by these two sources, in part because the Association includes clinics not covered by the NHS. A further problem both groups face in enumerating those contraceptors who are using orals is that there is only partial coverage of the private sector, and only guesses are available as to the number of monthly cycles sold over drugstore counters, since no prescription is necessary for their purchase.

The NHS report for 1968 indicated the number of active acceptors as 150,182 of whom 117,309, or 78.1 per cent, used IUDs, and 32,873, or 21.9 per cent, orals. The total of 150,182 acceptors represented 69.5 per cent of the target number for the year, with a very irregular geographic distribution. The report shows a pronounced decline in fertility between 1962 and 1968, from 37.4 to 29.2 per cent, and notes that this decrease parallels the development of the family planning program. Nevertheless, it is acknowledged that no direct relationship can be found between this decrease and the coverage provided by the program.

The NHS is attempting to correct the inadequacies of its reporting procedures. In collaboration with the Chilean Association, CELADE, and AID, NHS is attempting to develop a rapid feedback monitoring system based on monthly computer updating of a master file of NHS contraceptors. The patient record will be redesigned to serve clinic needs and also provide the information necessary for the master file system. As now planned, the monitoring system will record family planning visits and prenatal visits, and hospitalized abortions and births. During the first 18 months, the system will be applied to several Santiago districts comprising about 12 per cent of Chile's population, with subsequent extension, probably initially on a sample basis, to the rest of the country.

Two studies conducted in Santiago provide substantial evidence that family planning programs can affect fertility and abortion rates. Both these studies have been carried out on family planning programs where systematic reporting has been carefully done. The first study, published in 1966, measures the effects of a family planning program on fertility and abortion rates in the marginal working-class community of San Gregorio. In less than two years, the San Gregorio clinic was able to bring 16 per cent of the women of reproductive age into the family planning program. An additional 12 per cent were either sterilized or were using an effective contraceptive obtained from other sources. The remaining 72 per cent were with-

[8] For a detailed account of the numerous studies conducted by CELADE, see the official list of CELADE's publications, available from CELADE, Casilla 91, Santiago, Chile.

out contraception, but a substantial proportion of this group was subfertile or not at risk of pregnancy for some other reason. As a result of the program, the total fertility rate, that is, the number of children that could be expected to be born per woman by the time she reached age 45, changed in the 1964 1966 period for the 3 groups as follows: San Gregorio contraceptors, from 11.9 to 3.0; other contraceptors, 7.7 to 5.4; and unprotected women, 5.3 to 6.3. The overall fertility rate dropped almost 20 per cent from 6.3 to 5.1. A repeat survey in 1968 showed that the total fertility rate had decreased an additional 32 per cent to a level of 3.5, for an overall drop of 45 per cent during the 1964–1968 period. A marked reduction was observed in the induced abortion rates between 1964 and 1966, namely, over 40 per cent. The decline was greatest, almost 80 per cent, among women in the age group 25–29, the group with the highest induced abortion rate when the program was started in 1964. A final resurvey is now under way to determine whether the observed changes have persisted or whether the rates are now decreasing in a lower proportion.

The second study, published in 1968, was undertaken in the Western Health Area of Santiago. This area was the first to have a family planning program that offered both postabortion and postpartum insertion of the IUD (Lippes D). According to unpublished data, the number of births decreased from 14,353 in 1964 to 10,998 in 1968 despite an estimated population increase from 408,212 to 521,417 between those years. The figures indicate a decrease of 40 per cent in the birth rate from 35.2 per 1,000 to 21.1. Even if it is assumed that the population did not increase as estimated, the birth rate dropped at least 24 per cent to 26.9 per 1,000. These results are partially attributable to the insertion of approximately 36,000 IUDs, providing a net coverage of contraceptors by 1968 of around 20 to 22 per cent of women of reproductive age. Data also show a marked decrease in abortion rates in this area. For the period 1964–1968 while the number of IUD contraceptors increased eightfold from 4,073 to 36,418, the number of hospitalized abortions decreased by 31 per cent from 5,417 to 3,727. A follow-up to this study, the results of which were published in 1969, traced the history of 19,344 women with IUD insertions for a period of three years. A KAP (Knowledge, Attitude, and Practice) survey of this Health Area is now being conducted in collaboration with CELADE.

Some of the difficulties in undertaking adequate evaluation of the effects of family planning programs in Chile have been alluded to above, but the most serious obstacles may be summarized here:

1) Chilean census statistics are considered to be among the best in Latin America, but intercensal estimates of population changes and regional shifts must be based on projections from the 1960 census which are considered reliable only for large regional aggregates and cannot be used to make refined estimates of migrations or changing birth rates.
2) There is no standard reporting form for the whole country for follow-up of acceptors.
3) A substantial group of women do not return for medical care. Thus many cases are lost to clinical follow-up.
4) The figures for acceptance of oral contraceptives do not include all the orals used in the country because orals can be purchased without prescription in pharmacies.
5) There are virtually no data available on contraceptives prescribed by physicians to their private patients.

Private Efforts

The Chilean Association for the Protection of the Family, as was indicated above, has played a strategic role in the initiation and development of family planning programs in Chile. With funds from IPPF, with which it is affiliated, it has provided salaries, supplies, and equipment for family planning programs in the NHS and in other agencies with which it has established contractual arrangements. The Association has also sponsored a number of training and educational activities which are described below.

Educational and Scientific Efforts in Population

Training in family planning techniques, reproductive biology, demography, and interrelations between health and population have been conducted mainly by the universities, the Chilean Association for the Protection of the Family, and CELADE.

Universities Since 1967, the University of Chile and the Catholic University have included the teaching of contraceptive techniques in their schools of medicine and nursing. During their sixth year, medical students at the University of Chile take a course in preventive medicine, which includes basic study of demography and family planning. The latter is complemented by practical experience in the departments of obstetrics and gynecology. Annually since 1966 the Department of Public Health and Social Medicine, University of Chile, has offered a four-month course on health and population dynamics. The course is primarily intended for physicians and teachers from all over Latin America. It is sponsored by the Pan American Health Organization (PAHO), and conducted with the collaboration of CELADE. Between 1966 and 1969, 74 students took the course. Various departments of the University of Chile together with CELADE members participate in the Latin American Course on Reproductive Biology, the "Three Nations Program." This two-year postgraduate course for physicians, supported mainly by the Ford Foundation, is conducted in collaboration with several universities and affiliated institutions in Argentina and Uruguay. The course provides seven months of instruction on a rotating basis in Argentina, Chile, and Uruguay, followed by 17 months of research under faculty supervision in one of the three countries.

Chilean Association for the Protection of the Family. The Association and the NHS sponsor the Latin American Training Center in Family Planning, which, since 1965, has offered a one-month course five times a year on family planning techniques and prevention of abortion. The course is aimed at medical and paramedical personnel from all over Latin America, and is conducted in collaboration with a number of departments in the School of Medicine, University of Chile, and CELADE. Since 1965, 416 persons have taken this course, of whom 61 are physicians.

The Association has also organized special courses on family planning for Latin American midwives, rural physicians, volunteer workers, and nursing and social-work students in Paraguay. Two regional seminars on population, family planning, and fertility were recently conducted for health personnel, and a special seminar was held for union leaders from all over Chile. The Association is also engaged in a variety of educational efforts through lectures to low-income groups, films, distribution of leaflets, and provision of information for radio and press.

CELADE. CELADE has a comprehensive training program which includes courses at many different levels. A ten-month course offered to students from all over Latin America is concerned with the basic concepts and methodology of demography. The advanced course, a one-year course offered to students selected from the graduates of the basic course, provides research experience in addition to advanced academic training. A specialized course, also one year in duration, is limited to a few selected students who have completed the advanced program. These students no longer follow a formal course but are assigned as teaching and research assistants in CELADE's ongoing programs throughout Latin America. A course for research fellows offers opportunities for training in demographic research to a number of individuals who have adequate academic and professional qualifications to participate in population studies even though they may not have had any of CELADE's regular courses. The basic differentiated course, of six to twelve months' duration, is intended for a variety of professionals interested in demographic problems. It includes the following topics: formal demography and methodology; demographic aspects of economic and social development; demographic research applied to health problems; statistics; and methods of social research.

In May 1970 CELADE held a seminar in Santiago on family-planning-program evaluation. The seminar was for program administrators as well as for program staff responsible for evaluation and statistics. Participants were recruited from all of Latin America.

Education of the Community

The mass media have been employed from time to time for educational and informational efforts. These efforts have consisted mainly of radio and television panels, and occasional newspaper and magazine articles, on induced abortion, contraceptive methods, and problems of population growth. The Chilean Association for the Protection of the Family has presented 42 radio programs and 2 television programs, and has published 62 press articles.

The NHS and the departments of preventive medicine and obstetrics and gynecology in the University of Chile distribute a variety of leaflets in the NHS clinics all over the country. These leaflets emphasize the dangers of induced abortion, the advantages of conscious and responsible parenthood, and the opportunities for obtaining contraceptives.

At the clinic level, especially where maternal and child health care is provided, midwives and nurses' aides give talks employing diagrams, slides, and occasionally films to illustrate the information presented. In some hospital maternity services in Santiago, the education of inpatients has been undertaken by specially trained midwives and social workers, either through group talks or personal conversations. Occasionally, attempts have been made in some programs to encourage the diffusion of knowledge about contraceptive techniques through personal contacts established by successful users of a particular method, especially the IUD.

As described earlier, sex education and family living materials will be included in the primary and secondary school curriculum throughout Chile in the near future.

Foreign Assistance

Rockefeller Foundation

The Foundation has provided grants totaling $450,000 to the School of Medicine, University of Chile, for three studies: the family planning program in the Western Health Area of Santiago mentioned earlier; a study of feasibility and effectiveness of an expanded family planning program outside Santiago; and research on the feasibility and effectiveness of family planning measures undertaken in the postpartum period.

The Population Council

The Council has provided a total of $637,000 for various research and action programs concerned with human reproduction in Chile. Of this total, $392,400 was donated to various branches of the University of Chile: $98,000 for support of the San Gregorio Studies; $214,465 for studies based on administration of low doses of megestrol acetate and studies on mechanisms of action and use-effectiveness of metals and cytotoxic agents as contraceptive methods conducted at both the Institute of Obstetrics and the Institute of Physiology; and $54,000 for additional studies of abortion, fertility rates, and contraception conducted by various branches of the university; the remaining $13,000 was contributed to the Family Planning Statistical Unit. The Catholic University of Chile received approximately $158,300 in support of studies concerning the rhythm method of contraception, physiology of the pituitary, and other studies on tubal and uterine physiology and mechanisms of action of implanted progestogens. The Austral University of Chile received $63,700. The National Health Service received $15 600 for the purchase of IUDs and inserters. Two hospitals, Hospital Maternidad J.J. Aguiere and San Juan de Dios Hospital, received $10,000 each for ongoing research.

The Ford Foundation

The Foundation has provided grants in the amount of $535,000 to facilitate the development of population-related activities in Chile, mainly in demography and reproductive biology. An additional $750,000 has been given to support the Latin American Postgraduate Course in Reproductive Biology and Population Dynamics, the Three Nations Program.

Current grants, in addition to those for the Three Nations Program, provide support to CELADE for the strengthening of its regional research program and its subcenter in Costa Rica. Further grants support the Center for the Study of Reproductive Biology, Faculty of Medicine, University of Chile, a recently established interdepartmental program which takes a multidisciplinary approach to training and research in reproductive biology. The Foundation also pro-

vides funds for the Latin American Association for the Study of Human Reproduction (ALIRH), headquartered in Santiago, for the purpose of conducting a series of regional seminars on reproductive biology for medical personnel in countries where knowledge of this field is minimal, to be followed by training and research support of persons selected from these countries. A number of travel and study awards and graduate fellowships have been made available to Chileans working in the population field.

Other program interests of the Foundation in Chile include strengthening of professional resources in the field of public health and population dynamics; the development of university-based programs in demography and the social sciences; and fostering of social science research on population problems.

U. S. Agency for International Development

AID has entered into agreements, since mid-1968, with three Chilean agencies to carry out projects in both application and evaluation of family planning, sex education, and related population activities. These projects can be described briefly under their respective agencies.

(1) National Health Service: To further application and evaluation, AID has provided for construction of a building to be the new headquarters for the Latin American Training Center in Family Planning. This Center, operated under the NHS, will permit an increase in the annual enrollment in family planning courses from 100 to 200 Latin Americans, and will provide additional space for conducting research on the provision of family planning services.

Specifically in the field of application of population programs AID contributes to two programs. Under the first, maternal care, family planning, and other services of the health-post program are being extended to small rural communities. Under this agreement 50 new posts will be constructed and 50 already in existence will be rehabilitated.

The second program provides for purchase of medical and gynecological equipment for 124 professionally staffed clinics providing maternal care and family planning. This agreement also funds a pilot program in which auxiliary personnel will provide maternal and family planning education under the supervision of health educators and midwives in 15 different clinic settings. If the final evaluation shows positive results, the program will be extended nationally.

AID also provides support for research projects. In one project the effects of different approaches to the provision of maternal and child health care services will be carefully evaluated and related to program costs. Three health centers in the Southeastern Health Area of Santiago will be used for the study.

In another project a series of eight studies will be made on various aspects of current maternal and child health programs of the NHS. The largest study will constitute the first national evaluation of family planning services in Chile.

(2) Ministry of Public Education: AID has contributed support for the government program to introduce family living and sex education into the curriculum of primary and secondary schools.

(3) Department of Public Health and Social Medicine, Faculty of Medicine, University of Chile: Assistance to the recently organized Program on Health and Population is being provided for the following activities: realization of seven major KAP, evaluation, and demographic studies; strengthening of the departmental library in population materials; recruitment and training of additional professional staff; and faculty exchange between the program and U. S. universities.

Additional Foreign Assistance

Other foreign agencies contributing funds and equipment can be summarized briefly. The International Planned Parenthood Federation has provided $532,000 in grants to the Chilean Association for the Protection of the Family and to two Santiago hospitals. The Pathfinder Fund makes small grants for the support of individual family planning clinics. The Population Reference Bureau's activities in Chile include encouragement of the use of mass media for family planning information, distribution of educational materials, and the sponsorship of educational seminars. The United Nations has provided a resident population program officer whose principal role is that of helping to coordinate, integrate, and orient the efforts of local and external assistance agencies working in the population field in Chile. There is a reasonable probability that the Swedish International Development Authority (SIDA) will begin to provide assistance to the NHS by the end of 1970 in the form of equipment, vehicles, and audiovisual materials for use in maternal and child health and family planning clinics.

Summary

In Chile, due to the existence of a National Health Service covering 70 per cent of the population and providing partially socialized integral medical care, it has been relatively easy to develop family planning programs. International resources have greatly facilitated the task. Extensive training, and medical, demographic, social, and evaluative research are being carried out.

Nevertheless, there is much that remains to be done. The NHS has neither sufficient facilities nor sufficient manpower to meet the general health needs of the population, and the areas in which their services are extended to family planning are as yet limited. As a result, development of family planning programs in different health areas of the country has been very uneven and asymmetrical, and adequate delivery of services for the country as a whole still remains a major task.

The lack of nationally accepted standards in the collection of statistical information makes adequate evaluation of the family planning programs in Chile difficult.

While there are extensive research programs and training programs for medical and paramedical personnel in Chile, there is no mass media program for educating the population at large. There is no form of patient recruitment outside the clinic.

Finally, the extent to which the government and the population at large endorse family planning is limited. It remains problematic as to when Chile will decide whether it needs a population policy in relation to its goals for economic and social

development, and what steps, if any, will be taken in this direction.

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