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ABSTRACT

A profile of Sweden 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 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. In many social aspects, Sweden is unique. It has, for example, the highest life expectancy and lowest infant mortality in the world. Per capita gross national product is third largest in the world and has been growing at almost 5 percent a year. Unemployment has been low. An analysis of generation replacement for Swedish females born in 1870 and afterward reveals that, in cohort terms, Swedish fertility has been at or just slightly below replacement roughly from the 1895 cohort onward. Today, the main deficiency in the Swedish family planning program is shortage of personnel and facilities. (LK)

Country Profiles

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SWEDEN

by GERTRUD SVALA

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In many social aspects, Sweden is unique. It has, for example, the highest life expectancy and lowest infant mortality in the world. Per capita gross national product is third largest in the world and has been growing at almost 5 percent a year. Unemployment has been low.

Social legislation is advanced. Sweden is, for example, among the countries furthest along toward equality of women, and a wide range of child allowances, health provisions, maternity benefits, and supports for homemakers protects families.

Although today there is no official population policy as such, the government makes it economically possible for those who want children to have them, and it helps those who want to limit their families to learn how to do so. Policy is based on social and humanitarian rather than demographic grounds.

Although there is today little, if any, public concern about a possible, eventual decline of the Swedish population, there was such a fear in the 1930s. At that time net reproduction rate had dipped considerably below replacement, and two government Population Commissions were established in 1935 and 1941 to study the question. The goals that the first commission recommended were increased fertility (to keep the population stable in the long run with as low mortality as possible), more middle-sized families, raised living standards for children and improved quality of life, reduced illegitimacy, and more generally available birth control information, and the right to voluntary parenthood (*1*).

What the commissions proposed was a two-pronged attack to strengthen the social and economic basis of the family and promote responsible planned parenthood. Concrete measures subsequently adopted represent a thorough-going reform of the whole social and economic system of the nation. Specifically the reforms affected such parts of family life as health, housing, recreation, and education.

Sweden has been a pioneer in population and family planning, both at home and overseas. Voluntary family planning is firmly instituted, and all methods of contraception are readily available. Sweden also has a fairly liberal abortion law, which may be made even more liberal as a consequence of the recent report of a 1965 abortion committee (*2*).

Location and Description

Situated in northern Europe on the eastern half of the Scandinavian peninsula, Sweden shares boundaries with Finland on the northeast and Norway on the northwest and west. The Baltic Sea and the Gulf of Bothnia lie to the east, the Skagerrak and Kattegat seas to the southwest between Sweden and Denmark. With a length of 1,574 kilometers (almost 1,000 miles) and an area of 449,793 square kilometers (173,654 square miles), Sweden is Europe's fourth largest country, Russia, France, and Spain being larger. Sweden is a constitutional monarchy with a long tradition of parliamentary government. A unicameral parliament replaced the two-chamber system in January 1971. The country is administratively divided into 24 counties. Stockholm is the capital. Its foreign policy is based on nonalignment during peace and neutrality during war.

Although Sweden lies on the same latitude as Alaska, the climate is relatively mild because of the Gulf Stream. Average summer temperature in Stockholm is about 18°C (64°F) and winter temperature is −3°C (26°F). The climatic influence of its proximity to the Arctic Circle is, however, apparent from the barren mountain ranges, glacial areas, and sunlit summer nights that characterize the north. Large deposits of iron, lead, zinc, sulfur, manganese, and low-grade uranium ore are found in northern and middle regions. Agriculture is mainly limited to the fertile plains of the south where oats, wheat,

rye, barley, and potatoes are the chief crops. The remaining part of the country is covered by forests (54 percent of the total area) interspersed with tens of thousands of lakes (9 percent of the total area).

The most distinctive social characteristics of Sweden are its high standard of living and its comprehensive social security system. In per capita gross national product it is exceeded only by Kuwait and the United States.

Although the industrial revolution did not arrive until the latter half of the nineteenth century, the change from an agricultural to an industrial society was not marred by major upheaval. The facts that Sweden has had peace since 1814 and that emigration provided an outlet for the population pressure that had been built up around 1850 may explain the peaceful nature of the transition to an industrial society.

The reasons for Sweden's economic welfare have been given, on the one hand, as the long period of peace, the relative abundance of such valuable raw materials as iron ore, timber, and hydroelectric power, and, possibly, the influence of Protestant religious tradition on working habits and, on the other hand, as the welfare-orientation of governmental policies in social and economic matters. Worth noting is also the absence of significant racial or ethnic minorities in Sweden.

The main exports today are forest products, machinery and instruments, base metals, and transport equipment. In 1970 agricultural products made up only 2.3 percent of exports while machinery, instruments, and transport equipment made up close to 40 percent.

Population

Total Size

As of 31 December 1971, the total population of Sweden was 8,115,426. The population density, averaging 18 inhabitants per square kilometer, is one of the lowest in Europe.

Households

According to the 1965 census, the total number of households was 2,777,647 with an average size of 2.7 members per household. To illustrate the small household size, 64.5 percent of the households in 1965 contained no children, and only 5.8 percent had three or more children. In 1960 the mean number of children in a two-parent family was 1.07. Households in sparsely populated areas are slightly larger (10 percent) than the households in densely populated areas.

Households have decreased in size since the late nineteenth century with industrialization and urbanization. Among the reasons for the continued decline in household size are migration to urban areas where apartments are small and the likelihood of young people to move out and establish small households.

Marriage and Fertility

As of 31 December 1971, there were 1,590,560 women aged 15–44. Of these, about 57 percent were married, about 38 percent never married, slightly more than 3 percent divorced, and fewer than 1 percent widowed. One reason for the large percentage of unmarried women is that Swedish women marry relatively late. The marriage rate, which has traditionally been low in Sweden, has generally fluctuated between 9 per thousand persons per year (during 1941–1950) and 6 (during 1891–1910). The marriage rate has recently exhibited a sharp decline: in 1965 it was 7.75, in 1968, 6.61, in 1970, 5.38 and in 1971,

4.94. Thus the present marriage rate is even lower than it was around the turn of the century. The marriage boom of the 1940s has ended.

More important is the trend in total fertility figures (Table 1): Women today are expected to have about half as many children during their lifetimes as they would have had in the beginning of the century. During this century, there has been a lowering of the fertility age structure, mostly due to the lowering of age at first marriage. In other words, Swedish women today have fewer children but at an earlier age.

Of the total number of births (107,622) in 1969, 16.2 percent were out of wedlock. The percentage of out-of-wedlock births has increased sharply during the last decade, although out-of-wedlock births during 1926–1930 reached roughly the same proportions. The low marriage rate and the high out-of-wedlock rate are probably in part related in that a large and increasing number of young people do not register their relationships in the form of marriage. It has been estimated, however, that roughly half of the out-of-wedlock births during the early 1960s were "legitimized" through subsequent marriage of the parents. Even if the parents do not wed, the child has legally the same rights as a wedlock child. The word "illegitimate" was removed from the statutes in 1917, and in 1970 the last legal obstacle to equality was overcome when the right of an out-of-wedlock child to inherit the property of the father and his family gained legal force.

Table 1. Age Specific Fertility Rates: 1901-1969
(births per year per 1,000 women)

Age	1901-1905	1931-1935	1941-1945	1961-1965	1965-1969
15-19	15.9	17.8	25.6	42.8	44.62
20-24	119.5	76.2	111.4	136.9	131.5
25-29	193.3	93.4	134.0	148.9	142.9
30-34	193.6	80.8	107.5	87.6	81.2
35-39	159.7	56.1	66.8	39.3	34.52
40-44	87.8	25.7	23.6	10.7	8.34
45-49	11.4	3.0	1.9	0.7	0.54
Total fertility	3,906.0	1,765.0	2,354.0	2,334.5	2,217.9

Source: references 12 and 17.

Table 2. Life Expectancy at Birth and Age 50.

	1901-1910	1931-1940	1941-1950	1951-1960	1961-1965	1967
At Birth						
Males	54.53	63.76	68.06	70.89	71.60	71.85
Females	56.98	66.13	70.65	74.10	75.70	76.54
At age 50						
Males	23.17	24.08	25.01	25.54	26.65	25.74
Females	24.74	25.13	26.27	27.47	28.56	29.22

Source: reference 12.

Table 3. Vital Rates: 1750-1970
(Events per 1000 population per year)

Year	Live Births	Deaths	Emi-gration	Immi-gration	Increase of population	Net reproduction rate
1750-1820	33.18	27.25			5.32[a]	
1821-1865	32.57	21.89			11.46	
1866-1920	27.17	16.55	4.71	1.3	6.57	
1921-1930	17.51	12.07	2.13	1.03	3.93	0.908[b]
1931-1940	14.45	11.67	0.41	1.03	3.67	0.783
1941-1950	18.45	10.43	0.92	2.93	10.02	1.041
1951-1960	14.69	9.69	2.06	3.52	6.29	1.045
1961-1970	14.75	10.11	2.4	5.44	7.64	0.974
1961	13.90	9.78	2.00	3.94	5.88	1.045
1962	14.19	10.16	1.97	3.32	5.19	1.064
1963	14.85	10.05	2.02	3.54	6.12	1.098
1964	16.01	10.00	2.05	5.00	8.87	1.177
1965	15.88	10.10	2.07	6.41	10.05	1.147
1966	15.80	10.04	2.53	6.02	9.04	1.121
1967	15.42	10.14	2.54	3.81	6.32	1.082
1968	14.28	10.42	2.71	4.57	6.04	0.989
1969	13.45	10.44	2.51	8.18	9.04	0.919
1970	13.69	9.95	3.56	9.62	9.80	0.924
1971	14.14	10.22	4.88	5.26	4.30	—

[a] By simple subtraction the growth rate should be about 6 per thousand per year. The difference is due to undercounting because of recording difficulties associated with internal migration or simply the inability to register the locations of certain inhabitants.
[b] 1926-1930.
Source: references 12 and 13.

Age at Marriage

In 1968 the average age at first marriage was 25.9 for males and 23.6 for females. Since 1860 and particularly during the postwar period the trend has been toward marriage at lower ages. The respective ages for men and women were 28.8 and 27.8 during 1861–1870, 28.7 and 25.9 during 1941–1950, and 27.8 and 24.9 during 1950–1960. Yet Swedish men and women still marry late by world standards. For example, the median ages at first marriage in the United States in 1967 were 23.1 for men and 20.6 for women and in Indonesia the 1961 census shows that the respective mean ages were 24.3 and 19.2.

Until 1970 when a marriage law permitted both men and women to marry at 18, the legal ages were 21 for men and 18 for women. Dispensation to marry before 18 can be granted by the county authorities.

Life Expectancy

Sweden has the highest life expecancy at birth in the world: 71.85 for men and 76.54 for women in 1967. (Table 2 presents some data on mean expectations of life for specific periods during this century.) The table indicates that the decline in male death rates has slowed and that the present male mortality rate particularly above age 50 is either staying constant or exhibiting a slight rise. But control of those environmental factors that are becoming increasingly prominent as causes of death (for example, higher consumption of cigarettes, motor accidents, drug addiction) may lead to further reduction in mortality.

Growth

Swedish population statistics have been collected regularly since 1749 (Table 3). Sweden and Finland (which

belonged to Sweden in 1749) have been collecting data longer than any other country of the world. Estimates of the total population have also been made for periods before 1749. According to these estimates, the population of the land that is Sweden today was at least 750,000 during the 1560s and 900,000 during the period 1610–1640. In 1750 the total population was close to 1.8 million. By 1850 it had reached almost 3.5 million and by 1950 it had doubled to 7 million.

Sweden's population growth since 1750 can be divided into four stages, but one must keep in mind that considerable fluctuations occurred within each stage, particularly during earlier periods. The period 1750 to 1820 had a high birth rate (slightly above 33 per thousand persons per year), a correspondingly high average death rate (a little over 27), negligible immigration and emigration, and consequently a low rate of population growth (about 0.5 percent per year).

During the second period, 1820 to 1865, the birth rate remained high (close to 33 per thousand per year), and the death rate began to fall (averaging less than 22), because of medical and hygienic advances. Since emigration had not yet become extensive enough to have an impact, the rate of growth rose to an average of over 1 percent per year. A consequence of this population growth up to 1865 was an increase in the number of poor people, particularly in rural areas. In that sense Sweden, like many other European countries, had an "overpopulation" problem in the middle of the nineteenth century.

During the third stage from 1865 to 1920, industrialization, urbanization, and emigration all influenced the demographic picture. Towns grew by approximately 350 percent while the population in the countryside increased only about 13 percent. Industrialization and urbanization also led to a different attitude toward family size, evident from the drop in the birth rate by more than 5 per thousand per year. A similar downward trend occurred in mortality. With a birth rate of 27.2, the rate of natural increase (1.06 percent per year) remained at almost the level of the previous period. The average annual population increase for the 55-year period, however, amounted to only 0.66 percent because of extensive emigration, particularly during the 1880s. Approximately 1.2 million people left Sweden, mainly for the United States.

After 1920 birth rates fell sharply, and an all-time low in fertility occurred in 1933–1934. Net reproduction rate of 0.7, was considerably below replacement. Although marriage rates were low (between 6 and 7 per 1,000 per year) in the 1920s and early 1930s, they were actually slightly higher than during 1900–1920 (an average marriage rate of 6.1). The drop in the fertility rate was probably a reflection of social and economic conditions of the 1930s, that is, economic depression and consequent mass unemployment. No doubt the low marriage rate and the late age at marriage were significant. Partly because of the unfavorable age distribution and sex ratio resulting from the emigration of young males, in 1930 17 percent of the men and 23 percent of the women 45 to 49 were unmarried. During the 1930s public awareness of the possibility of a population decline stimulated the state to adopt a conscious population policy.

Whether or not the policy actually influenced the number of births, fertility recovered, and has until recently remained above unity. Analysis of fertility rates indicates that the rise was not due to a widespread tendency to have larger families but rather to an increase in young marriages and the frequency of first and second births (*3*).

After the peak in 1944–1945, the birth rate declined steadily until the early 1960s. The increase from 1961 to 1965 was due partly to the rise in the number of persons aged 20–24 (resulting from the relatively large cohorts of the late 1930s and early 1940s) and the growing immigration of young adults. The subsequent decline during the period 1965–1969 is more difficult to explain. Possibly the pill and the increase in legal abortions dampened fertility. Judging from data for 1970 and 1971, which indicate a slight rise in births, the decline may have been reversed, at least temporarily.

An analysis of generation replacement for Swedish females born in 1870 and afterward reveals, however, that in cohort terms, Swedish fertility has been just at or slightly below replacement roughly from the 1895 cohort onward (*4*).

In gross reproduction terms, there was an almost uninterrupted decline from 3.7 births per woman at the end of the reproductive period for women born in the early 1870s, until the 1904–1905 cohort, whose completed fertility was only 1.8 births, after which there was a moderate increase to about 2 births per woman for women born in the early 1920s. The decline has been achieved through a continuous decrease in the rates of childbearing in the later segments of the reproductive age span; that is, through progressively earlier termination of childbearing.

By and large the emigration trend ended by 1914. During the 1930s and 1940s emigration rate never exceeded one per thousand per year; since 1950, the number of foreign nationals immigrating into Sweden has been substantially larger than the number leaving. The extremely high immigration rates for 1969 and 1970, practically as high as the peak emigration figures during the 1880s, may be the most important feature of the Swedish demographic situation during the last decade. Since immigration is heavily influenced by labor market conditions and may consist largely of temporary migrants, the long-range impact of recent immigration cannot yet be determined. The average natural increase of the population (excluding net migration) during 1961–1970 was slightly less than 0.5 percent.

The immigration surplus during most of the postwar period no doubt has contributed to keeping the period replacement rate above unity. Since 1968, however, the rate has dipped slightly below unity. That Sweden still has not experienced a decline in the population seems to be due to the combined effects of immigration and improved mortality between generations.

Age Structure

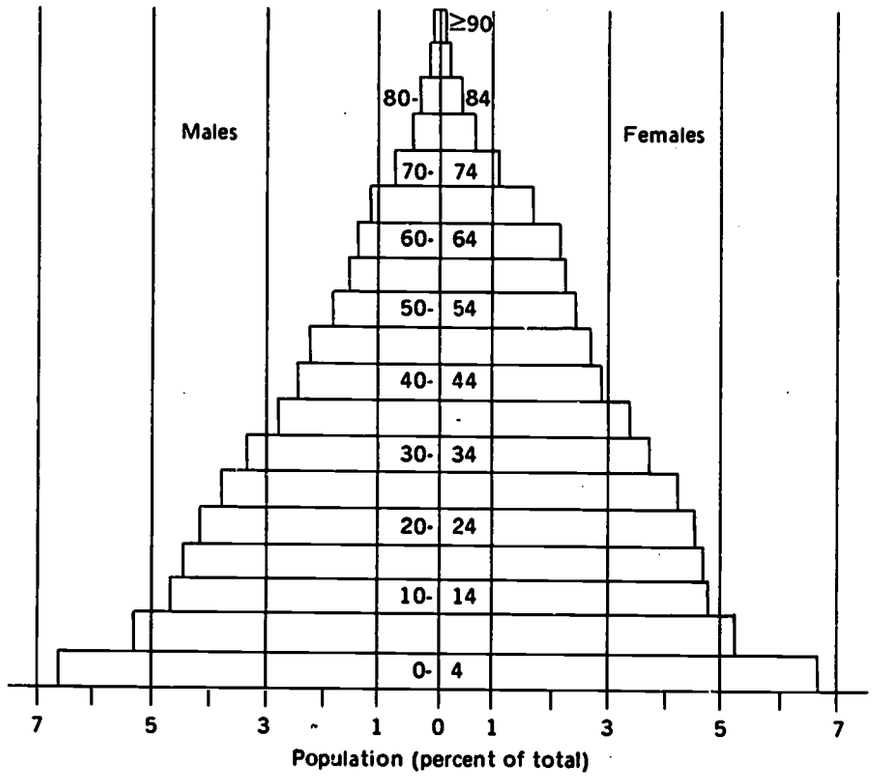
Although the age structure from 1750 to 1900 resembled the perfect pyramid of a growing population, that of the 1970s is closer to a stationary population (figures). Particularly marked in the 1970 pyramid is the indentation at 30–45 created when fer-

tility rates were at their lowest. Only about one-fifth of the present population is under 15. Growth in the fraction over 65 is particularly noticeable —from 8.4 percent in 1900 to 15.8 percent in 1970. In 1969 the median age was 34, and the dependency ratio, 52.5. The decrease in the young and middle age groups and the expansion of the oldest groups, characteristics of a population with low fertility and low mortality, have affected both expenditures for social services and the labor force. Except for public health, expenditures for old age are the greatest of all the social services. Since public health includes health care for the old, total outlays for the aged might very well be the largest single expenditure. Increased labor force participation by women (estimated to represent 39 percent of the labor force in 1970) and immigrants (6 percent of the total work force in 1970) have offset the relative decline in the active age groups.

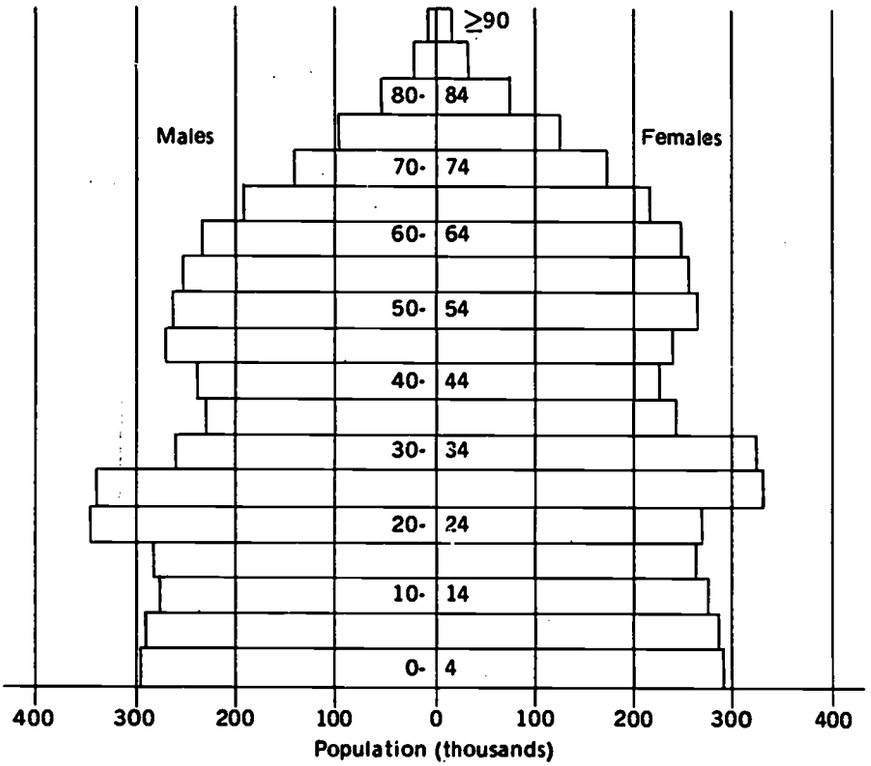
The surplus of women over men declined from 1,127 women per 1,000 men in 1750 to 1,002 per 1,000 in 1967. The sex ratio at birth (males over females) in the latter year was 1.063, but beyond the 55–59 age group, women outnumber men.

Urban-Rural Distribution

Since 1964 the census bureau has not used the traditional urban-rural distinction. Instead the population is now divided into densely and sparsely populated areas. The measure is based on a fairly exact definition: a densely populated area is a locality inhabited by at least 200 persons and having buildings that are not more than 200 meters apart. According to the 1965 census, 77.4 percent of the total population lived in 1,819 densely populated localities. Movement from countryside to more populated areas has been considerable. It is estimated that the population living in the countryside has dropped from 88.7 percent in 1860 to 38.3 percent in 1965. During this century alone, densely populated areas have grown as much as 315 percent while the population in sparsely populated areas has declined by 52 percent, due not only to urbanization but also to emigration. The population shift was not uniform in that movements from one rural area to another or from town to country also took



1750 POPULATION by age and sex resembled perfect pyramid of a growing population, and pattern persisted until 1900. Source: reference 12.



1970 POPULATION is close to a stationary distribution. Lowest fertility rates produced indentation at ages 30 to 45. Source: reference 13.

place, especially during the "colonization" of the north. Recent migration has been mostly from north to south: 90 percent of the population and most industry are concentrated today in the southern half of the country. As evidence of uneven population distribution, Norrbotten County in the north has only 3 persons per square kilometer whereas Malmöhus County in the south has 148. At the same time, it was not only the largest urban centers that received the influx from the rural areas. The 1965 census showed that 32 percent of the total urban population is in localities with less than 10,000 inhabitants. In 1971, the three largest cities, including suburbs, were Stockholm (1,352,359), Göteborg (685,992), and Malmö (449,296). Although there is no governmental population distribution policy, the government has taken steps to mitigate the urban drift, for example, by encouraging industries in smaller towns and by moving some independent government agencies away from the capital.

Ethnic and Religious Composition

Since, by principle, ethnic and religious composition are not included in the census, the figures that follow are rough estimates. Throughout its history Sweden has had an extremely homogeneous population. The Swedish people belong to the Nordic branch of the Germanic "race," and the only linguistic and ethnic minorities that have resided in Sweden for any length of time are the Lapps, the Finnish-speaking population, and the gypsies. The origin of the Lapps has not been established, but archaeological findings indicate that they may have lived in Sweden as long ago as 2000 B.C. They have settled mainly in the far north where they have engaged in their traditional occupation, reindeer raising. Today the Lapps number about 10,000. Many are becoming integrated into the Swedish community, but approximately 3,000 still obtain their living from raising reindeer. The Finnish-speaking minority, as distinct from the total number of Finnish citizens living in Sweden, now numbers about 40,000 and lives, for the most part, near the Finnish border. Gypsies number a little over 2,000 and can be divided into three different groups according to citizenship: Swedish, Finnish, and non-Nordic; many in the last group are refugees from eastern Europe, Spain, and France. Because of immigration during the last decades, foreign nationals and naturalized Swedish citizens today compose a considerable part of the Swedish population. As of 31 December 1971, 416,567 foreign nationals, equivalent to 5.1 percent of the population, were living in Sweden.

Sweden has a state religion, Lutheran Protestantism. Since all citizens are automatically members unless they have withdrawn or are born to parents who do not belong, over 95 percent of the Swedish population today officially belongs to the state church. A 1951 law permits secession from the church without joining another religious denomination as had previously been required. Relatively few have formally left the church even though Swedish society is extremely secular. In 1970, 80.6 percent of all children born were baptized and 79.3 percent of all marriages took place in church; yet only 2 percent of the total population attended at least one church service per week in 1968. (Seventeen percent attended church regularly in 1900.) In 1969 about 255,000 were members of one of the "free churches": 90,000 Mission and Covenant members, 27,000 Baptists, 9,000 Methodists, 91,000 in the Pentecostal movement, and 37,000 members of the Salvation Army. Many members of the free churches formally belong to the state church at the same time. In 1970 there were about 54,000 Catholics, of whom 44,000 were foreign nationals, and 13,000 to 14,000 members of the Jewish organization, Mosaiska Församlingen. A governmental committee is now studying the state-church relation to determine whether and how the state and church might be separated.

Migration

Immigration became a major demographic issue during the last decade, but it is subject to such sharp fluctuations (for example, with labor-market conditions) that no definite predictions can be made. Immigration rose almost 160 percent from 1961 to 1970. Gross and net immigration figures for 1970 were 77,355 and 48,710 respectively—the largest, both absolutely and relatively, ever recorded. In 1970 emigration also was the highest since 1923. But there are signs that immigration has slackened: During 1971 the net immigration figure was only 3,055. (The gross immigration was 42,615, and the gross emigration was 39,560.)

About two-thirds of all the foreign nationals are from the Nordic countries, principally Finland. The largest non-Nordic group is the Yugoslavs. Most immigrants are in the productive (and reproductive) ages: 56 percent of the immigrants as compared to 36 percent of the total population belong to the 18–44-year group. Immigrants compose about 6 percent of the total labor force. The areas of greatest immigrant concentration are the industrial centers in middle and southern Sweden.

Since 1967, the Swedish government has pursued two separate immigration policies. Because of the Nordic Common Market, immigration from Denmark, Finland, Iceland, and Norway is unrestricted. Immigrants from other countries require work permits before coming to Sweden. A foreign national, at least after some time, is entitled to practically the same social benefits and services as a Swedish citizen. Nevertheless many immigrants are concentrated in poor housing, work at low wages, feel discriminated against, and have language difficulties despite subsidized opportunities to study the language and generally learn about the country. A Royal Commission on the Social Adjustment of Immigrants was appointed in 1968. A first report released in 1971 proposed that immigrants should receive instruction in Swedish during work hours without loss of wage (*5*).

Literacy and Education

According to the 1930 census, 99.9 percent of persons over 15 were literate. Because of this large fraction, no questions about literacy have been included in the censuses since 1930. With the large numbers of recent immigrants, though, of whom a few thousand are estimated to be illiterate or semiliterate, the present literacy is probably not as high as 99.9 percent.

In the 1940s proposals were made to reform the educational system so

as to assure equal opportunities for all children. The basic feature of the new system, permanently established in the 1960s, is a nine-year compulsory comprehensive school that starts at age seven. Practically all children attend.

Secondary education has also undergone a reform and from the fall of 1971 consists of 21 lines of study divided among a *gymnasium*, a two-year professional school, and a two-year vocational school. Although in principle all lines are open to all pupils who have completed the nine-year comprehensive school, entrance depends on availability of places. All the lines are intended to prepare a student for both immediate employment and continuing education but with different emphases. During 1971–1972 it is estimated that the vocational school will have the largest enrollment.

Primary and secondary schooling are free, and so also, by and large, are college and university. At leaat in the comprehensive school, meals and books too are, as a rule, free of charge.

The numbers of young people obtaining both secondary and higher educations have increased sharply since 1940. The fraction of those between 16 and 18 attending school has increased from 10 percent in 1940 to an estimated 62 percent for 1970. From 1940 to 1970 the fraction of the 19–24 age group that has continued with studies beyond the gymnasium has increased from 5 percent to an estimated 30 percent. A few more men than women are enrolled in the secondary schools, and in the universities men outnumber women two to one.

The central government budget for education and research in fiscal 1970 was 8,730 million kronor (about US$1,700 million) representing almost 19 percent of the total national budget. Considerable expenditures for education are borne, however, by the municipalities and the county councils.

Economic Status

During 1970 76.8 percent of those aged 18–66 belonged to the labor force, and only 1.5 percent of the labor force was classified as unemployed. By 1971, however, the unemployment rate, which had generally remained low during the 1960s, had risen to 2.5 percent.

In 1970, about 10 percent of the economically active were engaged in primary industry (farming, forestry, fishing), 40 percent in secondary, and 50 percent in tertiary. In 1910 the respective figures were 49, 32, and 19 percent. Changes in the economic composition of the population during the last decades are toward a post-industrial society, particularly in regard to the remarkable growth of the tertiary fraction, from 28 percent of the economically active in 1940 to 50 percent in 1970.

Table 4. Projected Population by Age and with Different Assumptions about Immigration: 1971–2000

	Age			
	0–14	15–64	≥65	Total
Zero net immigration				
1971	1,688,490	5,286,771	1,137,854	8,113,115
1980	1,707,682	5,285,427	1,334,700	8,327,809
1990	1,640,392	5,346,331	1,439,343	8,426,066
2000	1,632,732	5,493,861	1,362,983	8,489,576
20,000 per year net immigration				
1971	1,693,083	5,302,220	1,138,073	8,133,376
1980	1,775,176	5,447,397	1,337,597	8,560,170
1990	1,801,536	5,700,304	1,446,884	8,948,724
2000	1,866,265	6,095,453	1,379,006	9,340,724

Source: Calculated from reference 6.

Table 5. Projected Composition by Age and with Different Assumptions about Immigration: 1971–2000

(figures are percents)

	Age			
	0–14	15–64	≥65	Total
Zero net immigration				
1971	20.81	65.16	14.03	100
1980	20.50	63.47	16.03	100
1990	19.47	63.45	17.08	100
2000	19.23	64.71	16.06	100
20,000 per year net immigration				
1971	20.82	65.19	13.99	100
1980	20.74	63.64	15.62	100
1990	20.13	63.7	16.17	100
2000	19.98	65.26	14.76	100

Source: Calculated from reference 6.

Present Population Trends

The National Central Bureau of Statistics has made population projections for the years 1971–2000 (Tables 4 and 5). Assumptions about fertility are based on past cohort fertility rates (an average of two children per woman), and mortality rates are derived from rates observed during the 1960s when slight reductions in mortality occurred. The projections are calculated on two different assumptions: net immigration of zero and net immigration of 20,000 persons per year. By 2000, according to assumption one, the total population would increase by only 4.6 percent; according to assumption two, the population would increase by 14.7 percent.

As shown in Table 5, the only age group that is projected to increase by 2000 according to both models is that 65 and over. The relative decline of the oldest group between 1990 and 2000 is caused by arrival in this group of the small cohorts from the mid-1930s. By 2000, the dependency ratio will have increased to 54.5 (zero immigration) or 53.2 (20,000 immigration) due to the aging of the population. The median age will have increased since 1969 by three years to 37 (zero immigration) or by one year to 35 (20,000 immigration) (*6*).

Population Growth and Socioeconomic Development

Sweden has combined a high standard of living with a comprehensive social welfare system. Average growth in gross national product (GNP) during

the 1960s was fairly high by international standards but is expected to decline during the first half of the 1970s. One of the most important and comprehensive of the social welfare programs is the health and medical care system.

National Income

In 1969 Sweden had a per capita gross national product of US$3,510 (at market prices), the third highest in the world. Since 1960, GNP has been increasing by a yearly average of 4.65 percent, mainly because of rising productivity. Average productivity (GNP per hours worked) rose by 5 percent per year during the second half of the 1960s, an increase which is rapid by both historic and international standards.

Table 6 shows the distribution of GNP by sectors for 1968. Total industrial output increased by 8 percent from 1968 to 1969. The average growth of GNP in the period 1970–1975 is not expected to exceed 3.8 percent per year because of the planned shortening of working hours and the small increase in the labor force.

Table 6. Gross National Product by Sector: 1968.

Sector	Product (percent)
Agriculture and forestry	4
Mining and manufacturing	28
Construction	9
Electricity, gas, water, and sanitary services	3
Commerce	21
Transport and communications	7
Services	28

Source: reference 14.

Labor Force

Total labor force in 1970 was estimated at 3.9 million. Of the persons 15–64 in 1965, 87.8 percent of the men, 63.8 percent of the unmarried women and 47.2 percent of the married women were in the labor force. For 1970 these numbers were estimated as follows: 85.7, 62.3, and 54.8 percent. Over the past 20 years, the labor force has grown by 0.5 to 1 percent annually. Table 7 shows expected compositions of the labor force in 1970, 1975, and 1980 in terms of men, unmarried women and married women and in terms of age. The table indicates that the married women category is expected to provide the net increase in the supply of labor, that the size of the 30–49 age group in the labor force will increase and the number of young workers decrease, and that the fraction of the older group in the work force will decline with the trend toward earlier retirement. The predictions are based on three assumptions: extremely slow future growth of the labor supply, planned reduction of working hours from 42½ to 40 hours per week in January 1973, and increasing enrollment of the young in institutions of higher learning.

Table 7. Expected Labor Force Composition by Sex, Marital Status (of Women), and Age:

(numbers are percents of total labor force)

	1970	1975	1980
Sex and marital status			
Men	61.0	59.5	58.5
Married Women	24.3	26.9	28.6
Unmarried Women	14.8	13.6	12.9
Age			
15-29	30.0	28.1	25.5
30-49	39.8	41.6	45.8
50-	30.2	30.3	28.7

Source: reference 15.

Agriculture

Only about 7 percent of Sweden's land is arable, and about 90 percent of that is in private hands. In 1969 there were about 178,000 farmers, equivalent to 4.6 percent of the total labor force. Employment in farming, forestry and fishing fell from 82.4 percent in 1870 to 10.2 percent in 1965. The percentage of gross national product attributed to agriculture has similarly fallen from 40 to 3 percent during the last century. Since total agricultural production has remained essentially unchanged during the last two decades while labor input has been decreasing, it is apparent that a considerable increase in labor productivity has occurred. Nearly 80 percent of farm income is from animal production, meat production constituting 40 percent and dairy products 31 percent.

Agriculture has also been undergoing major structural changes stimulated by a forward looking agricultural policy. The most important change is probably growing mechanization. The number of tractors has grown by almost a factor of ten since World War II. There has also been a marked trend toward specialization—28 percent of the farms had no cattle in 1969 and many specialized in only one or two crops. The number of holdings has decreased by almost half since 1920 (162,000 in 1969). The average size of farms with more than 2 hectares (20,000 square meters = 0.81 acres) has recently increased from 14 to almost 19 hectares, mainly through closure of small holdings. At the same time, the land from many of the smaller holdings has been taken out of production. Farming is no longer an occupation for the young. About half of the farmers are over 55. Many of the farms will probably cease to operate simply because there is no one to take over the farm.

Public Health

Most medical care for citizens and immigrants in Sweden is free or low in cost. It is financed mainly by the county councils, which are the sponsors of almost all hospitals and most of the ambulatory and preventive care. In addition to the taxes that the councils raise, funds are obtained from state subsidies and supplementary contributions provided by the national compulsory health insurance which covers both citizens and resident foreign nationals. As a result, hospital stays are free; a fee of about $1.35 is charged for an outpatient visit, and the patient obtains a refund of up to three-quarters of private practitioners' fees. Except for preventive medicine, the patient need not pay more than $3 a purchase. Some medicines for particular diseases are entirely free as are those provided to an inpatient in hospital. Technical aids for the handicapped are free, and their purchases of automobiles, if they need them to get to work or to a vocational school, are heavily subsidized by the state. In dental care, there is a large sector of nonsubsidized private practice together with growing public and subsidized services.

In fiscal 1970, the budget for the Ministry of Health and Social Affairs was 13,190 million kronor (US$2,635 million) or 28 percent of the budget. By international standards, the part of the budget allocated for health and social welfare in Sweden is extremely high. The largest expenditures were

for social insurance, including health insurance, (61 percent), support for families with children (18), and health and medical care (12). Total public net expenses for health and sick care reached close to $1,700 million for the budget year 1968–1969, about 6 percent of the GNP. The local authorities provided an estimated 65 percent of the total expenditures.

In 1970, there were 1.4 doctors per 1,000 population. Doctors are expected to increase to 2.4 per 1,000 inhabitants by 1980. Hospital beds for 1970 were estimated at 17.6 per 1,000 inhabitants. Sweden has the world's lowest infant and maternal death rates: only 11.7 infant deaths per 1,000 live births in 1969 and 11.3 deaths of childbearing mothers per 100,000 live births in 1968.

Concern for Population

The first debates on problems related to population took place in the 1880s when the neo-Malthusian economist Knut Wicksell advocated birth control to raise the economic and cultural standards of the masses. His ideas were supported by a group of young socialists in their fight for betterment of the working class. Opposition to birth control came predominantly from the conservatives, who rejected any artificial contraception. Their opposition was based on a mixture of religious and moral grounds and a concern for the falling birth rate (it began to decline around 1850) and the large emigration. Birth control had already been practiced for some time, particularly among the upper classes. The most common contraceptive method was *coitus interruptus*, but homemade mechanical devices were also used and induced abortion was probably practiced. The conservative opposition culminated in 1910 with the adoption of a law that prohibited any form of propaganda for birth control. (Sales of contraceptives were not forbidden unless they were accompanied by advertising.) Nevertheless, family planning continued to spread, particularly among industrial and urban populations. Opposition to contraceptives began to subside by the 1920s. Much of the pioneering work for spreading information about family planning was done in the 1920s and 1930s by Elise Ottesen-Jensen, one of the cofounders of the Swedish Association for Sexual Education and a former president of the International Planned Parenthood Federation.

Partly because of the declining birth rate but mainly because of emigration, public concern had resulted in an extensive series of public investigations (*Emigrationsutredningen*) before the first World War. Some public measures were taken, specifically creation of a public homeowners' loan institution aimed at helping the rural population.

With development and expansion of industrial and urban centers, decrease in the birth rate accelerated until births reached a minimum in 1933–1934. In 1935 the government set up a Royal Population Commission to study the situation. Although the commission's final report said that the basic purpose was to achieve "such a fertility as would keep the population in the long run at least constant, with as low mortality as possible" (*1*), the major concern was with strengthening the economic and social well-being of the family. The commission worked from 1935 to 1939 with Gunnar Myrdal as its most active member. A second Population Commission established in 1941 expanded on the first commission's proposals and presented additional programs (*7*). Tage Erlander, who later became prime minister of Sweden, was chairman of the second commission. Except for the period of the emigration investigations, this was the only time when quantitative population aspects were acknowledged as a motivation for conscious policy, although, even then, the policy was couched within a framework of a broader social program.

Publication of Gunnar and Alva Myrdal's book, *Crisis in the Population Question* (*8*) in 1934 had a major impact on public discussion and subsequent "population" programs. What the Myrdals emphasized, even more than possible extinction of the Swedish people, given the vital rates of the 1930s, was the "qualitative" aspects of the population. In particular the Myrdals were concerned with pronounced deficiencies in housing and nutritional standards, in low per capita incomes and in similar disadvantages of families with many children. The authors held that although children had been an economic asset and a pension insurance in the old agrarian society, they were a burden in a modern industrial society. Because of this fundamental change, the Myrdals felt that it was necessary, both from quantitative and qualitative population aspects, to decrease the costs of child bearing and child rearing. At the same time, to prevent unwanted pregnancies, the Myrdals demanded more systematic information about birth control techniques, particularly as part of the school curriculum. They felt that family planning information was urgently needed, especially among young people and poor families, who were generally the most ignorant about child spacing and child limitation.

The Myrdals' list of recommendations contained many other proposals such as subsidized marriage loans for couples wishing to set up homes, maternity services at extremely low costs, maternity benefits, more preventive care of expectant mothers and children, day nurseries and preschools, free school lunches, annual housing subsidies to families with children, and tax reforms favoring families with children. Almost all of the proposals were accepted, although not all immediately nor always in the form recommended by the Myrdals. In addition to the programs for strengthening the family, Parliament legislated the following measures in the late 1930s and middle 1940s: repeal of the prohibition against dissemination of contraceptive information, liberalizations of the abortion law, and introduction of sex education into schools.

Still, the views of the Myrdals were highly controversial and were often under severe attack particularly from the more conservative side, which disliked the proposed social welfare program. Some conservatives also held that because fertility and economic status are inversely correlated, raising the economic standard of the family would not increase fertility. In addition, representatives from labor championed neo-Malthusian views because they were anxious about mass unemployment.

Eventually, a certain consensus about "effectiveness" of the policy emerged but not until the baby boom

around 1944–1945 when quantitative population aspects ceased to be of major concern. The social welfare emphasis of the programs also gradually gained considerable support partly because many of the critics had changed their views but also because elections indicated that the welfare state had gained widespread popular acceptance.

It is difficult to determine to what degree specific measures contributed to the rise in births during the 1940s. Just as mass unemployment had been a leading cause for extremely low birth rates during the 1930s, it seems probable that the full employment experienced during and after World War II had the opposite effect by raising marriage rates and lowering age at first marriage. Despite the decline during 1946–1960 and rates below replacement during 1968–1970, there has been no significant reappearance of concern about population growth. Probably one can give three reasons. One is that the population continues to grow (largely because of extensive immigration and fertility of immigrant couples). A second is that few people are aware that the fertility of native-born Swedes is in fact below replacement. And a third is that awareness of worldwide population trends has led to a greater acceptance within Sweden of neo-Malthusian views.

Status of Women

Many reforms for the advancement of women occurred later in Sweden than in several other European countries. Not until 1919 were women given the right to vote. In 1920 they were given equal economic rights and responsibilities with their husbands. In 1938 women employed in the government obtained equal pay, and, finally, in 1965 this principle was established for the general labor market. About 55 percent of all women between 15 and 64 are today employed, although many work only a few hours a week. As is evident from Table 7, married women are expected to answer for the bulk of the increase in the labor force during the next couple of decades. Although the differences in salaries and wages between men and women are decreasing, the gap persists not only because women are more concentrated in low paid jobs but also because their chances of promotion are much smaller.

Married couples with children face the additional difficulty of finding day-care facilities or supervision for the children. Studies have shown that working wives have fewer children than housewives and that labor-force participation as well as average working hours decline with the number of children. What effect, if any, present plans for expanding nurseries will have on the differential birth rates is open for speculation. A recent reform has made the tax structure more favorable, or at least less unfavorable, to married working women.

Efforts to enhance the woman's status do not mean neglect of the man's status; both need to be liberated from their traditional roles. The decision to shorten working hours so that both men and women will be able to do the household chores is in line with this idea. Even if full equality has not been achieved, Sweden is among the countries furthest along the road in this respect, and current discussion within Sweden reveals continuing concern about the status of women.

Indirect Population Policies

The government's current social policies are not based on demographic but rather on egalitarian considerations. Planned parenthood is considered a human right in that the couple should be given the necessary information and the technical means to decide whether and when to have a child. At the same time the government promotes programs to ensure that a couple that wants a child will have the means both to give birth and to rear it. Hence both fertility control and subfertility treatment are incorporated in government programs. Some programs, such as child allowance and maternity benefits, may have a pronatalist effect (but not justification); others, such as the liberalized abortion law (and the newly proposed changes in the law) and advice on birth control, have a more antinatalist character, but, again, they are not promoted on demographic grounds. In short what the government strives for is to strengthen those families that desire more children and to prevent unwanted pregnancies.

Strengthening the Family

Most questions regarding the social and economic welfare and the health of the family come under the Ministry of Health and Social Affairs. The chief administrative authority for the ministry is the National Board of Health and Welfare. For family housing allowances, the National Housing Board is the administrator. Other questions, such as programs for adjustment of immigrants belong to the Ministry of Home Affairs; sexual education is the responsibility of the Ministry of Education; and all laws pertaining, for example, to child and maternal welfare and marriage belong to the Ministry of Justice.

Child allowances. An allowance of 1200 kronor per year ($240) tax free is given to the mother or the guardian quarterly for each child under 16. The allowance is not progressive as in France, where the program has had a definite pronatalist intent. The Child Welfare Committees handle the child allowances.

Children's pensions. In the event of death of one or both parents, a children's pension is paid out to children (including those out of wedlock). Under certain conditions, funds are provided for children up to age 19.

Child health. Children of preschool and school age are given free medical checkups. Such preventive medicines as vitamins and certain vaccinations are also free. Preschool health control is in the hands of the county councils, and school health care comes under the responsibility of the municipalities.

Nurseries and leisure centers. Four different types of "children centers" are available, all charging fees based on parents' incomes:

Day nurseries are intended for preschool children of families with working mothers.

Kindergartens are less restrictive in that all children between ages 4 and 7 are eligible. Today there are approximately 115,000 six-year-olds and only 110,000 places in kindergartens. Therefore very few four- or five-year-olds are admitted.

Leisure centers admit those school children who would have no supervision or place to stay either before or after school hours. The centers are designed for families in which both parents work.

Family day nurseries complement the public nurseries and consist of private families who receive children of either preschool or school age. The family day nurseries have now become unionized.

The centers are established and administered by the municipalities with the support of the state. Although the number of places in these centers, excluding kindergartens, more than tripled (from 16,700 in 1960 to 57,800 in 1969) during the 1960s, facilities and staff are far from adequate owing to the increasing number of married women in the labor force. Current plans are to increase the number of places in the nurseries and centers.

Children of unmarried and divorced parents. A child welfare guardian is appointed for every out-of-wedlock child under 18, primarily to assist the mother in settling questions regarding paternity and alimony. Advanced alimony (through public funds) and fairly large tax exemptions, in addition to the regular child allowance, are available to unmarried parents. Similar arrangements are sometimes made for children of divorced parents.

Low fertility. The National Health Insurance pays for treatment of infertility and low-fertility problems because these are considered curative (as opposed to preventive) medical cases.

Maternity benefits. A maternity allowance of 1080 kronor (about $216) is paid by the national insurance to every woman who gives birth. In multiple births, an additional 540 kronor ($108) is paid for each additional child. Free advice and care are given at the maternity centers before and after delivery. It has been estimated that about 90 percent of the pregnant women make use of these centers and that almost all children receive checkups at the centers during their first year.

Protective legislation ensures that childbearing will not seriously interfere with a woman's desire to work. For example, a woman cannot be dismissed for reasons of pregnancy or childbirth. A woman also has the right to six months' leave of absence at the time of delivery. Furthermore the national insurance pays out a supplementary sickness benefit, based on the woman's income, for a maximum of six months. An expectant or recent mother is also given low-cost dental care.

Homemaking and housing. Loans up to 6,000 kronor ($1,200) are available to married couples and unmarried parents wishing to set up a home. A state housing allowance given to families depends on their incomes, the numbers of children, and the sizes of their dwellings. For example, a family with three children and a dwelling of at least three rooms and kitchen can obtain up to 2640 kronor ($528) per year. About 40 percent of all families with children and about 90 percent of single parents receive this allowance. The state grant can also be supplemented by local grants if need is shown. Mothers, who have difficulties in finding permanent housing, particularly those who are unwed, can live temporarily in a home for mothers. Students have free school meals, which the Population Commissions strongly advocated to lessen the economic burden of large families and ensure that each school child gets at least one nutritious meal a day.

The housing allowance probably constitutes one of the most important measures for enabling families to acquire additional children. Although Sweden is building dwelling units at a greater rate than any other nation (11 per 1,000 inhabitants in 1969), the housing shortage is severe. Migration to towns, need for reconstruction in older parts of the cities, and, at least currently, high construction costs are the chief causes for the shortage. Crowded living conditions are often given as the reason for small family size and, thus, as a damper on fertility. A concerted effort to construct more and larger dwelling units started already in the 1930s to relieve overcrowding and provide dwellings for those who wished larger families.

In addition to the above programs, numerous other benefits contribute to the economic and social welfare of a family. The most important of these are the compulsory health insurance program and programs oriented toward certain sections of the population, such as handicapped, aged and migrants.

Operation and budget. Many programs are both financed and administered on the local level—county or community. Some programs, such as the child allowances, are paid by the state directly. In some programs, such as housing allowances, payments are made on both state and local levels. In administration of public health, Parliament, usually after a committee investigation, requests the Ministry of Health and Social Affairs to set forth certain standards for the country as a whole. The various boards, such as the National Board of Health and Welfare and the National Insurance Board, are legally autonomous bodies under the ministry. Their main task is to administer such questions as the national direction and general promotion of health standards. The county or the municipality is then given the responsibility to meet these standards by constructing hospitals, maternity clinics, etc.

In 1968 social welfare expenditures constituted almost 23,500 million kronor ($4,700 million) or 19.1 percent of the net national income. Support of the old and disabled and the public health service are the largest expenditures. Next comes assistance to families and children, which, in 1968, totaled slightly more than $700 million. The general child allowance represented almost half of the total expense in this category (about $315 million). The remaining expenditures were divided among mothers' and infants' welfare ($6.0 million), allowances paid in advance ($18 million), public child welfare ($130 million), grand total ($70 million), home help service ($48 million), rent allowances to large families ($60 million), and other services ($54 million). In brief, assistance to families and children represented approximately 15 percent of all social welfare expenditures in 1968.

Preventing Unwanted Children

Family planning is practiced by a large majority of the Swedish people, and it obviously need not be promoted for reasons of overpopulation. In organizational terms, family planning is not highly developed, except for the private efforts of one organization, the Swedish Association for Sex Education (RFSU). The government effort to promote family planning is probably adequate for people's needs only in its information programs. These comprise sex education in the schools and a growing literature on sexual questions, including informa-

tion on contraceptives. In principle maternal health care centers are responsible for contraceptive service. Some hospital clinics and most private doctors also take contraceptive cases. At times personal advice on family planning can also be obtained at a limited number of counseling bureaus. The Swedish Abortion Commission, which recently released its report (2), has recommended that "the supply of medical expertise available to both men and women for the safe planning of parenthood should be more in proportion to the demand than it has been up to now . . . [and] all advisory services run by the community should be free of charge for the citizen and the question of possible financial assistance from the State for the cost of contraceptives should be studied."

Maternal and Child Health Services

In 1968 a fairly extensive network of maternal and child welfare centers included 1,445 units throughout the country. More than 1,000 of these, according to instructions, were supposed to give family planning advice, but only 91 were connected with a hospital department of obstetrics and gynecology. Mainly such specialized maternal health centers give adequate advice and prescribe birth control devices. Because of staff shortages, even such centers are not always able to deal sufficiently with family planning cases. Often women are assisted only after childbirth or an abortion. As a rule, checkups and renewals are not handled at these centers. In smaller towns and rural districts where maternal care is the responsibility of rural or city medical officers, family planning services are least adequate (and probably most needed).

Clinics and Doctors

Since hospital services, including those given at outpatient clinics, are primarily concerned with curative care, the work load of the staff seldom permits cases that are exclusively preventive—for example, family planning. To meet the demand for contraceptive advice, at least one hospital has tried to open evening clinics. As a rule private doctors, depending on their work loads, accept family planning cases, but they charge more than the hospital. Nor does the number of doctors suffice. Doctors with specialization in gynecology and obstetrics have been estimated at 450. It is hoped that increased intake into the medical schools and focus on outpatient care and preventive medicine will improve the situation considerably within the next five years.

Counseling Bureaus

The 24 family counseling bureaus that receive state grants concern themselves only peripherally with fertility control. Contraceptive information is usually given only in connection with marital or family problems. One bureau, which is supported by the county, has recently been set up in southern Sweden and deals exclusively with sexual questions, including contraceptive information. The bureau provides examinations and prescriptions for contraceptives. Those bureaus that are in charge of abortion cases do not usually accept separate requests for birth control information. A committee at the National Board of Health is now studying the family planning counseling situation. A report expected soon might considerably improve the services.

Dissemination of Contraceptives

Condoms, which can be obtained from supermarkets, pharmacies, and coin-operated dispensers, are the most readily available contraceptives. Chemical devices are also freely sold at pharmacies. Traditional IUDs and pills must be prescribed by a doctor. Two types of oral contraceptives are on the market. One is a combination dose of estrogen and progesterone that is taken continually for 20, 21, or 22 days. The other is a sequential dose that consists of estrogen taken for 15 days and a combination dose of estrogen and progesterone taken for five days.

Contraceptives are in principle available for anyone regardless of marital status and age, although sexual relations are forbidden by law to persons under 15 (to prevent sexual exploitation). Since the pill and the IUD have to be prescribed by a physician, it is the physician's judgment that will determine whether a girl under 15 will receive such contraceptives.

Budget

Because expenditures for family planning are not separated from the general preventive health program, it is hard to estimate the amount spent by either the state or local authorities. Governmental expenses also include funds for advertisement about planned parenthood. In 1967 running cost for maternity and child welfare was about $8 million. Contraceptives are not covered by the national health insurance because they are classed as preventive medicine.

Contraceptive Practice

A 1967 survey (9) asked, "At the time of your last sexual intercourse, did you do anything to prevent pregnancy?" The most commonly used of the more reliable contraceptives was the condom (38 percent). Next came the pill (14.2), followed by the diaphragm (8), the "traditional" intrauterine device (1), and chemical methods (0.8). Less reliable methods were used by 19.3 percent: douche (1.7), rhythm (4.1) and *coitus interruptus* (17.2). About 6 percent used more than one method. The large fraction using *coitus interruptus* is perhaps surprising in light of the availability of more effective methods. Apparently combination of rhythm with *coitus interruptus* or a more reliable method during the fertile period is fairly common.

Even more surprising, given the general acceptance of birth control, is the large fraction that did not use contraception (26.8 percent) (excluding those who desired pregnancy, were sterile, etc.); 2.5 percent felt that contraceptives should not be used, 9.7 percent did not like using contraceptives, probably for reasons of comfort, and 16.3 percent simply did not bother.

Although 26.8 percent of the sample had not practiced birth control, only 6.3 percent felt in theory either that it was not necessary to use contraceptives (2.3 percent) or that it was wrong to use artificial means (4.0 percent). The large majority believed that contraceptives should always be used. It was also shown that contraceptive use increased among those who had a higher education and more advanced social status, who lived in urban areas, and who did not attend

church. Most church leaders, however, accept the use of artificial contraception within marriage.

Despite the large number that did not use contraception in that survey, family planning in Sweden has been highly effective. For example, a study in conjunction with the work of the recent Abortion Commission has estimated that "in the absence of such [birth] control, between 400,000 and 500,000 children would have been born [in 1969] whereas the actual number of births was 108,000" (*2*).

Use of oral contraception has grown substantially during the last years. An expected 400,000–450,000 women or about 25–28 percent of the 15–44 age group are now "on the pill." Approximately 30,000 are now using the traditional IUD. The new intrauterine devices containing copper, which are now being tested in women in Sweden, might also effect changes in contraceptive practices.

Sterilization is not usually recommended as a birth control method. Only women can receive permission for sterilization on "medicosocial" grounds, that is, "weakness." A man can be sterilized only for eugenic or medical reasons. In 1968, 1,578 people were sterilized, of whom only five were male. The Swedish Parliament has recently asked for an investigation regarding liberalization of the present law to make sterilization also available for family planning purposes alone.

A survey has shown that Swedish women, in fact, have fewer children than they desire. 2.42 was the average ideal number: 1 percent wanted no children, 2 percent wanted one child, 56 percent two children, 33 percent three children, and 6 percent four or more. The higher-status groups wanted a slightly larger number of children than the lower-status groups (*10*).

All contraceptives must be approved by the National Board of Health before they are released on the market. Condoms, diaphragms, chemical methods, IUDs (only since 1966), and oral contraceptives are all recognized as legitimate contraceptives by the government. (The IUD had been forbidden up to 1966 by the abortion law.) Sales, importation, and advertisement are controlled by specific governmental regulations.

Abortion

Until 1921 every abortion was considered criminal and could lead to severe penalties. In 1921 an amendment of the penal code permitted abortions on "medical grounds" if the woman's life or health were in serious danger. In 1938, a special abortion law was enacted, chiefly to combat illegal abortions. With subsequent amendments in 1946 and 1963 the interruption of a pregnancy is permitted on the following grounds: medical, medicosocial (if there is reason to assume that childbirth and child care would seriously reduce a woman's physical or psychic well-being because of her living condition and other circumstances), humanitarian (rape, incest, etc.), eugenic, and fetal injury. In general, abortions for reasons other than disease or a physical defect may not be performed after the twentieth week of pregnancy.

In 1965 a governmental commission was appointed by the Ministry of Justice to study the abortion law. The report of the commission, *The Right to Abortion*, was released in September 1971 (*2*). Although the commission did not promote the notion of abortion "on demand," it did recommend that every woman resident of Sweden should be entitled to an abortion "(1) if it can be assumed that her health will be threatened or her strength seriously reduced by a continuation of pregnancy, or (2) if it can be assumed that the child to be born would suffer from a serious illness or defect, or (3) if for another reason it is an unreasonable hardship for her to continue her pregnancy." "Unreasonable hardship" has been interpreted as including a large number of children, advanced age, immaturity, economic difficulties, various conflicting situations, and other personal reasons (*11*).

The procedure for obtaining a legal abortion under the present abortion law is relatively complex. Authorization is granted either by a specially appointed committee of the National Board of Health after an investigation or by two doctors (unless it is a eugenic or fetal injury case). In an emergency, the physician performing the abortion makes the authorization. Until recently most cases were decided by a committee of the National Board of Health. According to this procedure the woman submits an application to the board with one certificate from a physician and another from a social worker. The committee then decides whether or not there are grounds for abortion and whether the investigation should be supplemented by further examinations, which, as a result, would further extend the waiting period. Today more than half of the legal abortions are authorized by the two-doctor procedure. One of the doctors has to be the physician performing the abortion. In every case a report has to be sent to the board.

The procedure set forth by the Abortion Commission facilitates access to abortion. The commission has recommended that boards to be established at all obstetrical-gynecological departments of hospitals make the decisions to grant abortions. Each board would consist of an obstetrician-gynecologist, who acts as the chairman, a psychiatrist, and a lay member. Most applications for abortions by women who are less than three months pregnant would be approved by the obstetrician-gynecologist on his or her own responsibility. Doubtful cases and all cases involving second trimester pregnancies would be decided by a majority of the board. Any applications that were rejected would be automatically referred to the National Board of Health for final decision. The commission also recommended that all abortions be performed in "public hospitals and other approved facilities at public expense, as early as possible and by the least traumatic procedure" (*2*).

In the past, the number of legal abortions has fluctuated because of changes in interpretations of the law. For example, in 1950 there were approximately 6,000 abortions whereas in 1960 there were only 2,800. The number per year has grown steadily from 6,800 in 1965 to 11,000 in 1968, 14,000 in 1969, and 16,000 in 1970. The fraction of applications to the National Board of Health that are granted has also sharply risen—62 percent in 1960, 93 percent in 1969, and an estimated 97 percent during 1970. The abortion rate for 1970 was 145 per 1,000 live births.

The most common "indication" for

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abortions is the "medicosocial." In 1966 such abortions represented almost 80 percent and in 1968, 88 percent of the total number. The next largest category was medical (about 20 percent in 1966 and close to 10 percent in 1968).

The mortality rate in connection with abortions in Sweden is relatively high, although it has declined significantly since the late 1940s. During 1949–1953, it was 96 per 100,000 abortions, for 1959–1963, 58 and for 1964–1968, 18. The high death rate is attributable to the frequency of abortions late in pregnancy (57 percent of the abortions in 1968 were performed after the twelfth week) and poor health of many of the abortion patients. Methods used for interruption of pregnancy during the first trimester are dilation and curettage and vacuum aspiration. Abortions after the fifteenth or sixteenth week are usually induced by intrauterine injection of a saline solution. Most clinics use 20-percent sodium chloride.

Estimating the number of illegal abortions is obviously difficult. Before the 1946 amendment, estimates ranged from 10,000 to 50,000 yearly. During more recent years, the most common figures have been between 3,000 and 6,000.

Since 1945 the government has extended grants to counties and cities for abortion counseling. In 1970 there were 25 state-supported abortion counseling bureaus. The bureaus are usually staffed by gynecologists, psychiatrists, and social workers who give advice and support and make necessary arrangements if there are sufficient grounds for a legal abortion. All the services are free. In 1969, the bureaus received 10,430 abortion applicants.

In fiscal 1969, state expenditures for the bureaus were a little over $130,000; for fiscal 1970 the appropriation was $160,000; and for 1971, the Ministry of Health and Social Affairs requested slightly over $130,000.

Criticism of the present abortion law has been leveled particularly by those groups that believe that a woman should have a *right* to decide for herself whether she shall have an abortion. No recent official stand has been taken by the church. At a bishops' meeting in 1951 (which was supported by a subsequent meeting in 1964) abortions for other than medical grounds were condemned. This view is not shared by all pastors nor by a majority of the population. In 1967 a survey showed that 50 percent of the general public favored free abortions (that is, lifting present restrictions), 13 percent were uncertain, and 36 percent were against free abortions.

Another survey of young women found that 54 percent of those who had never been pregnant favored free abortions; 58 percent of those who had had a desired pregnancy and 61 percent of those who had had an undesired pregnancy felt that the law should be liberalized (*9*).

Private Efforts

The Swedish Association for Sex Education (RFSU) is the Swedish affiliate of the International Planned Parenthood Federation. It was established in 1933 as an independent organization that offers memberships to individuals and organization, and today it has 13 local branches. It was the first organization to fight for planned parenthood and greater knowledge about sexual questions. Sales, government grants, and membership fees support its operations.

Although early activities were mainly informational, during recent years RFSU has focused on four main lines of activity: information and propaganda, counsel, clinical services, and commercial sales.

To promote family planning it has distributed numerous books and pamphlets. These extensive informational activities indicate a need for sexual knowledge that the government has not met fully. It also has an active and interesting advertising campaign for increased birth control, particularly use of the condom to prevent unwanted pregnancies and combat a growing incidence of venereal disease.

RFSU has organized lectures, courses (mainly for medical personnel), and conferences (for example, an International Symposium on Sexology in 1969). It has participated in international family planning work and public debates about legislation.

To alleviate general staff shortages, RFSU has recommended to the National Board of Health the use of midwives—primarily for contraceptive advice but also for prescription of pills and insertion of IUDs.

To provide good, reasonably priced contraceptives it owns a subsidiary, Sales Organization AB, which retails through its shops and automats.

It operates two clinics, one in Göteborg and one in Stockholm. The staff in Stockholm consists of full-time nurses and midwives, a psychiatrist, and part-time gynecologists. As a rule the gynecologists have appointments at the University of Stockholm medical school.

Since RFSU sees its main function as starting new programs for integration into the public health system, its clinics are primarily oriented toward studying action and effects of various contraceptives, testing new methods, experimenting with new counseling approaches, and providing training for medical students and paramedical personnel. Testing and research have focused mainly on low-dose orals, the copper-7, and side effects of traditional pills.

Time permitting, the clinics also accept the general public. In 1969 they received a total of 17,903 patients, most of whom requested pills.

Study of Population

Sweden has considerable educational and scientific efforts in population. The universities are conducting significant research on reproductive biology. The central government is concerned with registration, censuses, and projections. One university has a demographic division. And sex education is conducted in all the public schools.

Reproductive Biology

Sophisticated research on the human reproductive cycle, significant contributions to contraceptive practice, and extensive training of researchers in various aspects of human reproduction are being carried out at the Karolinska Institute and the universities in Uppsala and Lund.

Karolinska Institute. Major research and training on human reproduction and fertility control are conducted by the Karolinska Institute and Karolinska Hospital. The Reproductive Endocrinology Research Unit (RERU) of the Karolinska Institute was designated in December 1970 as the first World Health Organization

Research and Training Centre on Human Reproduction under the direction of Professor Egon Diczfalusy. Major lines of research of RERU are studies of the human endometrium, including investigations of the action and effects of intrauterine devices containing copper, research on hormone production and reproductive cycles by means of displacement analyses of progesterone in the blood, and studies on the human fetoplacental unit with emphasis on effects of gonadotrophin hormones. Fifty research fellows from all parts of the world have participated so far in the 15-month postdoctoral program of the unit.

The Karolinska Institute in cooperation with WHO organizes symposia on various aspects of human reproduction. Topics of the symposia are published and disseminated to many countries. Since 1969, four symposia have been held, and there are plans for a fifth in early 1972.

RERU has collaborated closely with several departments of the Karolinska Institute, notably those of obstetrics and gynecology and of chemistry. The former department houses a hormone laboratory (from which RERU originally developed), a male fertility laboratory, a laboratory for uterine physiology, and a special section for psychosomatic gynecology. The Department of Chemistry has extensive steroid analytic facilities. Collaborative projects have also been conducted with various departments in west and east Europe and the United States.

A proposal has been set forth for a major expansion of the WHO Research and Training Centre at Karolinska Institute. The proposed program would include an international Documentation Centre responsible for recording the literature and clinical data on all aspects of human reproduction; expansion of the Karolinska symposia, a hormone assay laboratory, a steroid research laboratory, a special prostaglandin research laboratory with the objective of extensive collaboration with research groups in developing countries, a clinical research unit within the department of obstetrics and gynecology, a contraceptive testing unit to be located at the outpatient clinic of the Swedish Association for Sex Education; a "reëntry" program for the research fellows after their return to their home countries, an enlarged library on human reproduction. The program would integrate both research and training. It is expected that some 120 fellows could be trained during the next five years.

A $500,000 grant from the Ford Foundation contributed to the establishment of RERU in 1963. Support for the fellowship program has come from the Ford Foundation, U.S. National Institutes of Health and the Swedish International Development Agency (SIDA) as well as from other sources. RERU's present budget of approximately $300,000 is mainly financed by the Ford Foundation, SIDA, and the Swedish Medical Research Council.

Uppsala University. The Department of Obstetrics and Gynecology at the University of Uppsala has made significant contributions to both basic and applied research and to training of reproduction biologists.

The clinical investigations of Dr. Carl Gemzell and his colleagues led to the first success in treatment of human sterility with pituitary gonadotrophins. Patients from all over the world are still referred to Uppsala for treatment of infertility. The group pioneered in the development of the immunological test for pregnancy based on human chorionic gonadotrophin (HCG), a radioimmuno assay for human luteinizing hormone, based on cross-reactivity with HCG. One of the members of the group, Dr. Elof Johansson, introduced the competitive protein binding test for progesterone, now a critical tool in clinical and experimental work in reproduction.

The department members are much involved with international cooperative efforts in human reproduction. Dr. Gemzell is chairman of the program committee for the forthcoming Fourth International Congress of Endocrinology. Dr. Johansson is a member of the Population Council's International Committee for Contraceptive Research. Dr. Ulf Larssen-Cohn is a member of the WHO contraceptive visiting unit assigned to Bangkok, Thailand, starting in 1972. The department also trains fellows for both clinical and laboratory research.

Current research, under the direction of Dr. Gemzell, focuses around four main topics:

- development of new techniques for measurement of hormones involved in reproduction. A method has already been developed for detecting in a woman a fertilized ovum ten days after coitus; hence abortifacient treatment can be begun shortly after implantation, even before a menstrual period is missed.
- studies of methods for inhibiting the corpus luteum, a secretory organ that forms on the ovary after ovulation. Specifically, the research group is exploring the use of progestins as birth control agents.
- research involving purification and use of the two gonadotrophic hormones: follicle stimulating hormone and luteinizing hormone. A technique isolating these hormones from human pituitaries has already been perfected.
- study of side effects and action of the contraceptive pill containing both progesterone and estrogen. In addition to continued work on the corpus luteum, present plans include research on the "minipill" by studying sperm penetration of the human cervical mucus and investigations of the action of the copper-T IUD.

The primate colony at Uppsala is unique in Scandinavia. In fact, it is one of the few colonies in the world devoted to studies in fertility control.

Support for the Uppsala group comes mainly from the Ford Foundation, the Population Council, and the Swedish Medical Research Council.

Lund University. A group from the Department of Obstetrics and Gynecology at Lund, under the direction of Professor Lars Bengtsson, has concentrated particularly on control of myometrial function but has also done studies on other problems related to reproductive physiology. At present the following projects are under study: effects of estrogen and gestagen, oxytocin and vasopressin on myometrial activity in nonpregnant women, propagation of contraction waves in the myometrium of nonpregnant women, progesterone concentrations in endo- and myometrium, mechanism of effect of sodium-chloride-induced therapeutic abortion, myometrial activity in women with TCu 200, effect of TCu 200 on

menstrual blood loss, effect of copper ions on human endometrium in tissue culture, effect of copper on myometrial activity in rabbits, myometrial activity in unilaterally pregnant rabbits, binding and release of intracellular calcium in human myometrium, characteristics of spermatozoa in the human female genital tract.

Another group at the University of Lund, under the direction of Professors Bengt Falck of the Department of Histology and Evald Rosengren of the Department of Pharmacology, has conducted fundamental research on the smooth muscle activity of the uterine and tubal walls in reproduction. The group has developed sensitive methods for identifying adrenergic nerves, which control the female reproductive organs, and for studying substances that deplete or increase the transmitter substance and thereby alter smooth muscle contractility. Specific studies include the factors that modify tubal and uterine mobility, possible role of ovarian adrenergic nerves in follicle development, rupture of the ovarian surface for release of ova, and determination of how hormones associated with reproduction interact with nerve-controlling substances.

Since prevention of ovulation by adrenergic nerve blocking compounds would be less drastic than action at the level of the central nervous system, this basic research may have important clinical applications.

Moreover, basic studies of human reproduction are being carried out by the Department of Physiology at the University of Göteborg, and important contraceptive research is also conducted by various hospitals in Stockholm and Göteborg.

Teaching about oral contraception, the IUD, and other contraceptives is provided at all the medical schools during courses in obstetrics and gynecology. Practical training in contraceptive counseling and prescription, fitting of diaphragms, insertion of intrauterine devices, etc., are probably more deficient and depend on the individual instructor.

Demographic Statistics

Traditionally, the Bureau of the Census and the Bureau for Population Statistics, parts of the National Central Bureau of Statistics, were responsible, respectively, for the censuses and various aspects of demographic data production. As of July 1971 the Central Bureau was reorganized with the intention of establishing a separate section for population, which would be responsible for both censuses and vital statistical data, including annual data about the size of the population. Analysis of demographic data for projections will take place at other divisions of the National Central Bureau of Statistics. Censuses, based on a registration system of the population, are taken every five years. The Authority for Tax Collection is responsible for the registration system.

Demographic Research and Training

Only the University of Göteborg has a demographic division, the Demographic Institute. Research at the institute, which is headed by Professor Hannes Hyrenius, has focused on demometrics and demographic methods. Publications have included several reports on demographic models, two demographic dictionaries, and a study of methods of population projection. Present research projects include use of simulation and macromodels, development of methods and models for studying illness, and analysis of the labor force in a dynamic population.

At the remaining universities, the departments of human geography cover demography in their courses.

Public School Sex Education

Sweden's sex education program in the schools is unique in the world. The basic motivation is that children and teenagers need to be informed. Since parents do not always meet this need, the school has assumed responsibility. Sex education was introduced into the curriculum in 1944 and made compulsory in 1956. Instruction starts in the first grade and is given throughout the compulsory nine-year school. Instruction is also given to those who proceed beyond the compulsory school.

Subject matters range from explanation of the reproductive process through contraceptives and venereal diseases to the welfare measures that are relevant for starting a family. In the lower grades discussions on sexual questions are included in the general curriculum; in the higher grades the instruction is given in the biology courses. Class discussions have also included social, psychological, and moral aspects of sexual relations. The last aspect in particular has been subject to much controversy. Some groups favor a strict moralistic approach. Others (students and large segments of the general public) feel that the school should provide more factual information, especially regarding contraceptives, and leave the moral decision for the student.

A royal commission was appointed in 1964 to study the content of the curriculum. Proposals for a revised teacher's handbook suggest that the school should recognize that the society is pluralistic and consequently that no one norm holds for all individuals. A final report is expected shortly.

Surveys have shown that over 90 percent feel that teenagers should learn about contraceptives. Yet despite the introduction of sex education, a majority still learn about contraceptives from their peers and not from school. The [illegible]tion that has learned from school, however, has increased since sex education was made compulsory (*9*).

Foreign Assistance—SIDA

Sweden was the first government to provide official family planning assistance to the developing world. Since 1958, about US$25 million has been extended to the population field. About two-thirds of the funds has been disbursed on a bilateral basis, about 95 percent to Ceylon, India, Malaysia, Pakistan, South Korea, and Tunisia. The remaining 5 percent has been divided among some 15 countries. The multilateral portion of Sweden's family planning aid program has been disbursed for support of the United Nations Fund for Population Activities; other UN bodies, the IPPF, and the Population Unit of the Development Center within OECD. The Swedish International Development Agency is the executive agency of Sweden's foreign assistance program. The high priority that Sweden assigns to family planning is reflected by the substantial increases that have taken place in the family planning budget. In fiscal year 1962–

1963, about $250,000 was used for family planning. By 1969–1970 disbursements had reached some $6 million and the budget for 1971–1972 is about $11 million. The share of aid funds spent on family planning is 5 percent of the total Swedish aid program.

SIDA's work is carried on through bilateral arrangements with foreign governments, involvements with the United Nations and its specialized agencies, and a few other types of contributions.

Bilateral Agreements

SIDA's major contributions to the population field have included the following bilateral projects:

Ceylon. In 1953 Sweden and Ceylon agreed to establish a pilot project to survey attitudes toward family planning. Its purposes were to assess the feasibility of introducing a family planning program, to teach family planning methods, to equip clinics, to supply vehicles and contraceptives, and to train local health personnel. In 1965 Ceylon adopted an official population policy, largely because of the positive results of the project. In 1968 and 1970 new agreements were signed between SIDA and the Ceylonese government providing for both technical and commodity assistance.

Pakistan. The Sweden Pakistan Family Welfare Project was established in 1961 with the purpose of establishing model clinics, training family planning personnel, promoting motivational and information programs (including research activities), and supplying contraceptives and other equipment. Two mass-communication centers were created to assist the family planning program by producing materials for information, education, and promotion. The Sweden Pakistan Family Welfare Project was transferred to Pakistani authorities on 1 July 1970. From 1970 to the fall of 1971, when Sweden's population assistance to Pakistan ended, Sweden provided the national program with advisors, equipment, and financial support particularly in mass communication.

Tunisia. An experimental project establishing a maternal and child health center at Kelibia was begun in 1965. Important components of the program are nutritional education and motivational activities to promote family planning. Assistance has also been extended to the national family planning program consisting of supplies, advisors, and the establishment of a cytology laboratory.

SIDA's support to other countries in Asia, Africa, and Latin America, particularly India, Malaysia, and South Korea, is mainly limited to equipment and commodity assistance.

UN and Specialized Agencies

Sweden has played a major role within the United Nations system in promoting awareness of the population question. Special contributions were made for establishment of the UN Fund for Population Activities. Funds have also been allocated to the UN International Children's Emergency Fund (UNICEF), the UN Educational, Scientific, and Cultural Organization (UNESCO), and the World Health Organization. SIDA is closely involved with the new WHO program aiming at a concerted effort in human reproduction. Main components of the program are establishment of a few research and training centers, 20 to 30 collaborating clinical centers, task forces for collaborative research and development, a documentation center, and expansion of present WHO activities in this subject. SIDA's support of the UN system is extended in the form of general contributions to UNFPA. In special cases like the WHO program mentioned above, the funding will be earmarked for the specialized agency but still channelled through UNFPA.

Other Contributions

SIDA has made yearly contributions to IPPF since 1966, mainly for the associations in the developing countries. The population grants to seminars, funds for audiovisual materials, and support to voluntary organizations, such as the World Council of Churches, the International Union for the Scientific Study of Population, and the Christian Medical Association of India constitute an important part of SIDA activities. SIDA also operates a purchase scheme whereby governments and international organizations can buy contraceptives at favorable prices.

The SIDA family planning assistance program is moving toward greater support for multilateral efforts in light of the growing involvement of the UN system and other international organizations in population as well as toward concentration of bilateral assistance to a smaller number of countries. Support for population research is also to be expanded and to focus on human reproduction and contraceptive development on the one hand and motivation and training on the other. The budget for family planning assistance is expected to grow significantly during the coming year.

Conclusions

The main deficiency in the Swedish family planning program is shortage of personnel and facilities. Although today more than 400,000 women are using either the pill or the spiral IUD, only 450 doctors specialize in gynecology and obstetrics. Since oral contraception and IUDs are provided only by doctors, many women are unable to get either prescriptions or adequate supervision. But several government committees are presently studying various aspects of the family planning situation, and new and improved services and facilities may emerge.

Sweden's experiment with all aspects of sexual relations has received global recognition. Sex education in the schools, programs for out-of-wedlock children, and concern with the roles of the sexes—particularly advancement of women—represent probably the most progressive philosophy of human sexuality in the world. Sweden recognizes that ideas are constantly in flux and that programs and policies must be adjusted continually in line with societal trends and developments.

SIDA's expenditures for population, which have been about $25 million since 1958, are expected to grow and will focus on support for multilateral efforts, bilateral assistance to a small number of countries, research on reproductive biology, and population research in motivation and training.

Demographically Sweden has a nearly stationary population, relatively old in age distribution because of low birth and mortality rates. During the 1960s net reproduction rate has fluctuated around unity, and

natural increase was slightly less than 0.5 percent per year. Because of large immigration, however, the average population growth for the decade was 0.76 percent per year. In summary it appears fair to say that Sweden is as close as any country to the ideals of zero population growth with adequate provision for all.

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