

Document of
The World Bank
FOR OFFICIAL USE ONLY

FILE COPY

Report No. 2922-IND

REGIONAL ASPECTS OF FAMILY PLANNING AND
FERTILITY BEHAVIOR IN INDONESIA *

Dov Chernichovsky
Oey Astra Meesook

March 1980

Population and Human Resources Division
Development Economics Department
The World Bank

Prepared for the meeting of the Inter-Governmental Group on Indonesia,
to be held in Amsterdam, May 1980

*We are indebted to V. Mataac, S. Patel, K. Larholt, D. de Leeuw, S. Peer and B. Abramovich for computing activities and research assistance. Drs. H. Sigit and S. Suharto of the Central Bureau of Statistics of Indonesia share in the credit for this paper. However, only the authors are responsible for the views expressed here.

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

Table of Contents

	Page
SUMMARY AND CONCLUSION	i
1. Introduction	1
2. Recent Demographic Trends in Indonesia	3
3. The Family Planning Program	7
3.1 Historical Context of the Family Planning Program	8
3.2 Organizational Structure	8
3.3 Program Results	12
3.4 Evaluation	16
4. Determinants of Fertility Behavior and Family Planning Practice	19
4.1 The Data and the Setting	19
4.2 Analytical Framework and Statistical Procedure	20
4.3 Statistical Estimates	23
4.4 Conclusion	29

SUMMARY AND CONCLUSION

This report discusses one of the unique elements of recent Indonesian development: the decline in its population growth rate which has been achieved at a relatively low level of income and socio-economic development.

The report presents evidence of this decline which has been in large part attributed to the fall in the total fertility rate in Java-Bali. The much higher growth rate of population in the Outer Islands, which contain over one-third of the population of Indonesia at present but whose contribution to future population growth will become increasingly important, remains a matter of concern. Indeed, a major focus of the report is on the many aspects which differentiate Java-Bali and the Outer Islands.

The family planning program in Indonesia has attracted a great deal of attention; it has been credited by many for the impressive decline in fertility on Java-Bali. This report briefly reviews the history and organization of the program, attempts to identify those factors which have been responsible for its success and to assess its prospects for the future. It concludes that the strong political commitment, the organizational structure and approach of the program, and the efforts to ensure adequate provision of contraceptives, coupled with a favorable socio-economic environment in some instances, have accounted for the wide acceptance of the program. However, because some changes in the organization of the program had to be made in the Outer Islands, particularly with regard to the role of the field workers there, it is not clear at present that the performance of the program in Java-Bali can be readily replicated in the Outer Islands.

The report presents the results of a first attempt to explain fertility behavior and family planning practice by socio-economic factors as well as the family planning program. It concludes that socio-economic factors do influence fertility behavior. At low levels of income and education, an improvement in these is associated with higher fertility. However, at higher levels of income and education, the association is negative. Information gathered during the 1976 Intercensal Population Survey suggests that the use of family planning is associated with the number of living children that a woman has, so that the women who seek family planning services are those who have completed their desired family size. However, more recent family planning program data indicate that the average family size of women seeking the services of the program is declining and that services are being sought earlier in marriage. One of the major achievements of the program appears to be that it has made family planning accessible to the lower socio-economic groups and lower parity women in Java-Bali; use of modern program methods is not strongly associated with socio-economic factors there.

The Outer Islands do not account for as great a proportion of the population of Indonesia as Java-Bali, but they do account for over one-third. Moreover, this proportion is growing through a higher population growth rate. Family planning has been slower in coming to the Outer Islands and the logistics of reaching a population which is widely scattered will represent quite a challenge. There is no evidence that the program will face religious or socio-cultural obstacles in the Outer Islands and it seems clear that the focus of the struggle to hold down the size of the population of Indonesia requires increasing emphasis on extending the program in the Outer Islands.

Regional Aspects of Family Planning and Fertility Behavior in Indonesia

Dov Chernichovsky
Oey Astra Meesook

1. Introduction

The population of Indonesia at the end of 1979 was estimated to be 140 million, making it the fifth most populous country in the world. While Indonesia as a whole is not a densely populated country, its population is very unevenly distributed across the different islands, as can be seen in Table 1. While the population density outside Java and Bali is under 50 persons per square kilometer for nearly all the islands, it is over 600 persons per square kilometer in Java and 400 persons per square kilometer in Bali. Thus Java, with 7% of the total land area in contrast with 63% of the population, is one of the most densely populated regions in the world, comparable to Bangladesh. Historically, Indonesia has had a high growth rate of population. In the period 1961-1966, the crude birth rate was 46 per thousand population, so that, given a crude death rate of 25 per thousand, the population was growing at an annual rate of 2.1%. Finally, the population of Indonesia is poor; in 1979, its income per capita was U.S. \$370. Moreover, the more crowded islands of Java and Bali have a lower standard of living than many areas in the Outer Islands. All these considerations add up to a serious population problem for Indonesia.

On the brighter side, between 1971 and 1976, the average annual growth rate of population of 2.0% was substantially lower than the rate of 2.5-2.6% which had been predicted (Iskander, 1976; Speare, 1976). However, there was a disparity in growth rates between Java, where it was 1.7%, and the Outer Islands where it was 2.6%. There has apparently been a decline in fertility rates in Indonesia which has taken place primarily in Java and Bali (Hull, Hull and Singarimbun, 1977; Jones, 1977).

This decline in fertility rates in Java-Bali is noteworthy for two reasons. Firstly, it took place at a relatively low level of income and socio-economic development. Secondly, it coincided with the implementation of the family planning program.

Indonesia has an income level which is considerably lower than those of neighboring countries. It has not experienced rapid urbanization or industrialization: 82% of the population live in rural areas and 62% of the labor force are engaged in agricultural activities. As in the great majority of countries at Indonesia's income level, social development has been relatively limited. Nearly two in five adults, and over half of adult women, are illiterate. Primary education is by no means universal, secondary school enrollment is around 20% and only a small minority receives education beyond the secondary level. Life expectancy at birth is under 50 and infant mortality remains high; in 1976 the infant mortality rate was estimated to be 110 per 1,000 live births. The population per physician ratio in 1979 was 13,198 and only 12% of the population had access to safe water in 1975.

Table 1: BASIC DEMOGRAPHIC AND POVERTY INDICATORS BY PROVINCE OR REGION, INDONESIA, 1976

Province or Region	Population (in 000's) ^{/a}	Density (Pers./sqkm) ^{/a}	Growth Rate (%) ^{/a}	Total Fertility Rate (per 100,000) ^{/b}	Consumption per capita (Rp. per month) ^{/c}	Incidence of Rural Poverty (1) (%) ^{/d}
Java	82107	610	1.7	NA	4113	58.7
DKI Jakarta	5367	9318	3.8	4940	8987	-
West Java	23454	477	1.8	5825	4575	40.7
Central Java	23558	683	1.7	5360	3367	67.8
DI Yogyakarta	2625	836	1.2	4685	3818	60.5
East Java	27103	572	1.4	4735	3425	66.3
Outside Java	45911	39	2.6	NA	5133	NA
Sumatra	23510	43	2.8	6555	5245	28.5
Kalimantan	5816	10	3.0	6100	6433	17.3
Sulawesi	9379	41	2.1	6235	4836	45.0
Nusatenggara	4863	68	1.7	NA	NA)
Bali	2293	408	1.8	5680	4323) 49.5
Maluku	1258	15	3.3	NA	NA	61.9
West Irian	1008	2	2.0	NA	NA	NA
East Timor	655	NA	NA	NA	NA	NA
Indonesia	130284	69	2.0	5586	4489	50.2

(1)

The proportion of the population with average monthly per capita consumption expenditures under Rp. 3,000 per month.

(2)

A weighted average growth rate on the basis of 18 provinces excluding Maluku, West Irian and East Nusatenggara surveyed by SUPAS II (see C. Chandrasekaran and S. Suharto, "Indonesia's Population in the Year 2000", *Bulletin of Indonesian Economic Studies*, Vol XIV, Nov., 1978). A computation on the basis of the data presented here gives a growth rate of 2.53. The difference between the numbers results from rounding and the weighting of island, and not province, totals.

(3)

Weighted average between East and West Nusatenggara.

- Sources: ^{/a} Employment and Income Distribution in Indonesia, World Bank Report 2378-IND (1979), Annex 1, Table 1, p. 3.
^{/b} Suharto, Sam and Lee-Jay Cho, Preliminary Estimates of Indonesian Fertility Based on the 1976 Intercensal Population Survey, East-West Population Institute, Paper No. 52, 1978, Table 2, p. 9.
^{/c} Unpublished tabulations from SUSENAS, 1976.
^{/d} World Bank Report 2378-IND, Op. Cit., Table 4.7.

The family planning program in Indonesia was initiated in Java and Bali in 1969 and extended to the Outer Islands in 1974. While much credit should be given to the program for the observed fertility decline, it is also appropriate to note the importance of the socio-economic changes which are currently taking place in Indonesia. Notwithstanding the relatively low level of social development noted above, changes in standards of living, levels of educational attainment, and labor force participation, particularly that of women, have been remarkably rapid. Separation of the effects of the program and the socio-economic changes is extremely difficult.

This report takes up some of these important issues. The next section presents some evidence on recent demographic trends and discusses the implications of these trends for the future. Section three gives a brief history and description of the family planning program in Indonesia, and evaluates both its success to date and its future prospects. Given the disparate features of Java-Bali and the Outer Islands in many respects, some attention will be paid to regional differences. Against this background, section four presents the results of an exploratory study of the demographic and socio-economic correlates of family planning practice and fertility behavior in Indonesia. The study is based on an analysis of primary data at the household level from the second round of the Intercensal Population Survey for Indonesia (SUPAS II) which was carried out during February-March 1976. The study is a first attempt to analyze household-level data for the Outer Islands as well as Java-Bali.

2. Recent Demographic Trends in Indonesia

The growth rate of a population is determined by three factors: births, deaths and migration.

Migration has a negligible effect on the overall growth rate of the population of Indonesia. In 1976, the total foreign population living in the country was 1.1 million, or less than 1% of the total population. No estimate is available of the number of Indonesians living abroad, but it is not believed to be great. Migration also has only a small effect on the population growth rate by island. Both the 1971 Census and the 1976 Intercensal Population Survey indicate that net inter-island migration flows are small. Between 1971 and 1976, the net migration from Java to the Outer Islands was of the order of 0.1% of the population of Java. Rural-urban migration is more substantial since, given that there is no evidence of significant differences in fertility and mortality rates between urban and rural areas of a region (Chernichovsky, Newlon and Sigit, 1978), and a roughly comparable age structure, it must have accounted for the difference between the urban population annual growth rate of 2.6% and the rural rate of 1.8% (World Bank Report 2378-IND, 1979).

Recent surveys provide sufficient data to establish regional fertility rates, but not mortality rates. ^{1/} The most widely accepted mortality rates for Java and the Outer Islands are those produced by Chandrasekaran

^{1/} It is possible to deduce mortality rates from the regional growth and fertility rates given in Table 1. However, such a calculation assumes no net migration between two regions, and cannot be considered to give reliable estimates.

and Suharto (Chandrasekaran and Suharto, 1978) which were based on the 23 provinces covered by the Intercensal Population Survey of 1976 and are shown in Table 2. These estimates have also been used as the basis for the most recent population projections, which are given in Table 3. 1/

Table 2 provides a useful contrast between the demographic situations in Java and the Outer Islands over the 1971-75 period. The annual growth rate of population of 1.7% in Java resulted from a birth rate of 37 per thousand, a death rate of 18 per thousand and a net out-migration rate of 0.1%; in the Outer Islands the growth rate of 2.6% was the outcome of a much higher birth rate of 47 per thousand, a higher death rate of 23 per thousand and a net in-migration rate of 0.2%. The implications of a continuation of these statistics are that the population of the Outer Islands could overtake that of Java within a few decades. As shown in Table 3, the Outer Islands accounted for 36% of the population of Indonesia in 1971. By the end of the century they will account for 42%. After the mid-1980s, the contribution of the Outer Islands to the absolute increase in population will exceed that of Java.

The evidence is conclusive that fertility has declined in Java and Bali. 2/ Table 4 presents total fertility rates 3/ (TFR) for the period 1967-71 and 1976 for Java and Bali. The figures show an overall decline in the TFR from 5.3 children per woman to 4.5, representing a drop of 15% between 1971 and 1976.

Changes in fertility are attributable, either singly or in varying combinations, to three factors: changes in marital fertility; changes in marriage patterns, that is, variations in age at marriage and/or proportions married; and changes in the overall age composition of the population.

Two measures of marital fertility are analyzed to evaluate changes in marital fertility rates. These are the age-specific marital fertility rates (ASMFR) and Coale's Index of Marital Fertility (Ig) 4/ which are presented in Table A1. Between 1971 and 1976, ASMFRs declined in the older age-segments, starting from the age group 25-29 years, while increasing

-
- 1/ For a fuller discussion of these issues the reader is referred to Chandrasekaran and Suharto (1978), Biro Pusat Statistik (1978) and Annex I in World Bank Report 2378-IND (1979).
- 2/ Comparable information is not available for the Outer Islands.
- 3/ The total fertility rate is the mean number of births a woman will have throughout her reproductive life if the prevailing age-specific fertility rates continue.
- 4/ The index of marital fertility (Ig) is defined as the number of births of currently married women relative to the number they would bear if subject to Hutterite marital fertility rates, the Hutterites being the most prolific sizable population for which there are reliable statistics. The index is confined to the interval zero to one.

Table 2: ESTIMATED AVERAGE ANNUAL BIRTH AND DEATH RATES DURING 1971-1975 IN INDONESIA

AREA	Birth Rate per 1000	Death Rate per 1000	Natural Increase Rate (per cent)	Migration Rate (annual) per 1000	Growth Rate (per cent)
23 provinces ^{1/}	40.0	19.8	2.0	0.0	2.0
Java	36.6	18.4	1.8	-0.9	1.7
Outer Islands ^{1/}	47.1	23.1	2.4	1.7	2.6
All Indonesia	40.3	19.9	2.0	0.0	2.0

^{1/} Excluding Maluku, Irian Jaya and East Nusatenggara.

Source: Chandrasekaran and Suharto (1978), Table 2.

**Table 3: POPULATION PROJECTION FOR INDONESIA 1971-2001
(MILLION)**

Year-end	Both Sexes		
	Java	Outside Java	Indonesia
1971	76.4	42.6	118.9
1976	83.6	47.7	131.3
1981	91.2	53.8	145.0
1986	99.2	60.9	160.2
1991	107.3	69.1	176.4
1996	115.0	78.3	193.2
2001	122.0	88.2	210.2

Note: Totals may not add because of rounding.

Source: Chandrasekaran and Suharto (1978), Table 3.

Table 4: ESTIMATES OF TOTAL FERTILITY RATE^{1/} FOR JAVA-BALI BY PROVINCE, 1967-71 AND 1976

Year	Java/ Bali	Jakarta	West Java	Central Java	Yogyakarta	East Java	Bali
1967-71 ^{2/}	5.3	5.4	6.0	5.3	4.7	4.6	5.8
1976 ^{3/}	4.5	4.5	5.3	4.4	4.4	3.9	3.8
% change	-15.1	-16.7	-11.7	-17.0	-6.4	-15.2	-34.5

1/ The total fertility rate is the mean number of births a woman will have throughout her reproductive life if the prevailing age-specific fertility rates continue.

2/ 1967-71 estimates based on pregnancy history data as collected in the World Fertility Survey (WFS) component of 1976 Intercensal Survey.

3/ Based on 1976 WFS data, analyzed using pregnancy-status method.

Source: Terence Hull, Valerie Hull and Masri Singarimbun, "Indonesia Family Planning Story: Success and Challenge," Population Bulletin, Vol. 32, No. 6., November 1977, p. 26-27.

among younger women. These declines became sharper with increasing age, thus conforming with the patterns of fertility decline in other developing countries: women who have achieved their desired family size are more likely to avail themselves of the opportunity to limit their fertility by means of contraceptive methods, when such services are readily available. Nevertheless, the almost precipitous decline for women over 40 is unusual, because these women have been found in many other countries to be more likely to resist innovations such as family planning.

Whenever marital fertility, as measured by Coale's I_g , is equal to or greater than 0.64, then it reflects natural fertility, that is fertility among married couples uncontrolled by contraception. In the late 1960s, Bali, Jakarta and West Java were experiencing natural fertility levels (see Table A1). By 1976, only West Java had fertility levels approaching the natural level (.628). Elsewhere there was no decrease in the marital fertility level in Yogyakarta between the late 1960s and 1976, a sharp decline in Bali, and moderate declines in the remaining provinces, as well as in Java and Bali as a whole.

As noted above, the decline in fertility is also due to changes in age at marriage and proportions married. As may be seen from Table A2, there is a decline in the proportion of women currently married, as measured by Coale's Index of Proportion Married (I_m), ^{1/} from .75 in 1971 to .71 in 1976 for Java and Bali. This overall decline in proportion married occurred through a very noticeable reduction in the percent of women currently married in the youngest age groups (15-29). These shifts in the proportions marrying are also reflected in the rise in the mean age at marriage (SMAM), which increased in Java and Bali from 18.7 in 1971 to 19.4 in 1976.

Changes in marital fertility have been advanced as the most significant contributory factor to the decline in the TFR for Java and Bali. According to Sinquefield and Sungkono (1977:48), fully 70% of the decline in fertility between 1971 and 1976 is due to a reduction in marital fertility, with most of the remainder (30%) explained by rising age at marriage.

In conclusion, the evidence establishes that fertility has declined in Java and Bali. However, the higher population growth rate of the Outer Islands implies that they will contribute more and more to the population problem of Indonesia in the future.

3. The Family Planning Program

Indonesia has been widely acclaimed for its successful family planning (FP) program. As already indicated, the growth rate of population

^{1/} The index of proportion married (I_m) is defined as the number of children that married women would produce relative to the number that all women would produce if both sets of women experienced the Hutterite fertility schedule. The index is confined to the interval zero to one.

has declined in recent years, with much of the decline taking place in Java and Bali. While these results are impressive, it is necessary to view the FP program in its entirety in order to identify the factors that contributed to the success of the program. Special mention should be made of the strong and sustained political commitment to the FP program; the historical context of the program; the organizational structure, to which much of the success of the program has been attributed; and the efforts to ensure adequate provision of contraceptives at all levels of distribution. This paper considers the importance of some of these factors, examines various statistics, and provides an evaluation of the program, emphasizing the extent of the success of the program in Java-Bali and the factors that contributed to the success, as well as future prospects of the program both in Java-Bali and the Outer Islands.

3.1 Historical Context of the Family Planning Program

In the early years of independence, a pronatalist policy was adopted under President Sukarno, and transmigration to the relatively sparsely populated Outer Islands was advocated as a solution to the perceived population problem of overcrowding on Java-Bali. Birth control was viewed as unnecessary except for the purposes of spacing births in order to preserve the health of the nation's mothers (U.N., 1978:11). It was considered that, in the long run, fertility would decline as economic development progressed. Consequently, no direct governmental action was taken to reduce the high level of fertility. In addition, dissemination of information on birth control and the distribution of contraceptives to the public was prohibited by law.

With the change of government in March 1966, the population problem was viewed from a different perspective. According to this point of view, the population growth rate of around 2% per annum, although moderate by developing country standards, nevertheless affected the country's socio-economic development by putting excessive pressure on available natural resources and by contributing to the problem of unemployment. In addition, it constrained desired income redistribution, affected savings generation and hampered the effectiveness of capital investment (UNFPA-UN, 1979). Therefore, the official population policy was changed from the previously pronatalist stance to one of explicit support for a national program of birth control.

3.2 Organizational Structure

Against the setting outlined above, the initial steps towards a national FP program were taken not by politicians but by community leaders and influential groups who saw a need for such services for individuals, quite apart from any effect that it would have on the population problem. Scattered services were provided to a mainly urban clientele by a number of agencies which were forged into the Indonesian Planned Parenthood Association (PKBI) in 1957 (Hull, Hull and Singarimbun, 1977). The PKBI continued to expand until the mid 1960s, when political turmoil forced it to abandon its services. With the advent of the new government in 1966, and freed from the earlier restraints of hostile press coverage and lack of government support, the PKBI reopened its clinics, and over the next two years paved the way for the adoption of family planning as an official government policy.

In 1968, the Government of Indonesia (GOI) formally adopted family planning as a national program with an explicit policy to reduce the population growth rate. A National Family Planning Coordinating Board (NFPCB) was established in 1970 to plan and coordinate the FP program which was at first restricted to Java-Bali, extended to 10 provinces in the Outer Islands in 1974, and to the remaining 11 provinces of the country in 1979.

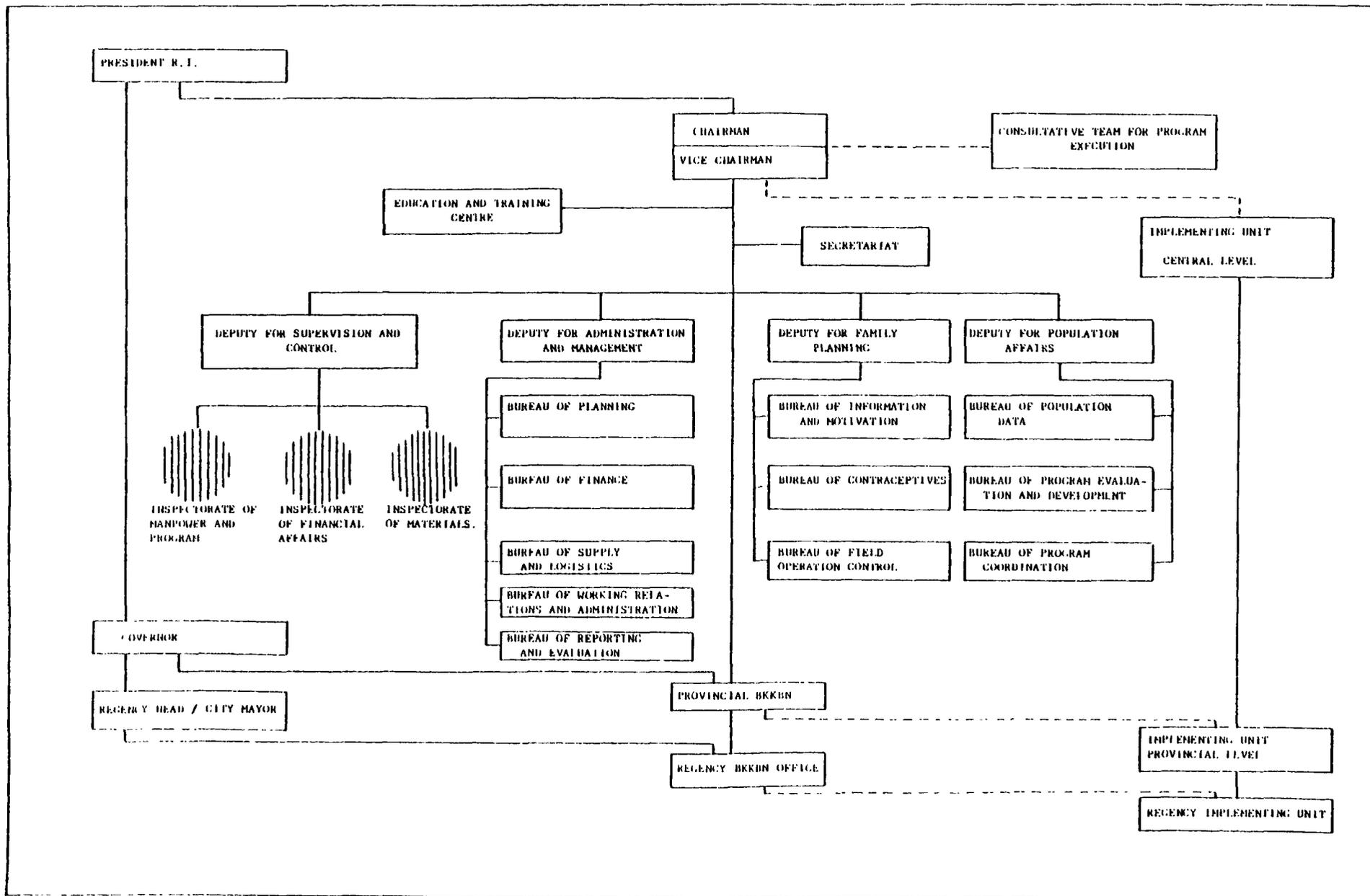
The administrative structure of the FP program is presented in Figure 1. The President assumes personal responsibility for the progress of the program. On policy matters he is advised by a council of ministers, chaired by the State Minister for Peoples' Welfare. The NFPCB is a fully governmental body (unlike its predecessor, the semi-autonomous Family Planning Institute) with a chairman, four deputy chairmen, who are in charge of eleven bureaus representing various staff functions, and a secretariat to provide administrative and financial support. The chairman reports directly to the President. Actual implementation of the program activities is vested in various concerned governmental ministries (the most important of which is the Ministry of Health), as well as the armed forces, various voluntary organizations and universities which carry out research and pilot studies.

Similar structures exist at the provincial and kabupaten (regency) levels, which form the operational base of the program. Insofar as the governors are responsible to the President for the development programs within their administrative areas, and since FP forms an integral part of the nation's development plans (UN, 1978), they are also responsible for the FP program.

A salient feature of the Indonesian FP administration which accounts in some measure for the success of the program is the operational decentralization involved in the elaborate process of program development and implementation. The chairman of the NFPCB, after considerable discussion with the senior and mid-level officials of the central and provincial NFPCBs and implementing units, enunciates a national policy. Programs responsive to local conditions are then formulated by the provincial NFPCBs in collaboration with various government ministries, kabupaten NFPCBs and private organizations. After approval of the governor has been obtained, it is presented to the central NFPCB as the provincial program. Once the NFPCB has approved and funded these plans, implementation devolves on the agency which proposed them.

Two types of services are offered by the family planning program: Information, Education and Communication (IEC), and medical. The community education program, directed and supervised at the national level by the Special Bureau of Field Workers, is planned and coordinated at the provincial level and implemented at the kabupaten level through Family Planning Field Workers (FPFW) who impart FP education to couples contacted during regular house visits. In addition to this direct input by the NFPCB, information on FP is also provided by private organizations such as the PKBI, whose role was increasingly modified and limited to community education and motivation as the GOI increased direct support for FP. FP information is also part of the curriculum of the health education program offered in FP clinics.

Figure 1:
 ORGANIZATION CHART
 IN ACCORDANCE WITH THE PRESIDENTIAL DECREE
 NO 38/1978



Public information services are rendered primarily by the Ministries of Information and Religion, and were initiated at the instigation of the Bureau of Information and Motivation of the Central NFPCB. The Ministry of Information has established a FP unit which is provided with an assessment of the information needs of the program, as well as technical information and funds by the NFPCB. Within the Ministry of Information, FP information teams exist at provincial and kabupaten levels. A multi-media approach is used to cover FP subject matter which includes discussion of population problems, the relationship between religion and FP, and information on contraceptive methods.

Medical services are provided by the Ministry of Health (MOH), the armed forces, and by private agencies supervised by the MOH. Initially these services were clinic-based, and consisted of a few hours set aside each week during which the medical staff were available for FP services. This arrangement was necessitated by the shortage of trained medical personnel. Recently estimated statistics for March 1979 are as follows:

Doctors	1:13,198 population
Nurses and Midwives	1: 4,443 population
Auxiliary Health Personnel	1: 3,879 population

In spite of these limitations, by 1976, the number of clinics offering FP services increased to 2,700 in Java-Bali, and to over 3,600 in Indonesia as a whole (Nortman, 1978). In an effort to service the rural areas, most clinics were provided with field workers for door-to-door canvassing of eligible couples, and with mobile teams staffed by paramedical personnel.

A major innovation by the NFPCB designed to increase contraceptive use was to re-orient its program strategy by "transferring the primary responsibility for motivating, recruiting and maintaining FP acceptors from the government to the people themselves and their communities" (Nortman, 1978:23). Local community workers were enlisted to promote the small-family norm, and serve as the delivery network for contraceptive supplies. In addition, the field workers were reassigned to serve particular geographical areas to ensure the availability of medical and information services. They are no longer attached to the puskesmas (health centers), from which they obtain logistical and other support.

In Bali, the "banjar," a hamlet bound together by kinship, social and economic ties, became the vehicle for integrating FP into the life of the community. Household heads meet once a month to discuss community matters as well as the FP status of eligible women in their households. A banjar map identifies each household according to the method of contraceptive use.

In Java, where village communities are more loosely bound, the NFPCB sought to penetrate the villages by establishing village contraceptive distribution centers (VCDC) staffed by villagers themselves (usually satisfied acceptors) who are assisted by field workers from the provincial NFPCB.

In the Outer Islands, the NFPCB modified its approach. Since field workers were not employed in these provinces, the Camats ^{1/} from the Department of Internal Affairs were used as a link between the national program and the local community. Hamlet officials were trained by the Camats to assume responsibility for the programs in their areas.

Over the years, under the guidance of the NFPCB, the Indonesian FP program has evolved into a unique blend of "government initiatives and local customs" (Stokes, 1977). It has been successfully absorbed into the political and social processes of the local institutions, thus becoming an integral part of the community.

3.3 Program Results

Table 5 shows the extent of current use of contraceptive methods in Indonesia. Overall, 17% of married women aged 15-44 were using some program method of birth control in 1976. This figure, however, disguises a wide variation in the current use of contraceptives by region. Whereas only 5.3% of married women in the Outer Islands were using contraceptives, 23.3% of the married women in Java-Bali were using birth control methods.

Table 4 highlights the extent of the decline in TFR's in the provinces of Java-Bali between the period 1967-70 and 1976. Overall, the TFR of Java-Bali declined from 5.3 to 4.5, a reduction of 15.1%. However, the range of decline is wide, from a spectacular 34.5% drop in TFR in Bali to a comparatively small decline of 6.4% in Yogyakarta.

A summary of some of the changes that took place in current use of contraceptives by currently married women of reproductive age (15-44 years) between 1973 and 1976 is presented in Table 6. In 1976, Yogyakarta had the highest percentage of women currently using any method of contraception (43.1) followed by Bali (39.1), with West Java having the lowest current use (17.4). However, as the second panel of Table 6 shows, the proportion currently using modern methods is highest in Bali (38.3), and lowest in West Java (14.9). This indicates a positive association between current use of modern contraceptives and decline in fertility. Bali, with the highest current use of modern methods also experienced the largest decline in its fertility (see Table 4). On the other hand, Yogyakarta, which has a small proportion of married women currently using modern methods (19.9 percent), experienced a relatively small decline in its fertility.

As can be seen from Table 7, the IUD was the most common method used in Bali by women currently using contraceptives. Yogyakarta, which had experienced a 30.3% increase between 1973 and 1976 in the proportion of married women currently using contraceptives, the largest increase of any province, also showed the smallest increase, 8.8%, in the proportion currently

^{1/} The Camat is the head of a subdistrict (kecamatan).

Table 5: ESTIMATED CURRENT USE OF PROGRAM
METHODS OF CONTRACEPTION: INDONESIA
DECEMBER 1976

Region	Married Women Aged 15-44 (Column Percentage)	Total Acceptors to Date	Current Users	Current Users as % of Acceptors	% Married Women Currently Using Program Methods
Java-Bali (Official program since 1969/70)	14,439,566 (67%)	7,983,250	3,370,279	42.2	23.3
Ten Outer Island Provinces (Official program since April 1974)	5,205,256 (24%)	461,291	276,428	59.9	5.3
Ten remaining provinces (No program as of mid-1977)	1,761,460 (8%)	0	0	0	0
Indonesia Total	21,406,282 (100%)	8,444,541	3,646,707	43.2	17.0

Source: Hull, Hull and Singarimbun, p. 41.

Table 6: ESTIMATED PERCENTAGE OF CURRENTLY MARRIED WOMEN AGED 15-44 WHO ARE CURRENT USERS OF CONTRACEPTIVES, BY PROVINCE, 1973 AND 1976

Type of use and year	Java/ Bali	West Java	Jakarta	Central Java	Yogyakarta	East Java	Bali
Currently using							
1973	10.5	5.9	15.5	9.8	12.8	14.6	23.0
1976	28.0	17.4	29.1	29.8	43.1	33.8	39.1
Increase 1973-1976	17.5	11.5	13.6	20.0	30.3	19.2	16.1
Currently using a modern method							
1973	9.4	5.5	10.6	9.3	11.1	13.6	21.0
1976	23.4	14.9	19.9	26.0	19.9	29.2	38.3
Increase 1973-1976	14.0	9.4	9.3	16.7	8.8	15.6	17.3

Source: Sinquefield and Sungkono, p. 51.

Table 7: ESTIMATED PERCENT OF CURRENT USERS OF CONTRACEPTIVES AMONG WOMEN AGED 15-49, BY METHOD USED, ACCORDING TO PROVINCE, 1973 AND 1976.

Province and year	Pil	IUD	Con- dom	Coiled injection	Rhythm, abor- tional, withdrawal, etc.	Folk methods*	Total
Java-Bali							
1973	49.5	30.8	4.0	u	u	u	7.1
1976	56.3	21.2	7.1	2.2	8.4	4.9	13.3
West Java							
1973	67.0	14.6	6.1	u	u	u	12.3
1976	75.4	6.4	3.3	3.6	6.4	5.0	11.3
Jakarta							
1973	u	u	u	u	u	u	u
1976	34.9	15.1	14.3	4.0	19.8	11.9	31.7
Central Java							
1973	38.8	44.0	11.3	u	u	u	5.9
1976	55.7	18.5	10.0	1.9	6.4	4.5	10.8
Yogyakarta							
1973	25.5	52.0	9.2	u	u	u	13.3
1976	8.9	17.8	16.7	2.2	53.2	1.1	51.4
E. of Java							
1973	57.1	36.1	0.9	u	u	u	5.9
1976	57.7	27.4	3.9	1.6	4.5	5.0	9.5
DIY							
1973	12.0	77.0	1.4	u	u	u	9.5
1976	14.1	70.3	10.9	3.1	1.6	0.0	1.6

* Includes withdrawal, coiled, herbs, uterus inversion and other unlisted traditional methods.

Notes: 1976 IBS estimates based on users among exposed women; 1973 IBS figures based on users among all currently married women.

Source: Sinquefield and Sungkono, p. 53.

using a modern method. As Table 7 indicates, the traditional methods of rhythm, withdrawal, abstinence and folk methods gained more popularity; the proportion using these rose from 13.3% in 1973 to 54.4% in 1976. Of the modern methods, only the use of the condom increased, while that of the pill and of the IUD fell from 25.5% to 8.9% and from 52.0% to 17.8% respectively over this period. In the remaining provinces, the proportion of women currently using traditional methods in 1973 was low (except Jakarta, for which no data are available), and continued to be low in 1976. These data re-emphasize the importance of the type of method used, rather than prevalence per se, in contributing to the reduction in fertility.

3.4 Evaluation

Some of the factors that contributed to the success of the FP program have already been discussed. Primary among these is the administrative structure that evolved under the guidance of the Central NFPCB, which permitted both innovation and decentralization of program operations. This decentralization permits a high degree of participation in both the planning and implementation of the program. For the NFPCB, it serves as a device for mobilizing the political power and enthusiasm of regional officials behind the FP effort (Snodgrass, 1979:12).

Operational decentralization within the FP program was further extended to the villages. Contraceptives were distributed to the villagers either through the existing diffusion networks or through village-level volunteers. Moreover, part of the responsibility of the administration of the program was also shifted to the village politicians. This worked well, especially in Bali, because of the high degree of cohesion existing in the social and cultural structure of the villages.

In addition to the structural-functional factors, there were psychological factors that contributed to the success of the program. The most important of these is the strong dedication of the political leadership to the cause of FP. In the early 1970s, a new sense of urgency was created for slowing the population growth rate. From the President down, an awareness was created that FP could not be left solely within the scope of the Ministry of Health. Population pressure came to be viewed as a problem affecting general community development, and Indonesians recognized that strengthening FP meant making birth control efforts a community rather than central government undertaking. As Haryono Suyono of the Central NFPCB pointed out, "the long-term success of family planning in Indonesia hinges on the ability of the government to transfer to the individual and the community the same sense of urgency that now exists at the higher levels of government rather than simply imposing a Family Planning program on an otherwise uncommitted public." (Stokes; 1977:32, 34-35).

To sum, the success of the FP program "rests fundamentally on a political commitment to use an established administrative system which is capable of reaching from the center through successively smaller administrative units to the village itself. This involves authority, power and respect relations resting on traditional forms of relationships, but strengthened as the fundamental framework for order and policy implementation by the present government" (Freedman, 1978:5).

This overall FP success, which nationally appears to be an all-encompassing movement, presents a varied pattern when viewed in terms of provincial acceptance. In Bali, which in 1976 had the lowest estimated fertility, the social structure creates supports for low fertility (Hull, 1978). Therefore, there already exists a latent demand for contraceptives. This is reinforced by a highly developed clinical infrastructure for contraceptive supplies, and the newly introduced banjar system. Therefore the demographic miracle of Bali has been reinforced by certain unique features of the island.

East Java in 1976 had achieved the second lowest fertility. This achievement rested primarily on the mobilization of bureaucratic resources by an energetic and committed leadership. However, this could emerge as a potential weakness in that change in leadership could result in a change in program performance (Hull, Hull and Singarimbun, 1977).

Central Java and Yogyakarta had middling success in their program efforts. Central Java's high reliance on the pill creates problems of motivation, guaranteed supplies and available help for side effects. Yogyakarta, on the other hand, favored the use of highly unreliable traditional methods, especially abstinence.

In West Java, such characteristics as high mobility, early marriage, and high marital fertility are less conducive to fertility decline. In addition, a severe shortage of field workers hampered the local NFPCB approach of pairing field workers with health paramedics for door-to-door service, and this shortage was compounded by the larger average size of administrative units in this province, implying a lower field worker to population ratio.

Jakarta documented a very low proportion of women currently using contraceptives, and hence experienced a relatively moderate decline in fertility. While such a performance is unusual for a cosmopolitan city, it may be explained by the greater difficulty of attracting and training field workers there and the shortage of service facilities. Family planning services in Jakarta are thus less well developed than in most areas of Java and Bali.

The program has thus achieved varying success in Java-Bali, but there is now some concern that the acceptance rates may have reached a plateau. Recent statistics indicate that the proportion of currently married women aged 15-44 using contraceptives continues to rise, reaching 25% in 1978, but the absolute number of new acceptors declined slightly for the first time in 1978-79 from the preceding year. It is too early to conclude that acceptance rates have levelled off and it is by no means clear that this is inevitable. Not only has the change in fertility and contraceptive acceptance been rapid, the flexible program design has also been able to mould itself to accommodate varying situations. A strong base composed of administrative flexibility and a policy of innovation already exists from which the program can respond to changing demands that arise as the traditional brakes on fertility give way and socio-economic development changes the nature of the demand.

Of more importance is the question of whether the experience of Java-Bali can be transferred to the Outer Islands, which have played a crucial role in Indonesia's population problem and hence its development efforts. Some of the areas are currently growing by 3% or more each year and the very young age structure of this region has a built-in momentum for population growth that is foreboding. It is therefore crucial that the FP program should succeed in these provinces.

The prospects of success for the program in the Outer Islands depend on how rapidly adequate services can be provided to the people there. Until quite recently, the clinic coverage was far from adequate. At 8,080 women per clinic in 1976, it was still higher than the 1:7,000 ratio in densely settled Java-Bali even during the early years of the program. However, the government is now increasing the number of puskesmas (health centers), mobile units, and other services and this will go some way towards overcoming the previous shortage of facilities.

Additionally, the field workers, who formed the cornerstone of the program in Java-Bali by acting as recruiters and motivators, were not included in the Outer Islands program in order to hold down costs. Community leaders and village officials therefore assume the tasks of both recruiting and distributing in the Outer Islands. This strategy is kept under constant review to ensure adequate program results, particularly as it places the main burden on busy government officials who have other duties to perform as well.

The main challenge in reducing fertility in the Outer Islands will be the organization and logistics of providing services to the more scattered population in many areas. There is, however, no evidence that the program will face religious or socio-cultural obstacles in the Outer Islands substantially different from those in Java-Bali. But desired family size is at the present appreciably greater in the Outer Islands, and it seems clear that the focus of the struggle to hold down the size of the population of Indonesia requires increasing emphasis on extending the program in the Outer Islands.

In conclusion, certain aspects of the Indonesian experience have been crucial for its success. These are a program design sufficiently flexible to accommodate the existing socio-political and socio-cultural institutions and a readiness to innovate.

4. Determinants of Family Planning Practice and Fertility Behavior

4.1 The Data and the Setting

This study uses data at the household level from the second round of the 1976 Intercensal Population Survey for Indonesia (SUPAS II). The sample design for the survey and summaries of various statistics have been well documented (Biro Pusat Statistik, 1976, 1978). The data pertain to some 60,000 households, with a provincial breakdown given in Table A3. These households were interviewed during February - March 1976. Rural areas of Maluku, Irian Jaya and East Nusatenggara were excluded from the survey altogether.

When the analysis reported here was carried out, data had not yet been made available for Central Java, Yogyakarta, Maluku, Irian Jaya, parts of Nusatenggara and rural areas of East Java. Of the total household count for SUPAS II, some 14,000 households, or 24%, were missing from the data tapes.

Some basic information has been obtained from unpublished tabulations provided by the Central Bureau of Statistics (CBS) which gives a simple overview of the provinces or islands according to their demographic and socio-economic characteristics. The detailed tabulations have been summarized in Table A4 and are given by province for Java and by major island for the Outer Islands. Urban and rural areas are treated separately.

To summarize the tabulations, to which the interested reader is referred for greater details on variations across provinces or islands and urban/rural areas of residence, the differences in demographic and socio-economic characteristics between Java and the Outer Islands are quite striking. The Outer Islands have a higher proportion of young children under five than Java, 16.1% compared with 14.5%, and a higher average number of children ever born per ever-married woman, 4.2 compared with 3.6. These findings are consistent with the higher population growth rate and total fertility rate for the Outer Islands already reported.

Yet at first sight there are reasons for expecting a higher birth rate in Java than in the Outer Islands: the proportion of women aged 15 to 49, that is, of child-bearing age, in the total female population is higher in Java, 49% compared with 47%, as is the proportion of ever-married women in the total female population, 72% compared with 64%; the average age at first marriage is lower in Java, 16.8 years compared with 18.3 in the Outer Islands, and the average age of ever-married women is correspondingly lower in Java, 38.2 compared with 44.0. On the other hand, there are factors working the other way: childlessness is more prevalent in Java, 13.4% compared with 8.9%; and marital disruption is more frequent in Java, as indicated by 35.1% of ever-married women having married more than once, compared with 17.3% in the Outer Islands.

A large proportion of ever-married Javanese women are without any schooling. However, they are also more likely to be working or looking for work than their counterparts in the Outer Islands. A higher proportion of them have heard of a method of family planning, 76.5% compared with 51.2%

in the Outer Islands, where there are also great variations among the different islands. Whereas 65% of those in Sulawesi have heard of a method, only 28% of those in Kalimantan have. The proportion currently using a method of family planning is low compared with the proportion who have heard of a method in both regions, but is still much higher in Java at 23.9% than in the Outer Islands at 6.4%. The average number of surviving children is lower in Java, as is the proportion of married women wanting an additional child.

In terms of the characteristics described above, Bali resembles Java rather than the Outer Islands, especially in the area of family planning.

In summary, Java and the Outer Islands are very different in terms of their demographic and socio-economic characteristics. While Java has some demographic aspects consistent with a higher birth rate than the Outer Islands, there are some mitigating factors, most notably the greater prevalence of knowledge and use of family planning, as well as a lower desire for additional children despite an already lower number of surviving children. Bali is altogether a special case in the Outer Islands.

4.2 Analytical Framework and Statistical Procedure

As pointed out earlier, it is not possible to establish that any single socioeconomic improvement, such as the spread of education or improvements in health, or any single policy, such as family planning, is a prerequisite to fertility decline. Rather, it is clear that each makes its contribution; to see this requires an understanding of the decision making of individuals concerning fertility.

Economists and other social scientists have developed a simple model of family fertility behavior, which explains why it is sensible for the poor to have large families, and which provides a guide to how changes in the family's economic and social environment will affect fertility. 1/

In the first place, children may be considered a consumption good; they are a source of pleasure to parents. In many developing countries, children are also a form of investment, both short-term if they work during childhood and long-term if they support parents in old age. But parents need to spend time as well as money to bring up children. Therefore if family income increases, parents may be expected to want more children. This then would provide an explanation if we find that better-off families have more children.

But in reality we usually observe a negative association between family income and family size. Several non-competing reasons have been offered for this phenomenon. First, with increasing educational and employment opportunities for women, they want smaller families. Women are primarily responsible for childrearing and, as their horizons expand beyond the family,

1/ The analytical framework is taken from Birdsall, Nancy, Population and Poverty in the Developing World, World Bank, mimeo., February 1980.

the alternative uses of time, either to earn incomes or enjoy other purchased goods, become more attractive. This explanation is consistent with the frequent observation that more educated women have lower fertility. Second, there is an explanation which reinforces the previous one. In low-wage settings, much of women's traditional work, in agriculture, traditional crafts and petty trading, are compatible with childcare, so that looking after children does not involve loss of income. As women accept job opportunities outside the home, they find that these compete with having children and so may want fewer of them. Third, the children of the poor help around the house and work outside the home at an early age. In addition, if they do not go to school, so that the costs of schooling can be avoided, then having many children means a larger contribution to family income. The children's contribution to family income is less important for better-off families who can also better afford the costs of schooling. Fourth, if children contribute to parents' support in old age, the low current costs of raising children are a small premium to pay for insurance against future uncertainties. Where mothers command only low wages, the difference between children's and mothers' earnings may be small; work time lost by the mother during a child's infancy may be easily recaptured by the child in later years. Better-off parents view children as a less important source of support in old age and therefore have less incentive for large families. Fifth, with increasing income, parents opt for healthier and better-educated children, but fewer of them. Parents are more likely to seek increased education for their children when they believe that their children's future work opportunities will be governed less by class origin or family background than by education and associated skills, and this tends to be a consequence of development.

The link between low household income and high fertility is reinforced by two further forces. The first is the set of reasons why high rates of infant mortality are commonly found together with high fertility in low-income families. In the first place, mothers who cease breast-feeding because of the death of an infant are biologically more likely to conceive another. Moreover, parents who lose children are likely to try to replace them; in addition, parents in high mortality communities may also insure themselves against future child loss by having more children than they would ideally want. On the other hand, high fertility contributes to high infant and child mortality because close spacing of births and many births may deplete the mother's physical resources and reduce the amount a family has to spend on each member of it; a commonly noted phenomenon is the death of a child when, on the birth of a subsequent child, the mother ceases breastfeeding the older child.

The second is the fact that poor households are often in situations where modern and simple means to restrict fertility are not easily available, or if available are costly. For a poor family in a rural area, where means of family limitation are confined to abstinence, illegal abortion and infanticide, or to ineffective and difficult traditional contraception, the psychological or financial costs of avoiding a particular pregnancy may exceed the costs of having an additional child. Even in urban areas, the costs of obtaining contraception through private doctors may outweigh the additional cost of another child to a poor household. Moreover, in most societies, though both parents enjoy the satisfaction children bring, it is

the mother who bears more of the physical and usually more of the caretaking costs of children. In some cultures, the mother may even bear primary financial responsibility for children; this is the case where marital disruption is frequent or where unions are highly informal. Yet, if contraceptives are difficult to obtain and costly, women cannot restrict their fertility without complete cooperation from husbands or other sexual partners. Finally, family planning availability may lower the social, as well as private, costs of avoiding children, by legitimizing what relatives, friends, the community, the clan or village might otherwise have frowned upon as unusual behavior. This could help explain the growing acceptance of modern family planning in Indonesia, where the government has encouraged community-level cooperation in arranging and administering services.

A decline in the birth rate may reflect a decline in marital fertility, that is, the childbearing behavior of couples, an increase in the average age at which women marry in a society, or a reduction in the proportion of women who ever marry.

An increase in the female age at marriage affects the birth rates in two ways not linked to individual behavior: it shortens the period during which women are exposed to pregnancy, and at an age when fecundity is high; and it lengthens the interval between generations. In addition, there may be behavioral effects of late marriage. In part, women who marry later have fewer children because the same factors which lead to later marriage, such as greater education and employment opportunities, also directly reduce fertility; but it is also possible that later marriage assures individual women more time to explore interests beyond family and childbearing, interests which they take with them into married life and which moderate their fertility goals.

In the statistical analysis which follows, we shall attempt to determine the direction and extent of association between family planning practice, as well as fertility, and a number of factors suggested by the model outlined above. The sample used includes all women aged 14 and above. ^{1/} Family planning practice is represented by knowledge and use of contraception. Fertility will be measured by the number of children ever born to an ever-married woman. The explanatory factors for fertility may be grouped as follows: exposure to pregnancy (age, age at marriage, marital disruption); education; economic activity (labor force participation, place of work); economic status

^{1/} No attempt was made at this stage to select just one woman per household. It is estimated that roughly 10% of the women in the sample belong to households with more than one woman included in the study. This reduces somewhat the variance in the common household variables, but is not believed to affect the results obtained.

(ownership of modern consumer durables, 1/ use of electricity, level of household consumption expenditures); knowledge of contraception; and cultural and environmental factors (religion, urban/ rural area of residence). 2/

The first set of factors indicating exposure to pregnancy controls for the simple fact that the greater the exposure, the larger the potential number of children ever born. The factors describing the education status of the woman and economic status of the household taken as a group should, as they improve, be associated with fewer children. However, in the range where education and income have improved only slightly, it is possible that the factors which the model postulates will lead to a lower demand for children, such as increasing employment opportunities for women outside the home and the desire of parents to give children a better education, may not yet operate. In such a case, it is possible to find the somewhat higher education and income status being associated with a larger number of children. In addition, it has been suggested that at low levels of income, fertility is likely to increase with an improvement in socio-economic conditions through improved maternal health and fecundity (Easterlin 1976). The set of factors concerned with economic activity is again suggested by the model; work outside the home is expected to be associated with a lower demand for children. Finally, religion and urban/rural area of residence are expected to influence fertility through the norms set by society for family size.

For this initial exploratory effort, a single-equation multivariate regression analysis has been used. This procedure ignores the more complex interdependent structure underlying fertility behavior that would consider age at first marriage, female labor-force participation and children's schooling as being codetermined with the number of children the couple is likely to have. The analysis is carried out separately for each province of Java-Bali and each major island in the Outer Islands.

4.3 Statistical Estimates

4.3.1 Family Planning

This part of the analysis is concerned with knowledge and practice of family planning, and utilizes three questions asked of women aged 15 to 49 in SUPAS II: whether they have heard of any methods of family planning (FP), whether they have been using any method, and, if so, if they have been using a modern program method, namely the pill, IUD or condom. On the basis of the responses to these questions, an attempt will be made to assess the impact of the FP program on fertility behavior and to identify those women who may be receptive to the program.

Table 8 gives the proportions of women giving affirmative answers to the three questions listed above by province or island. It can be seen

1/ These include the following: radio, television, stereo, refrigerator, motorcycle and automobile.

2/ There is a high degree of multicollinearity between some of these variables, especially those indicating economic status.

Table 8: PROPORTIONS OF WOMEN 15-49 WHO HAVE
HEARD OF A METHOD OF FAMILY PLANNING,
HAVE BEEN USING A METHOD AND HAVE
BEEN USING A PROGRAM METHOD*
(%)

Province or Region	Have heard of a method	Have been using (of those heard)	Have been using a program method (of those using)
Java-Bali:			
DKI Jakarta	65	32	77
West Java	69	20	83
Central Java			
Yogyakarta			
East Java	64	44	97
Bali	65	47	95
Outer Islands:			
Sumatra	51	13	66
Sulawesi	58	12	70
Kalimantan	30	20	54
Nusatenggara	52	18	40

*These figures are different from those in Table A4 which refer to married women under 50, whereas the ones given here refer to unmarried as well as married women.

that there are impressive differences between Java-Bali and the Outer Islands. Whereas roughly two-thirds of all women aged 15 to 49 in Java-Bali have heard of a method of family planning, in the Outer Islands this is true for 58% of those in Sulawesi, just over 50% of those in Sumatra and Nusatenggara and only 30% of those in Kalimantan. The differences are even more striking for use of family planning. Of those women who have ever heard of a method, the proportion who are currently using one in Java-Bali ranges from 47% in Bali to a low of 20% in West Java, while in the Outer Islands, the proportion is never greater than 20% and is as low as 12% in Sulawesi and 13% in Sumatra. Of those currently using a method, the proportion using a program method is substantially higher in Java-Bali, being as high as 97% in East Java and 95% in Bali, while Jakarta has the lowest proportion at 77%. In the Outer Islands, the proportion using a program method, of those using any method, ranges from 70% in Sulawesi to 40% in Nusatenggara. Thus among users there has been as yet little substitution of program methods for traditional ones in many areas. These differences are consistent with the fact that the FP program has been active in Java-Bali since 1969 but has only been introduced to the Outer Islands since 1974. Nevertheless, without an analysis which properly takes into account the vast socio-economic differences across regions, it would be premature to credit the FP program with the entire decline in fertility in Java and Bali.

The results of the multivariate analysis aimed at identifying the socio-economic factors which can be associated with knowledge and use of contraception are given in Tables A5, A6 and A7. A summary of the findings is given here.

When all other factors, including the number of living children, are controlled for, it is found that knowledge, general practice and use of modern contraception decline with the age of the woman. In general, late marriers appear to be more knowledgeable about contraception, but this knowledge translates into actual use only in Jakarta, West Java and Sumatra. In East Java and Bali, later marriage is associated with greater use of program methods. The evidence thus suggests that women who marry later are more inclined to acquire knowledge of contraception and, moreover, that the FP program in Java-Bali may have promoted the use of contraception in general and, in East Java and Bali, of program methods in particular. Later marriage thus contributes to smaller family size both by limiting the woman's exposure to pregnancy and through greater knowledge and use of contraception.

Being currently married significantly increases the likelihood that a woman knows of family planning, but actual use among women who have heard of FP appears to be unrelated to current marital status. Since extra-marital child bearing is rare in Indonesia, these findings are consistent with the notion that subfecundity may be a reason for divorce or separation.

The most important finding is that the number of living children appears to be the most significant factor in influencing both the knowledge and use of contraception. In East Java, Bali and Sumatra, it also increases the likelihood that a woman uses a program method. Moreover, it is the number of living children that matters, not the number of children ever born. This finding gives the strongest support yet to the hypothesis that family planning is a function of family size and comes into play only after a woman has achieved her desired family size.

Throughout Indonesia better-educated women are more likely to have some knowledge of contraception. However, among those who have some knowledge, better education is only associated with actual use of contraception in Jakarta, West Java, Sumatra and Sulawesi. One striking finding is that the use of modern program contraceptives is in general negatively associated with the level of education and socio-economic status. The result is especially consistent for Java-Bali when compared with the Outer Islands which have had much less exposure to the family planning program. This interesting finding suggests that in Java-Bali the program has been made accessible to the lower socio-economic groups; either the program has reached out to them or they have sought the services of the program. The lower socio-economic groups are also more likely to respond to community pressure, of which the family planning program has taken advantage.

In general, women who work outside the home are more likely to know about family planning but are not necessarily more likely to be currently using contraception.

In conclusion, the multivariate analysis of family planning practice has yielded two important conclusions. First, the number of living children a woman has is the most significant factor influencing knowledge and use of contraception, which suggests that women seek information on family planning when they have achieved their desired family size. Second, in Java-Bali, the family planning program, which has been in operation for some years, has reached the lower socio-economic groups who show greater acceptance of program methods than the higher groups, among those who are using some method of family planning.

4.3.2 Fertility

The regression estimates with the number of children ever born to ever-married women as the dependent variable for provinces of Java and major islands of the Outer Islands are presented in Table A8. In order to make the results comparable across different regions, each having a different mean and a different coefficient for every variable, elasticities around region-specific means were calculated for the continuous variables. ^{1/} These are presented in Table A9. For the dummy variables, a measure comparable to the elasticity has been used; this gives the change in the number of children ever born attributable to the dummy variable as a percentage of the predicted level around the mean without this variable. The results are given in Table A10.

The regression equations should be interpreted in the context of the analytical framework set out in section three. First of all, we have three variables which together reflect the exposure of a woman to pregnancy: her current age, age at first marriage and marital disruption. The results

^{1/} These are summary statistics giving the percentage change in the average number of children ever born associated with a one percentage change in the independent variable.

are as expected and statistically significant throughout. A large number of children ever born is positively associated with increasing age of the woman, and negatively associated both with increasing age at first marriage and with marital disruption following death of the husband, divorce or separation.

Since the effects of other socio-economic factors are controlled for, the coefficients of current age in the regressions reflect the underlying propensity to have children of ever-married women. It is interesting that this propensity is higher in the Outer Islands than in Java and Bali. The finding may reflect higher preferences for children in the Outer Islands which are not correlated with the factors included here, and also the lower prevalence of family planning practice there. In this respect, it may be noted that Jakarta, which has a higher propensity to have children than the rest of Java, also has a lower proportion of women who have used a method of family planning.

The correlation coefficients underlying the regression coefficients reported here indicate that late marriage is associated with a higher level of education and income. Therefore socio-economic factors have both a direct effect on fertility and an indirect effect through their influence on the age at marriage. The finding that age at marriage has a substantial effect on the number of children ever born, as shown in Table All, is indicative of a situation in which family planning is still not widely practiced. The lower current average ages at first marriage in Java compared with the Outer Islands is reflected in the greater potential effect of this variable on fertility decline in Java.

With respect to marital disruption it should be noted that childlessness may be a reason for divorce or separation, so that the association between this variable and fertility can go either way. The larger coefficient obtained for Jakarta, for instance, may be due to a greater tendency for women who are divorced or separated from their husbands to migrate to this city.

The analytical framework for fertility behavior led us to expect a negative association between fertility and both education and income level, although at low levels of education and income the association may be positive. The results are generally consistent with this expectation. For all regions except Bali, more education is first associated with higher fertility, but beyond a certain level, either completion of elementary or junior high school, it is associated with lower fertility. In Bali the relationship between education and fertility is negative throughout.

For the income-related variables, fertility is positively associated with household expenditures but negatively associated with its squared value, showing that fertility initially rises with increasing expenditures but declines beyond a certain level. Ownership of modern consumer durables and use of electricity, both reflecting a household income above some minimal level, as well as modernisation, show negative associations with fertility.

The regression estimates given here may suffer from high degrees of association among the independent variables, so that the results are not always clear-cut. Reducing the number of variables which move together would give clearer results. Nevertheless, it would appear that, at low levels of income and education of women, an improvement in these variables is associated with rising fertility but, beyond some level of education and income, the improvement is clearly associated with falling fertility. 1/

As far as economic activity is concerned, women who are not economically active have fewer children. This may be taken as indicative of the negative effect of maternal ill health on fertility. Although we had expected to find women engaged in housekeeping having more children, as well as women who work in household enterprises as compared to outside the home, the results obtained here are mixed. Where the results are statistically significant, work outside the home is negatively associated with fertility. It is likely that there are some definitional problems which deserve further scrutiny. In particular, the distinction between housekeeping and working in a household enterprise is likely to be hazy in Indonesia and may be simply a matter of degree, so that the effect of one variable may be confounded by the presence of the other in the equation.

The religion variables are included to control for differences in the attitudes towards the number of children desired by a family, as well as towards family planning. These variables are not suitable for showing differences among religions when used in region-specific equations because there is a strong association between religion and region; for example, all provinces of Java are mostly Moslem, while Bali is mostly Hindu. The religion variables therefore show too little variation and should not have been included in the regressions for some of the regions.

Knowledge of contraception was included in the equation without any a priori notion. This approach was adopted because, on the one hand, women with knowledge of contraception have the means for limiting family size. On the other hand, women who wish to limit fertility may be more vigorous in their search for knowledge on contraception. The regression results tend to confirm the second hypothesis since we find a positive association between knowledge of contraception and the number of children ever born in those provinces or regions where the coefficients for contraception knowledge are statistically significant. Thus women with more children are the ones with greater awareness of contraception. The association is strongest in Bali and is statistically insignificant in the Outer Islands, where the family planning program has only recently been introduced.

To conclude, the regressions show the expected result that fertility is positively associated with exposure to pregnancy. The underlying propensity of women to have children, holding other factors constant, appears

1/ Similar results have been obtained by other researchers. See, for example, Valerie J. Hull, The Positive Relation Between Economic Class and Family Size in Java, Gadjah Mada University, Population Institute, Monograph Series No. 2, 1976.

to be higher in the Outer Islands than in Java, reflecting some systematic factors which have been excluded from the regressions, for example, the fact that the FP program was introduced more recently in the Outer Islands or that land is less scarce in relation to the size of population there.

At low levels of education and income, there is a positive association between these factors and fertility. However, the association is clearly negative at higher levels. Thus higher levels of schooling and an improvement in the standard of living will eventually be associated with a decline in fertility. Modernization, which is here approximated by use of electricity and modern durables, is found to be negatively associated with fertility. It is found that women with larger numbers of children are the ones who seek knowledge of contraception.

4.4 Conclusion

These preliminary results represent a first attempt aimed at assessing the relative influence of both socio-economic factors and the family planning program on fertility behavior in Indonesia. In addition, the study is unique in that it is the only one of this kind which focuses on differences between Java-Bali and the Outer Islands. The results show that there are some fundamental differences in fertility behavior and family planning practice in Java and the Outer Islands. The former can apparently be characterized by a lower propensity of women to have children, given that other factors are controlled for, and by a much greater prevalence of family planning knowledge and practice, among the lower socio-economic groups as well as the higher ones. Thus, whereas it is clear that socio-economic factors do influence fertility and family planning decisions, their significance may be reduced when all strata of society have easy access to contraception.

It should be emphasized that the research results reported here are preliminary. Future work will aim to separate the effect of socio-economic factors and the family planning program more directly by including community-level data which give information on the family-planning services available to the women in a given community. This will be carried out in the context of a research program, in which data from the Intercensal Population Survey, 1976 and the Multi-Purpose Household Survey, 1978/79 (SUSENAS 1978/79) will be used to analyze interrelated questions concerning poverty, fertility and human resources in Indonesia.

Table A1: ESTIMATED AGE-SPECIFIC MARITAL FERTILITY RATES PER 1,000 WOMEN (ASMFRS), BY FIVE-YEAR AGE-GROUPS, AND COALE'S INDEX OF MARITAL FERTILITY (I_g)^{1/}, BASED ON 1971 CENSUS, 1973 FMS AND 1976 IFS, BY PROVINCE.

Province and marital fertility measure	1976 IFS			Province and marital fertility measure	1976 IFS		
	1967-1971	1972-1973	1976 ^{2/}		1967-1971	1972-1973	1976 ^{2/}
Java/Bali ^{3/} ASMFR, by age				Yogyakarta ASMFR, by age			
15-19	334	337	389	15-19	270	285	254
20-24	323	337	367	20-24	304	261	474
25-29	285	278	262	25-29	264	308	270
30-34	231	210	178	30-34	231	228	240
35-39	166	155	102	35-39	189	121	142
40-44	120	71	53	40-44	100	74	70
45-49	u	32	26	45-49	u	0	21
I_g (Coale)	.589	.566	.547	I_g (Coale)	.532	.495	.576
West Java ASMFR, by age				East Java ASMFR, by age			
15-19	363	355	413	15-19	325	327	359
20-24	317	332	382	20-24	309	326	368
25-29	305	308	317	25-29	258	233	219
30-34	246	222	168	30-34	189	177	145
35-39	187	204	128	35-39	145	123	60
40-44	152	89	68	40-44	91	53	51
45-49	u	45	19	45-49	u	40	32
I_g (Coale)	.642	.632	.628	I_g (Coale)	.536	.507	.488
Jakarta ASMFR, by age				Bali ASMFR, by age			
15-19	406	443	473	15-19	378	373	519
20-24	387	399	403	20-24	384	369	298
25-29	309	329	263	25-29	341	356	277
30-34	300	207	235	30-34	262	235	117
35-39	185	185	75	35-39	198	124	74
40-44	138	88	58	40-44	146	115	58
45-49	u	51	56	45-49	u	0	74
I_g (Coale)	.681	.652	.596	I_g (Coale)	.692	.642	.446
Central Java ASMFR, by age							
15-19	293	303	375				
20-24	323	343	329				
25-29	295	289	261				
30-34	253	238	217				
35-39	104	149	133				
40-44	121	69	40				
45-49	u	18	16				
I_g (Coale)	.578	.554	.531				

^{1/} The index of marital fertility (I_g) is defined as the number of births of currently married women relative to the number they would bear if subject to Hutterite marital fertility rates. (The Hutterites are the most prolific sizable population for which there are reliable statistics.) The index is confined to the interval zero to one.

^{2/} Uses pregnancy-status method

^{3/} Population base from 1971 census

Source: Jeanne Cairns Siquefield and Bambang Sungkono, "Fertility and Family Planning Trends in Java and Bali," International Family Planning Perspectives, Vol. 5, No. 2, June 1979, p. 47.

Table A2: ESTIMATED PERCENTAGE OF WOMEN CURRENTLY MARRIED BY FIVE-YEAR AGE-GROUPS, COALE'S INDEX OF PROPORTION MARRIED (I)^{1/}, AND SINGULATE MEAN AGE AT MARRIAGE (SMAM)^m2/, BASED ON 1971 CENSUS SERIES E AND PRELIMINARY RESULTS FROM 1976 SUPAS I, ACCORDING TO PROVINCE.

Year and measure	Java-Bali	West Java	Jakarta	Central Java	Yogyakarta	East Java	Bali
1971							
% currently married, by age							
15-19	53.3	54.4	28.1	33.9	13.1	39.2	18.2
20-24	75.2	81.4	65.7	74.6	55.9	73.9	58.9
25-29	86.9	89.9	83.2	87.8	84.7	85.8	81.1
30-34	87.1	88.9	85.4	87.0	86.6	86.2	85.0
35-39	83.4	85.1	83.1	83.8	85.6	81.5	80.5
40-44	74.6	76.3	73.7	76.4	81.1	70.9	80.5
45-49	67.2	69.3	67.9	69.9	74.2	63.1	70.9
I _m	.75	.79	.69	.75	.87	.75	.70
SMAM ^{2/}	19.7	17.7	20.4	19.9	21.7	18.5	21.8
1976							
% currently married, by age							
15-19	30.8	40.7	24.3	25.9	13.4	31.1	16.8
20-24	69.7	77.6	59.2	57.9	53.0	58.9	52.4
25-29	84.4	87.5	78.0	81.0	79.2	83.3	82.9
30-34	85.5	88.6	86.1	83.1	83.7	85.6	85.5
35-39	84.7	85.9	83.5	81.8	82.9	81.1	85.4
40-44	76.0	79.3	76.9	77.7	80.5	74.7	73.3
45-49	71.4	71.8	69.1	71.4	75.8	67.5	76.2
I _m	.71	.77	.64	.69	.82	.71	.67
SMAM ^{2/}	19.4	18.7	21.5	19.6	20.9	16.4	21.4

^{1/}The index of proportion married (I_m) is defined as the number of children that married women would produce relative to the number that all women would produce if both sets of women experienced the Hutterite fertility schedule. (The Hutterites are the most prolific sizable population for which there are reliable statistics.) The index is confined to the interval zero to one.

^{2/}The singulate mean age at marriage (SMAM) is the average age at marriage of all women married before the age of 50.

Source: Jeanne Cairns Sinquefield and Bambang Sungkono, "Fertility and Family Planning Trends in Java and Bali," International Family Planning Perspectives, Vol. 5, No. 2, June 1979, p. 48.

Table A3: NUMBER OF HOUSEHOLDS, BY PROVINCE, IN THE INTERCENSAL POPULATION SURVEY (SUPAS) PHASE II.

PROVINCE	Urban	Rural	Total
1. Jakarta	3,000	NA	3,000
2. West Java	3,000	5,334	8,334
3. Central Java	3,100	5,000	8,100
4. Yogyakarta	600	3,000	3,600
5. East Java	3,300	5,334	8,634
6. Bali	600	3,000	3,600
Total Java and Bali	13,600	21,668	35,268
7. Aceh	150	300	450
8. North Sumatra	1,000	900	1,900
9. West Sumatra	375	400	775
10. Riau	150	240	390
11. Jambi	200	200	400
12. South Sumatra	900	400	1,300
13. Bengkulu	50	200	250
14. Lampung	250	400	650
15. North Sulawesi	800	600	1,400
16. Central Sulawesi	200	400	600
17. South Sulawesi	2,100	1,800	3,900
18. Southeast Sulawesi	100	300	400
19. West Kalimantan	700	1,200	1,900
20. Central Kalimantan	275	600	875
21. South Kalimantan	1,300	900	2,200
22. East Kalimantan	875	300	1,175
23. West Nusa Tenggara	500	3,000	3,300
24. East Nusa Tenggara	600	600	1,200
25. Maluku	1,200	U	1,200
26. Irian Jaya	1,200	U	1,200
Total outside Java and Bali	12,725	12,740	25,465
Total Indonesia	26,325	34,408	60,733

U-unavailable
NA-not applicable

Source: Biro Pusat Statistik, Organisation and Methods: 1976
Intercensal Population Survey, Technical Report Series, Monograph No. 1,
(Jakarta 1976), Appendix B.

Table A4: SELECTED FERTILITY AND OTHER SOCIO-DEMOGRAPHIC INDICATORS BY REGION AND AREA OF RESIDENCE, INDONESIA, 1976

Indicator	URBAN											
	JAVA	DKI Jakarta	West Java	Central Java	DI Yogyakarta	East Java	OUTSIDE JAVA	Sumatra	Kalimantan	Sulawesi	Other Islands (incl. Bali)	Bali
1. % of population aged 0-4	14.2	15.7	14.7	12.9	11.5	12.8	15.4	15.4	16.0	14.8	14.9	12.0
2. % of women aged 15-49 in female population	51.3	52.9	49.3	50.0	49.5	51.7	48.8	48.0	49.0	51.0	48.0	48.2
3. % of women ever-married in female population (aged 10+)	62.3	61.2	62.2	62.1	58.1	64.3	58.6	59.1	60.2	57.7	53.3	55.8
4. Average age of ever-married women	38.1	34.9	37.8	41.3	44.3	39.6	37.7	37.7	36.5	38.2	39.7	42.8
5. Average age at first marriage	17.9	17.9	17.5	18.3	19.7	17.9	18.5	18.2	18.6	18.5	20.6	21.3
6. % of ever-married women (aged 10+) having married more than once	25.2	23.6	30.7	23.7	20.1	25.0	18.3	21.6	12.7	16.7	11.6	11.5
7. % of ever-married women (aged 10+) who have never attended school	36.3	32.6	22.2	44.3	49.7	43.8	32.9	28.9	33.5	42.5	34.3	51.3
8. % of ever-married women (aged 10+) working or looking for work	28.9	18.7	24.8	43.1	49.6	32.6	26.6	30.7	15.5	21.0	38.8	53.6
9. % of married women (aged under 50) who have ever heard of a method of family planning	79.0	74.0	85.3	87.5	72.0	77.0	67.2	70.8	48.6	71.0	76.6	74.3
10. % of married women (aged under 50) currently using a method of family planning	24.0	23.5	20.3	21.5	18.2	29.5	11.8	10.4	10.7	10.2	32.1	35.7
11. % of ever-married women (aged 10+) childless	12.4	11.1	12.0	13.2	12.2	13.9	8.7	8.5	8.6	9.1	9.8	11.2
12. % of ever-married women (aged 30+) childless	8.8	6.2	7.9	10.3	10.1	10.9	4.5	4.3	3.4	5.0	7.4	9.2
13. Average no. of children ever born/ever-married woman (aged 10+)	3.7	3.9	4.0	3.8	4.0	3.4	4.5	4.5	4.1	4.2	4.1	3.9
14. Average no. of children surviving/ever-married woman (aged 10+)	3.0	3.2	3.2	3.0	3.1	2.8	3.6	3.6	3.5	3.3	3.5	3.3
15. Survival ratio [(14)/(13) x 100]	0.81	0.82	0.80	0.79	0.77	0.82	0.80	0.80	0.85	0.79	0.85	0.85
16. % of married women (aged under 50) wanting an additional child	43.0	44.1	43.3	43.8	45.3	42.4	44.7	41.5	50.9	47.5	45.5	40.0

Table A4:(continued)

Indicator	RURAL										
	JAVA	West Java	Central Java	DI Yogyakarta	East Java	OUTSIDE JAVA	Sumatra	Kalimantan	Sulawesi	Other Islands (incl. Bali)	Bali
1. % of population aged 0-4	14.5	16.8	14.2	12.7	13.0	16.2	16.3	15.8	16.8	15.4	14.6
2. % of women aged 15-49 in female population	48.1	47.6	47.4	46.8	49.5	46.3	45.3	48.7	46.7	47.0	45.5
3. % of women ever-married in female population (aged 10+)	74.7	78.3	71.5	67.1	75.3	65.5	65.0	67.3	64.3	67.6	65.9
4. Average age of ever-married women	38.2	36.5	38.8	42.3	38.7	38.0	37.7	36.4	38.6	39.8	41.3
5. Average age at first marriage	16.6	16.1	16.5	18.7	16.7	18.3	17.9	17.8	18.4	19.9	20.6
6. % of ever-married women (aged 10+) having married more than once	37.0	42.4	37.9	28.6	32.5	17.1	17.0	16.1	16.8	19.0	11.5
7. % of ever-married women (aged 10+) who have never attended school	61.0	53.5	62.5	71.0	65.2	48.0	37.8	57.5	53.1	69.8	75.1
8. % of ever-married women (aged 10+) working or looking for work	61.2	46.8	68.6	82.2	65.3	51.9	55.8	56.4	35.8	58.0	65.8
9. % of married women (aged under 50) who have ever heard of a method of family planning	76.1	74.1	75.7	67.4	78.9	47.6	45.1	21.7	63.6	58.1	72.0
10. % of married women (aged under 50) currently using a method of family planning	23.9	13.5	20.9	21.0	36.1	5.2	3.2	1.7	5.2	17.0	33.2
11. % of ever-married women (aged 10+) childless	13.6	14.0	12.8	9.8	14.2	9.0	8.4	13.0	7.2	10.1	10.4
12. % of ever-married women (aged 30+) childless	6.8	7.0	6.8	4.9	8.9	4.8	4.2	7.6	3.7	6.5	7.8
13. Average no. of children ever born/ever-married woman (aged 10+)	3.6	3.9	3.8	3.9	3.3	4.2	4.1	3.6	4.4	4.2	4.1
14. Average no. of children surviving/ever-married woman (aged 10+)	2.7	2.8	2.9	3.1	2.6	3.3	3.3	2.9	3.3	3.0	3.0
15. Survival ratio (14)/(13) x 100	0.75	0.72	0.76	0.79	0.79	0.79	0.80	0.81	0.75	0.71	0.73
16. % of married women (aged under 50) wanting an additional child	49.6	43.5	48.4	51.3	52.2	56.5	52.1	61.3	66.5	60.8	41.2

Source: 1976 Intercensal Population Survey, unpublished tabulation series number 1, Fertility of the Indonesian Population Central Bureau of Statistics, Jakarta, Tables 1-6, 10, 15 and 18.

Table A4: (continued)

Indicator	TOTAL											
	JAVA	DKI Jakarta	West Java	Central Java	DI Yogyakarta	East Java	OUTSIDE JAVA	Sumatra	Kalimantan	Sulawesi	Other Islands (incl. Bali)	Bali
1. % of population aged 0-4	14.5	15.7	16.5	14.0	12.5	13.0	16.1	16.1	15.8	16.4	15.4	14.4
2. % of women aged 15-49 in female population	48.7	52.9	47.8	47.6	47.2	49.8	46.7	45.8	48.7	47.4	47.0	45.8
3. % of women ever-married in female population (aged 10+)	72.4	61.2	76.3	70.5	65.6	73.7	64.1	63.8	65.5	63.1	65.9	64.9
4. Average age of ever-married women	38.2	34.9	36.6	39.1	42.5	38.8	44.0	37.7	36.5	38.5	39.8	41.4
5. Average age at first marriage	16.8	17.9	16.2	16.7	18.9	16.8	18.3	18.0	18.0	18.4	20.0	20.7
6. % of ever-married women (aged 10+) having married more than once	35.1	23.6	41.1	36.5	27.3	31.6	17.3	17.9	15.3	16.8	18.3	11.5
7. % of ever-married women (aged 10+) who have never attended school	57.1	32.6	50.3	60.6	67.8	62.5	45.3	36.1	51.9	51.2	66.4	73.0
8. % of ever-married women (aged 10+) working or looking for work	56.1	18.7	44.6	66.1	77.3	61.2	47.3	51.1	46.8	33.2	56.1	64.7
9. % of married women (aged under 50) who have ever heard of a method of family planning	76.5	74.0	75.2	76.8	68.1	78.7	51.2	50.0	28.1	64.9	59.9	72.1
10. % of married women (aged under 50) currently using a method of family planning	23.9	23.5	14.2	21.0	20.6	35.2	6.4	4.6	3.8	6.1	18.5	33.4
11. % of ever-married women (aged 10+) childless	13.4	11.1	13.8	12.9	10.2	14.2	8.9	8.4	12.0	7.6	10.0	10.5
12. % of ever-married women (aged 30+) childless	7.8	6.2	7.1	7.2	5.7	9.2	4.8	4.2	6.7	3.9	6.6	8.0
13. Average no. of children ever born/ever-married woman (aged 10+)	3.6	3.7	3.9	3.8	4.0	3.3	4.2	4.2	3.7	4.4	4.2	4.0
14. Average no. of children surviving/ever-married woman (aged 10+)	2.8	3.1	2.8	2.9	3.1	2.6	3.3	3.4	3.0	3.3	3.0	3.0
15. Survival ratio $[(14)/(13) \times 100]$	0.77	0.82	0.73	0.77	0.77	0.79	0.79	0.81	0.81	0.76	0.72	0.75
16. % of married women (aged under 50) wanting an additional child	52.0	51.7	50.1	53.1	54.8	52.6	68.1	70.2	66.2	68.4	60.6	46.6

Table A5: REGRESSION COEFFICIENTS (OLS) ON WHETHER AN EVER-MARRIED WOMAN BETWEEN AGES 15-49 KNOWS OF CONTRACEPTION

Independent Variable	Province or Region									
	D.K.I. Jakarta	West Java	Central Java	Yogyakarta	Bali	Sumatra	Sulawesi	Kalimantan	Nusa Tenggara	
Constant	0.442 (8.099)	0.629 (15.901)	0.666 (12.200)	0.777 (10.368)	0.402 (9.213)	0.438 (11.015)	0.379 (7.169)	0.424 (3.953)		
Demographics										
Age	-0.582E-2 (-5.238)	-0.386E-2 (-5.669)	-0.534E-2 (-5.463)	-0.0136 (-10.664)	-0.772E-2 (-8.314)	-0.502E-2 (-5.369)	-0.119E-2 (-1.068)	-0.456E-2 (-2.268)		
Age at first marriage	0.678E-2 (2.771)	0.504E-2 (2.766)	0.999E-2 (3.732)	0.308E-2 (1.188)	0.936E-2 (4.364)	0.405E-2 (2.239)	-0.191E-2 (-0.834)	0.910E-2 (2.311)		
Widow/divorce/separated ^a	-0.531 (-21.673)	-0.623 (40.677)	-0.641 (-29.883)	-0.512 (-16.866)	-0.364 (-16.959)	-0.447 (-24.332)	-0.196 (-7.568)	-0.371 (-7.669)		
Number of children who died	0.013 (2.163)	0.013 (2.163)	-0.022 (-3.338)	0.016 (2.336)	0.807E-3 (0.182)	0.013 (2.819)	0.866E-2 (1.223)	-0.026 (-2.267)		
Number of surviving children	0.025 (6.476)	0.025 (6.476)	0.047 (11.236)	0.059 (13.082)	0.021 (6.579)	0.024 (7.520)	0.012 (2.996)	0.029 (4.431)		
Religion ^b										
Christian	0.019 (0.676)	0.028 (0.738)	-0.154 (-0.939)	0.086 (0.853)	0.115 (5.332)	0.081 (4.465)	-0.074 (-2.844)	-0.139 (-4.292)		
Hindu/Buddhist/Confucian/Other	-0.022 (-0.941)	-0.035 (-0.742)	-0.017 (-0.442)	-0.017 (-0.442)	-0.137 (-4.041)	-0.039 (-0.916)	-0.210 (-10.067)	0.283 (3.591)		
Education ^c										
Elementary	0.160 (8.092)	0.113 (8.868)	0.090 (5.315)	0.069 (3.607)	0.089 (6.408)	0.214 (15.363)	0.202 (12.269)	0.133 (4.045)		
Junior High	0.307 (6.724)	0.173 (4.990)	0.252 (1.959)	0.216 (2.197)	0.226 (5.519)	0.315 (7.528)	0.589 (9.309)	0.344 (3.608)		
Junior High General	0.269 (8.846)	0.182 (7.023)	0.119 (1.397)	0.208 (3.782)	0.232 (9.190)	0.308 (10.854)	0.434 (12.574)	0.283 (4.809)		
Senior High	0.288 (6.884)	0.211 (6.303)	0.262 (1.978)	0.293 (3.390)	0.227 (5.076)	0.335 (7.640)	0.609 (9.128)	0.245 (3.089)		
Senior High General/Academy/University	0.323 (9.076)	0.220 (6.581)	0.256 (0.949)	0.228 (3.124)	0.286 (6.113)	0.365 (8.242)	0.508 (8.418)	0.245 (2.826)		
Economic Activity ^d										
Housekeeping ^e	-0.012 (-0.464)	0.041 (3.148)	-0.032 (-2.003)	0.011 (0.519)	0.084 (6.059)	0.065 (4.036)	0.032 (1.629)	-0.084 (-2.741)		
Not Active Economically	0.015 (0.235)	-0.094 (-2.785)	-0.348 (-7.507)	0.078 (0.317)	0.082 (1.866)	0.019 (0.373)	0.082 (2.301)	-0.219 (-1.503)		
Non-household Enterprise ^f	0.017 (0.488)	0.043 (2.249)	0.076 (2.029)	0.077 (2.179)	0.163 (4.343)	0.091 (2.242)	0.098 (2.245)	0.245 (3.089)		
Male Marriage										
Modern Durables ^g	0.115 (4.734)	0.076 (6.680)	-0.010 (-0.554)	0.069 (3.656)	0.084 (6.481)	0.059 (3.953)	0.012 (0.746)	0.113 (2.049)		
Electricity ^h	-0.833E-2 (-0.391)	-0.021 (-1.467)	-0.126 (-1.174)	-0.890E-2 (-0.239)	0.204E-2 (2.623)	-0.144 (-6.419)	0.061 (2.301)	0.359E-2 (3.036)		
Household Exp.	0.167E-2 (2.418)	0.403E-3 (0.710)	-0.188E-2 (-2.266)	0.114E-2 (0.551)	0.204E-2 (2.623)	-0.389E-2 (-2.819)	-0.389E-2 (-2.819)	0.410E-4 (-2.485)		
Household Exp. Sqrd.	-0.632E-5 (-2.080)	-0.312E-5 (-1.155)	0.164E-5 (1.060)	-0.103E-4 (-0.337)	-0.637E-5 (-1.593)	-0.174E-5 (-1.747)	-0.174E-5 (-1.747)	-0.927E-5 (-2.911)		
Location ⁱ										
Rural ^j	NA	0.561E-2 (0.486)	0.056 (2.052)	0.056 (2.052)	-0.165 (12.802)	-0.059 (-4.639)	-0.212 (-11.823)	-0.077 (-1.846)		
B	2852	5728	2618	2726	5301	5200	2734	1239		February 1980

t - Statistics are given in parentheses
 * - Dummy variables
^a Not included: Married
^b Not included: Muslims
^c Not included: With no education
^d Not included: Working

^e Not included: Household enterprise
^f Not included: Not having stereo, radio, T.V., motorcar
^g Not included: Not having electricity
^h Not included: Urban only
ⁱ Urban only

Table A6: REGRESSION COEFFICIENTS (OLS) ON WHETHER AN EVER-MARRIED WOMAN BETWEEN AGES 15-49 WHO KNOWS OF CONTRACEPTION HAS BEEN USING IT

Independent Variable	Province or Region									
	D. K. I. Jakarta	West Java	Central Java	Yogyakarta	East Java / ¹	Bali	Sumatra	Sulawesi	Kalimantan	Riau Tenggara
Constant	0.051 (0.764)	0.034 (0.683)			0.532 (6.065)	-0.037 (-0.349)	-0.109 (-2.431)	0.112E-2 (0.027)	-0.218 (2.107)	0.322 (2.707)
Demographic										
Age	-0.915E-2 (-5.219)	-0.456E-2 (-4.961)			-0.011 (-6.074)	-0.454E-2 (-2.017)	-0.369E-2 (-3.386)	-0.161E-2 (-1.629)	-0.812E-2 (-3.445)	-0.752E-2 (-3.099)
Age at first marriage	0.712E-2 (2.123)	0.850E-2 (3.774)			0.420E-2 (1.018)	0.678E-2 (1.699)	0.486E-2 (2.287)	0.199E-3 (0.114)	0.446E-2 (1.003)	0.191E-2 (0.417)
Widow/divorcee/separated*/ ^b	-0.127 (-1.639)				-0.219 (-2.029)	-0.033 (-0.275)	-0.056 (-1.291)	-0.049 (-1.298)	-0.163 (-1.764)	-0.159 (-1.607)
Number of children who died	-0.999E-2 (-1.065)	-0.468E-2 (-0.964)			-0.029 (-2.596)	-0.816E-2 (-0.964)	0.012 (2.057)	-0.950E-2 (-1.975)	-0.704E-2 (-0.541)	-0.342E-2 (-0.226)
Number of surviving children	0.063 (11.089)	0.033 (10.359)			0.075 (10.856)	0.078 (10.293)	0.299 (8.790)	0.026 (8.419)	0.026 (6.029)	0.041 (4.874)
Religion*/^b										
Christian	0.058 (1.704)	0.192 (4.533)			-0.038 (-0.128)		-0.050 (2.635)	0.070 (4.528)	0.182 (3.653)	-0.104 (-2.796)
Hindu/Buddhist/Confucian/Other	0.088 (1.829)	0.193 (3.497)				0.114 (2.324)	0.011 (0.273)		0.978E-2 (0.137)	-0.141 (-1.903)
Education* /^c										
Elementary	0.039 (1.288)	0.037 (2.169)			-0.037 (-1.431)	-0.338E-2 (-0.129)	0.034 (1.805)	0.323E-2 (0.226)	-0.064 (-1.541)	-0.031 (-0.952)
Junior High Vocational	0.156 (2.739)	0.126 (3.109)			-0.244 (-1.509)	0.182 (1.561)	0.156 (4.274)	0.068 (1.954)	0.084 (1.110)	-0.060 (-0.711)
Junior High General	0.149 (3.597)	0.111 (3.579)			0.025 (0.201)	0.061 (0.874)	0.127 (4.916)	0.068 (2.741)	0.061 (1.140)	-
Senior High Vocational	0.240 (4.442)	0.136 (3.527)			0.117 (0.657)	-0.104 (-0.995)	0.178 (4.580)	0.165 (4.537)	-0.055 (-0.684)	0.013 (0.176)
Senior High General/Academy/University	0.268 (5.634)	0.164 (4.195)				0.120 (1.326)	0.137 (3.579)	0.137 (3.726)	0.095 (1.233)	0.022 (0.299)
Economic Activity*										
Housekeeping		-0.096 (-5.693)			0.011 (0.459)	0.091 (3.002)	-0.011 (-0.723)	-0.015 (-0.857)	0.694E-2 (0.137)	-0.138 (-3.314)
Not Active Economically	-0.294 (-2.354)	-0.104 (-1.679)			-0.360 (-1.958)	0.191 (1.119)	0.063 (1.036)	0.076 (1.001)	-0.308 (-1.361)	-0.243 (-0.929)
Non-Household Enterprise / ^e	0.019 (0.508)	-0.028 (-0.964)			0.085 (1.535)	0.090 (1.803)	0.021 (0.680)	0.835E-2 (0.234)	0.057 (0.696)	-0.065 (-0.882)
Welfare Measures										
Modern Durables* / ^f	0.081 (3.346)	0.021 (1.513)			-0.044 (-1.557)	0.479E-2 (0.183)	0.053 (4.001)	0.484E-2 (0.356)	0.031 (0.971)	0.075 (2.010)
Electricity* / ^g	0.059 (2.164)	0.770 (4.476)			-0.378 (-2.221)	0.023 (0.460)	0.026 (1.446)	0.133 (6.571)	0.178 (4.919)	-0.010 (-0.202)
Household Exp.	0.128E-2 (1.335)	0.169E-2 (2.371)			0.136E-2 (0.641)	0.372E-2 (1.279)	0.314E-2 (4.180)	0.212E-2 (2.029)	-0.325E-2 (-1.235)	0.504E-2 (2.636)
Household Exp. Sqrd.	-0.365E-5 (-0.825)	-0.462 (-1.378)			0.434E-5 (0.353)	-0.365E-4 (-0.892)	-0.946E-5 (-2.333)	0.163E-5 (0.145)	0.368E-4 (1.225)	-0.135E-4 (-0.968)
Location*										
Rural / ^h	NA	0.046				0.030 (0.802)	-0.024 (-1.714)	-0.466E-2 (-0.379)	-0.335 (-0.961)	-0.043 (-0.888)
N	1855	3964			1667	1780	2706	3008	822	652

t - Statistics are given in parentheses
 * - Dummy variables
¹/a Not included: Married
²/b Not included: Muslims
³/c Not included: With no education
⁴/d Not included: Working

⁵/e Not included: Household enterprise
⁶/f Not included: Not having stereo, radio, T.V., motorcar
⁷/g Not included: Not having electricity
⁸/h Not included: Urban
⁹/i Urban only

February 1980

Table A7: REGRESSION COEFFICIENTS (OLS) ON WHETHER AN EVER-MARRIED WOMAN BETWEEN AGES 15-49 WHO HAS BEEN USING CONTRACEPTION IS USING A MODERN PROGRAM METHOD (PILL, IUD OR CONDOM)

Independent Variable	Province or Region									
	D.K.I. Jakarta	West Java	Central Java	Yogya-Karta	East Java /1	Bali	Sumatra	Sulawesi	Kalimantan	Rusa Tenggara
Constant	0.865 (5.957)	1.345 (12.526)			1.039 (25.804)	0.858 12.163	0.878 (4.110)	0.747 (3.309)	0.954 (2.607)	0.144 (0.312)
Demographic										
Age	-0.835E-2 (-2.018)	-0.010 (-3.593)			-0.422E-2 (-4.349)	-0.689E-2 (-4.181)	-0.019 (-3.647)	-0.210E-2 (-0.418)	-0.010 (-1.106)	-0.034 (-2.745)
Age at first marriage	0.733E-2 (1.085)	-0.617E-2 (-1.270)			0.495E-2 (2.479)	0.972E-2 (3.759)	0.767E-2 (0.817)	-0.221E-2 (-0.245)	-0.018 (-1.056)	0.039 (2.021)
Widow/divorcee/ separated* /a	-0.052 (-0.211)	-0.037 (-0.414)			0.033 (0.375)	-0.040 (-0.484)				-1.020 (-1.727)
Number of children who died	0.018 (0.941)	-0.012 (-1.075)			0.806E-2 (1.439)	0.023 (3.416)	-0.019 (-0.951)	-0.012 (-0.485)	0.050 (0.940)	0.081 (1.666)
Number of surviving children	0.371E-2 (0.295)	0.017 2.058			0.791E-2 (2.221)	0.018 (3.350)	0.056 (3.634)	0.027 (1.922)	0.028 (1.048)	0.024 (0.668)
Religion* /b										
Christian	0.016 (0.331)	-0.105 (-1.852)			-0.0266 (-0.174)	-0.350 (-3.844)	-0.242 (-4.093)	0.138 (2.460)	0.044 (0.394)	-0.113 (-0.670)
Hindu/Buddhist/Confucian/Other	0.082 (1.062)	-0.085 (-1.111)				-0.010 (-0.274)	0.035 (0.233)		0.585 (2.573)	-0.724 (-1.442)
Education* /c										
Elementary	-0.095 (-1.342)	-0.051 (-1.171)			-0.197E-2 (-0.163)	-0.647E-2 (-0.398)	-0.060 (-0.895)	-0.124 (-1.490)	-0.225 (-1.875)	0.304 (2.324)
Junior High Vocational	-0.323 (-3.182)	-0.069 (-0.907)			-0.033 (-0.303)	-0.182 (-2.919)	-0.137 (-1.384)	0.022 (0.161)	-0.020 (-0.115)	0.856 (2.734)
Junior High General	-0.107 (-1.297)	-0.169 (-2.662)			0.649E-2 (0.109)	-0.133 (-1.133)	-0.130 (-1.765)	-0.046 (-0.431)	-0.296 (-2.225)	0.431 (2.054)
Senior High Vocational	-0.117 (-1.249)	-0.256 (-3.624)				-0.299 (-3.489)		-0.123 (-0.984)	-0.602 (-2.988)	0.377 (1.612)
Senior High General/Academy/University	-0.183 (-2.087)	-0.222 (-3.103)				-0.283 (-5.335)		-0.084 (-0.646)	-0.264 (-1.487)	0.385 (1.481)
Economic Activity*										
Housekeeping /d	0.086 (1.156)	0.014 (0.413)			-0.033 (-2.870)	0.085 (4.203)	0.139 (2.203)	0.151 (1.943)	0.200 (0.960)	-0.182 (-1.471)
Not Active Economically	0.356 (0.831)	0.078 (0.622)				0.080 (0.783)	0.545 (2.083)	0.362 (1.495)		
Non-Household Enterprise /e	0.031 (0.328)	0.083 (1.635)			0.714E-2 (0.298)	0.105 (3.348)	0.158 (1.638)	0.073 (0.645)	0.336 (1.318)	-0.154 (-0.823)
Welfare Measures										
Modern Durables* /f	-0.629E-2 (-0.125)	-0.013 (-0.425)			0.020 (1.477)	0.020 (1.339)	0.148 (2.338)	-0.941E-2 (-0.148)	0.255 (2.272)	0.194 (1.640)
Electricity* /g	0.044 (1.082)	-0.010 (-0.293)			0.021 (0.192)	-0.053 (-1.734)	-0.111 (-1.952)	0.038 (0.587)	-0.013 (-0.151)	-0.069 (-0.469)
Household Exp.	0.700E-3 (1.171)	-0.319E-3 (-0.278)			-0.233E-2 (-2.688)	-0.196E-2 (-1.113)	-0.299E-2 (-0.431)	-0.486E-2 (-1.297)	-0.549E-2 (-0.818)	0.543E-2 (1.039)
Household Exp. Sqrd.	0.341E-5 (0.725)	0.341E-5 (0.725)			0.115E-4 (2.359)	0.206E-4 (0.883)	0.602E-4 (0.697)	0.294E-4 (0.973)	0.582E-4 (0.851)	-0.351E-4 (-1.221)
Location*										
Rural /h	NA					0.019 (0.853)	-0.160 (-2.588)	-0.174 (-2.565)	-0.114 (-0.928)	-0.223 (0.928)
N	599	805			749	836	341	356	167	119

February 1980

t - Statistics are given in parentheses
 * - Dummy variables
 /a Not included: Married
 /b Not included: Muslims
 /c Not included: With no education
 /d Not included: Working

/e Not included: Household enterprise
 /f Not included: Not having stereo, radio, T.V., motorcar
 /g Not included: Not having electricity
 /h Not included: Urban
 /i Urban only

Table A8: REGRESSION COEFFICIENTS (OLS): NUMBER OF CHILDREN EVER BORN TO EVER-MARRIED WOMEN AS A DEPENDENT VARIABLE, BY PROVINCE OR REGION, INDONESIA, 1976

Independent Variable	Province or Region									
	D. K. I. Jakarta	West Java	Central Java	Yogya-Karta	East Java /j	Bali	Sumatra	Sulawesi	Kalimantan	Nusa Tenggara
Constant	-10.299 (-17.322)	-11.302 (-25.751)			- 8.405 (-15.774)	- 9.200 (-15.345)	-11.004 (-27.204)	-12.895 (-30.645)	-11.242 (-21.064)	-10.757 (-11.071)
Demographic										
Age	5.164 (33.660)	4.838 (47.151)			3.761 (28.214)	4.562 (30.558)	5.112 (48.350)	5.761 (51.128)	5.118 (36.421)	5.703 (22.721)
Age at first marriage	- 0.229 (-16.856)	- 0.137 (-11.596)			- 0.103 (- 7.177)	- 0.179 (-15.468)	- 0.196 (-21.292)	- 0.178 (-21.058)	- 0.224 (-19.280)	- 0.256 (-15.036)
Widow/divorcee/separated*/a	- 2.102 (-15.365)	- 1.757 (-18.188)			- 1.363 (-11.642)	- 1.517 (-11.961)	- 1.701 (-17.842)	- 1.796 (-19.959)	- 1.496 (-10.793)	- 1.234 (- 5.707)
Religion*/b										
Christian	- 0.243 (- 1.487)	- 0.992 (- 4.118)			N.A.	- 0.065 (- 0.113)	0.699 (6.362)	0.128 (1.317)	0.520 (3.465)	- 0.237 (- 1.414)
Hindu/Buddhist/Confucian/Other	0.189 (0.976)	- 0.114 (- 0.369)			N.A.	0.047 (0.229)	- 0.104 (- 0.594)	- 0.248 (- 1.138)	0.420 (3.637)	0.677 (- 1.587)
Education*/c										
Elementary	0.152 (1.289)	0.263 (3.076)			0.154 (1.450)	* 0.389 (- 3.435)	0.338 (4.222)	0.373 (4.788)	0.320 (3.314)	0.098 (0.568)
Junior High Vocational	0.0412 (0.146)	0.310 (1.278)			0.0176 (0.0213)	- 0.177 (- 0.301)	0.572 (2.542)	0.257 (1.050)	0.902 (2.322)	0.130 0.255
Junior High General	0.0967 (0.525)	0.491 (2.696)			- 0.298 (- 0.546)	- 0.338 (- 1.013)	0.332 (2.193)	0.227 (1.395)	0.133 (0.631)	- 0.207 (- 0.644)
Senior High Vocational	- 0.179 (- 0.701)	0.038 (0.143)			- 0.517 (- 0.631)	- 1.269 (- 2.365)	- 0.317 (- 1.278)	0.002 (0.008)	0.083 (0.203)	(- 0.436) (- 0.966)
Senior High General/Academy/University	- 0.347 (- 1.604)	- 0.452 (- 1.926)			- 0.396 (- 0.228)	- 0.887 (- 1.999)	- 0.676 (- 2.604)	- 0.416 (- 1.617)	- 0.034 (- 0.920)	- 0.196 (- 0.404)
Economic Activity *										
Housekeeping /d	0.0299 (0.198)	0.321 (3.629)			0.307 (3.288)	- 0.0399 (- 0.359)	- 0.195 (- 2.692)	- 0.299 (- 3.436)	0.157 (1.436)	0.106 (0.613)
Not Active Economically	- 1.133 (- 4.231)	0.824 (- 5.328)			- 0.776 (- 3.877)	- 1.753 (- 9.311)	- 1.639 (-10.257)	- 1.671 (-10.923)	- 1.314 (- 4.295)	- 1.938 (- 5.446)
Non-Household Enterprise /e	- 0.611 (- 2.932)	- 0.355 (- 2.685)			- 0.204 (- 0.995)	0.0739 (0.365)	0.195 (1.094)	- 0.355 (- 1.516)	0.092 (0.390)	0.164 (0.454)
Welfare Measures										
Modern Durables*/ff	0.0301 0.288	- 0.152 (1.931)			- 0.0671 (- 0.624)	- 0.292 (- 2.876)	- 0.103 (- 1.498)	- 0.116 (- 1.422)	0.130 (1.381)	- 0.194 (- 1.114)
Electricity*/fg	- 0.419 (- 3.335)	- 0.496 (- 5.003)			- 0.0482 (- 0.0806)	- 0.141 (- 0.711)	0.133 (1.267)	- 0.630 (- 5.293)	- 0.481 (- 0.322)	0.589 (- 2.064)
Household Exp.	0.0381 (9.546)	0.0517 (13.899)			0.0329 (6.703)	0.0709 (6.506)	0.068 (17.576)	+ 0.045 (+ 3.889)	0.0719 (9.548)	0.045 (7.337)
Household Exp. Sqrd.	- 0.158E-3 (- 8.687)	0.207E-3 (10.993)			- 0.477E-4 (- 5.813)	- 0.627E-3 (- 3.603)	- 0.215E-3 (- 9.848)	- 0.541E-4 (+ 9.863)	- 0.584E-3 (- 6.437)	- 0.990E-4 (- 5.802)
Contraception*										
Knows of /h	0.339 (2.836)	- 0.136 (- 1.328)			0.491 (3.87)	0.631 (5.575)	- 0.088 (- 1.185)	0.150 (1.862)	- 0.151 (- 1.464)	- 0.054 (- 0.350)
Location										
Rural /i	N.A.	0.186 (2.358)			N.A.	0.157 (1.098)	- 0.180 (- 2.576)	- 0.143 (- 2.088)	0.052 (0.508)	- 0.420 (- 1.902)
R ² (adj.)	0.377	0.316			0.252	0.284	0.374	0.369	0.383	0.382
Number of Observations	3205	6997			3200	3809	6364	6317	3167	1479

February 1980

t - Statistics are given in parentheses
 * - Dummy variables
 /a Not included: Married
 /b Not included: Muslims
 /c Not included: With no education
 /d Not included: Working

/e Not included: Household enterprise
 /f Not included: Not having stereo, radio, T.V., motorcar
 /g Not included: Not having electricity
 /h Not included: Have not heard of
 /i Not included: Urban
 /j Urban only

Table A9: ELASTICITIES (AROUND THE MEANS) OF NUMBER OF CHILDREN EVER BORN WITH RESPECT TO MOTHER'S AGE, HER AGE AT FIRST MARRIAGE AND HOUSEHOLD MONTHLY EXPENDITURES

Province or Region	Mother's Age	Mother's Age at First Marriage	Household Monthly Expenditures
Java-Bali:			
DKI Jakarta	1.32	-1.04	.23
West Java	1.17	-0.55	.28
Central Java			
Yogyakarta			
East Java	1.13	-0.49	.11
Bali	1.13	-0.91	.21
Outer Islands:			
Sumatra	1.14	-0.78	.26
Sulawesi	1.28	-0.73	.16
Kalimantan	1.28	-1.03	.25
Nusatenggara	1.32	-1.21	.17

Table A10: RELATIVE CHANGES IN NUMBERS OF CHILDREN EVER BORN DUE TO CHANGES IN
SELECTED (DUMMY) VARIABLES

(%)

VARIABLE	PROVINCE OR REGION									
	DKI JAKARTA	WEST JAVA	CENTRAL JAVA	YOGYA- KARTA	EAST JAVA	BALI	SUMATRA	SULAWESI	KALI- MANTAN	NUSA- TENGGARA
<u>Religion</u>										
Christian	-6.2	-23.9*			N.A.	N11	15.8*	2.9	13.1*	-5.3
<u>Education</u>										
Elementary	3.9	6.6*			4.7	-9.4	7.9*	8.6*	8.3*	N11
<u>Economic Activity</u>										
Housekeeping	N11	8.2*			9.6*	N11	-4.0*	-6.4*	4.0	N11
Non-household Enterprise	-15.4*	-8.5*			N11	N11	4.3	-7.9	N11	N11
<u>Welfare Measures</u>										
Modern Durables	N11	-3.6			N11	-7.0*	-2.3*	-.1	3.3	-4.4
Electricity	-10.4*	-11.7*			N11	N11	3.0	-13.8*	N11	-13.4*
<u>Location</u>										
Rural	N.A.	4.6*			N.A.	4.0*	-3.9*	3.2*	N11	-26.6*

* Statistically significant above the .75 level.

Table A11: IMPLIED REDUCTION IN AVERAGE NUMBER OF CHILDREN EVER BORN DUE TO RISING AVERAGE AGE AT FIRST MARRIAGE TO 20 BY PROVINCE OR REGION

Province	Reduction in Average Number of Children Ever Born	Percentage
Java-Bali:		
DKI Jakarta	.50	(12.8)
West Java	.89	(21.6)
Central Java		
Yogyakarta		
East Java	.82	(24.6)
Outer Islands:		
Sumatra	.40	(8.9)
Sulawesi	.29	(6.4)
Kalimantan	.40	(10.0)
Nusatenggara		

References

- Birdsall, Nancy, Population and Poverty in the Developing World, World Bank, mimeo., February 1980.
- Biro Pusat Statistik, Organisation and Methods: 1976 Intercensal Population Survey, Technical Report Series, Monograph No. 1, Jakarta 1976.
- Biro Pusat Statistik, 1976 Intercensal Population Survey: Fertility of the Indonesian Population, Tabulation Series Number 1, Jakarta, 1978.
- Chandrasekaran, C. and S. Suharto, "Indonesia's Population in the Year 2000", Bulletin of Indonesian Economic Studies, Vol. XIV, November 1978.
- Chernichovsky, Dov, Bonnie Newlon and Hananto Sigit, Fertility Behavior in Rural and Urban Indonesia: A Socio-Economic Analysis, World Bank, mimeo., 1978.
- Easterlin, Richard A., "An Economic Framework for Fertility Analysis", Studies in Family Planning, 6(3): 54-63.
- Freedman, Ronald, "Evaluation and Research on Family Planning, Fertility, and Population in Indonesia", World Bank, mimeo., May 1978.
- Hull, Terence, Valerie Hull and Masri Singarimbun, "Indonesia Family Planning Story: Success and Challenge," Population Bulletin, Vol. 32, No. 6, November 1977.
- Hull, Terence, "Where Credit is Due: Policy Implication of the Recent Rapid Fertility Decline in Bali", Working Paper Series No. 18, Population Institute, Gadjah Mada University, Yogyakarta, Indonesia, 1978.
- Hull, Valerie J., The Positive Relation Between Economic Class and Family Size in Java, Gadjah Mada University, Population Institute, Monograph Series No. 2, 1976.
- Inter-Governmental Coordinating Committee and International Planned Parenthood Federation, Indonesia, Kuala Lumpur, Malaysia, December 1978, pp. 33-38.
- Iskander, N., "When Z.P.G. in Indonesia?", Universitas Indonesia, Fakultas Ekonomi, Lembaga Demografi, Jakarta, 1976.
- Jones, Gavin W., "Fertility Levels and Trends in Indonesia," Population Studies, 31(1), 1977; pp. 29-41.
- Nortman, Dorothy and Ellen Hofstatter, Population and Family Planning Programs, A Population Council Factbook, The Population Council, New York, 1978 (Ninth Edition).

- Sinquefield, Jeanne Cairns and Bambang Sungkono, "Fertility and Family Planning Trends in Java and Bali," International Family Planning Perspectives, Vol. 5, No. 2, June 1979.
- Snodgrass, Donald R. "The Family Planning Program as a Model for Administrative Improvement in Indonesia," Development Discussion Paper No. 58, Harvard Institute for International Development, Cambridge, Mass., May 1979.
- Speare, Alden, Summary Report Projections of Population and Labor Force for Regions of Indonesia, 1970-2005, Vol. I, National Institute of Sciences, LEKNAS, mimeo., 1976.
- Stokes, Bruce, Filling the Family Planning Gap, Worldwatch Paper 12, May 1977.
- Suharto, S. and Lee-Jay Cho, Preliminary Estimates of Indonesian Fertility Based on the 1976 Intercensal Population Survey, East-West Population Institute, 1978.
- United Nations, Department of Economic and Social Affairs, "National Experience in the Formulation and Implementation of Population Policy, 1960-1976, Indonesia," New York, 1978.
- United Nations, Department of International Economic and Social Affairs, Population Division and United Nations Fund for Population Activities, Population Policy Compendium, Indonesia, New York, May 1979.
- World Bank, Employment and Income Distribution in Indonesia, World Bank Report 2378-IND, 1979.