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Modern Contraceptive Use in Indonesia: A Challenge to Conventional Wisdom

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The World Fertility Survey is an international research programme whose purpose is to assess the current state of human fertility throughout the world. This is being done principally through promoting and supporting nationally representative, internationally comparable, and scientifically designed and conducted sample surveys of fertility behaviour in as many countries as possible.
The WFS is being undertaken, with the collaboration of the United Nations, by the International Statistical Institute in cooperation with the International Union for the Scientific Study of Population. Financial support is provided principally by the United Nations Fund for Population Activities and the United States Agency for International Development.
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El proyecto está a cargo del Instituto Internacional de Estadística en cooperación con la Unión Internacional para el Estudio Científico de la Población y con la colaboración de las Naciones Unidas. Es financiado principalmente por el Fondo de las Naciones Unidas para Actividades de Población y por la Agencia para el Desarrollo Internacional de los Estados Unidos.
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1 Introduction

This is a multivariate analysis of the social and economic factors affecting the current use of contraception in Indonesia, more specifically Java and Bali. Indonesia is a case of special policy and scientific interest. During the 1970s the use of modern contraception increased rapidly in Indonesia, although it was the type of poor, densely settled country in which such a development was believed to be highly unlikely. The following analysis indicates that the kinds of people who adopt contraception in considerable numbers are indeed unusual according to conventional wisdom. While some patterns found are consistent with our expectations, the most striking finding is that moderately high use of modern contraception was found across all social and demographic strata and that it was unexpectedly high among the very poor.

We turn now to the evidence for these generalizations.

The data come mainly from the Indonesian Fertility Survey (CBS and WFS 1978), the Indonesian version of the World Fertility Survey, conducted in 1976, and covering the islands of Java and Bali (67 per cent of the national population). The Indonesian Fertility Survey or IFS (also known as Phase III of the Indonesian Intercensal Population Survey or SUPAS III) was a subsample of a household survey (SUPAS II) which focussed on household, social and economic characteristics among other things. The present analysis is based mainly on the IFS (SUPAS III) but for some purposes we also refer to SUPAS II data. It was possible to link directly the household data from SUPAS II to the SUPAS III individual interviews with ever-married women 15-49 years old. In addition, some of the data about the characteristics of the villages in which the respondents lived are from a completely independent village-level data file compiled by the Central Bureau of Statistics from questionnaires filled out by village officials in 1976 (CBS 1976).

The sample design and other methodological aspects of the IFS are described in detail in the IFS *Principal Report.* Since the sample is both clustered and stratified, the sampling errors for an unrestricted sample do not apply. Appendix A contains estimates of the sampling error for the statistics we cite on the use of contraception.

Analysis of the correlates of contraceptive use in Indonesia is of particular interest because the use of modern means of contraception has increased rapidly in a short period of time. This has coincided with the growth of a vigorous national family planning programme. A semi-governmental organization, the National Family Planning Institute, was established in 1968. In 1970 the government created the National Family Planning Coordinating Board (BKKBN) to integrate all activities concerned with family planning. By May 1976, the BKKBN estimated that 21 per cent of married women aged 15-44 in Java-Bali were using a modern method of contraception obtained from the programme (the IUD, the contraceptive pill and the condom). The fact that the programme succeeded in obtaining a large number of acceptors in a relatively short period came as a surprise to many observers (including the authors) since Indonesia ranks rather low on most of the macro-social and economic modernization variables generally considered to be conducive to contraceptive use and lower fertility. The Indonesian programme has been characterized by strong political commitment and an administrative structure that appears to be capable of bringing family planning services, information and supplies down to the village level. It is of special interest to know what the correlates of contraceptive use are in such an unusual situation. The IFS offers an opportunity for such an analysis.

Although the study of reproductive patterns is the general objective of the IFS, an important specific objective was to obtain an independent check on the BKKBN contraceptive use estimates, which were based on service statistics. The IFS does validate the BKKBN estimates as to rough orders of magnitude, since it found that about 24 per cent of currently married women were using modern contraception as compared with the BKKBN estimate of 21 per cent. A roughly similar estimate of 24 per cent was obtained in the much larger household (SUPAS II) survey from which the women interviewed in the IFS were a subsample. This additional validation by the SUPAS II data was important, because it was based on only a small set of questions asked by male interviewers while the IFS involved female interviewers and detailed questions including a pregnancy history and many questions on contraception. It seems safe to state categorically that there was a substantial use of modern contraceptives in Indonesia by 1976. The figures are even more impressive if we consider only 'exposed women' (currently married women, not pregnant and not reporting a fecundity impairment). Thirty-two per cent of exposed women in the IFS were currently using a modern method.

That the extensive use of modern contraception is a recent phenomenon in Indonesia can be shown in several ways. First of all, the BKKBN service statistics show the following rapid rise in the estimated number of current users per 100 married women of childbearing age:

Year	Current users per 100 married women of reproductive age (15-44)
1971-2	2.2
1972-3	5.9
1973-4	9.4
1974	9.4
1975 (Dec)	19.4
1976 (May)	20.8
Post-IFS	
1977 (Nov)	27.4
1978 (Dec)	31.6
1981 (Feb)	44.5

In addition, the text of the *Principal Report* of the IFS plausibly infers the recency of modern contraceptive practice from the following:

(i) 77 per cent of all ever-married women aged 15-49 who had ever used modern contraception were currently using it. (ii) 68 per cent of all users began use after the birth of their last child.

While the extensive use of modern contraception is very recent, there is some evidence that more traditional methods of contraception have been used for some time in Indonesia. First of all, the IFS data indicate that in addition to the 32 per cent of exposed women using modern contraceptives, approximately 5 per cent were using traditional methods.

Further, the Hulls, Singarimbun and Manning (Singarimbun and Manning 1974; T.H. Hull 1975; V.J. Hull 1975) report the use of such traditional methods – especially prolonged abstinence – in communities they studied in Yogyakarta. Whether such abstinence is deliberate birth control is not always easy to determine. In commenting on the situation in Yogyakarta, the Hulls and Singarimbun (1977), while emphasizing their research base in Yogyakarta, indicate the possible relevance more widely in Java:

> Why do people abstain when methods are available to permit sexual relations without fear of pregnancy? Deliberate fertility control is not always the motive. Local tradition rules out sexual relations during the customary year and a half or more of breastfeeding. Some spiritual meditation groups (*kebatinan*) hold their members to long periods of abstinence or coital frequency of once a month or less. Other cases may be due to marital discord with actual separation.
>
> Any explanation of abstinence in Javanese culture must acknowledge the strong social and economic role of women in the household and community. Javanese women generally control the pursestrings and are, in fact, often the family's main providers. This gives them both the motive and the power to exercise some control over child-spacing and family size. In this context, the method of fertility control becomes a secondary issue.
>
> While the importance of tradition and the strong position of women are not limited to Yogyakarta, it is there that both factors seem to be most fully expressed. At the same time, the women of Yogya are sharing the changes occurring among their sisters in other Indonesian provinces. Abstinence is less practiced by the younger generation. Young educated women are not breastfeeding as long, swayed by doctors' advice and the availability of infant feeding substitutes. And sexual relations assume more importance as marriages are increasingly based on couple's choice rather than parental arrangement. With such traditional brakes on fertility giving way, substitute contraceptive methods will be needed, but the BKKBN will have to be sensitive to the preferences of potential acceptors. Program administrators prefer the IUD and the pill, but Yogya women generally shun the IUD and there are important questions about the pill's effect on milk flow. Yogya women might well welcome simpler contraceptive methods during the postpartum breastfeeding period.

The possible significant use of traditional methods may also be inferred from the fact that total fertility rates in Java-Bali have been rather low for some time for a population in its stage of social and demographic development. Dr Lee-Jay Cho has brought together the estimates shown in table 1 based on his own work and several other sources for a forthcoming report on Indonesian demographic trends by a panel of Indonesian and outside experts for the Committee on Population and Demography of the US National Academy of Sciences. The total fertility rate is estimated to be only about 5.3 for the 1967-70 period.

The use of traditional methods can also be linked to the pattern of differential fertility in Java-Bali. The Hulls (1977) pp 43-57; see also Singarimbun and Manning 1974) have brought together various pieces of evidence that indicate a positive relation of fertility to such a social status measure as wife's education within the range of the lower educational strata in which most Javanese women are classified. If we extrapolate the results on abstinence and similar traditional methods from the community studies, it can be argued plausibly that the lower status women have lower fertility because of their use of such methods. The IFS data also show that for ever-married women aged 15-49 fertility follows a curvilinear pattern increasing from no education to some primary or complete primary education and then falling to the lower level expected for more education for the small group of women with at least junior high education.

It is, then, plausible to argue that Indonesia's relatively low fertility and the positive correlation of fertility to status result from use of traditional methods, especially by the large low status groups. It is also possible, however, that the relatively low fertility in Indonesia results from other factors such as health-related subfecundity and time lost between marriages in the significant number of marriages characterized by divorce followed by remarriage.

The IFS consistently shows that as of 1976 the use of traditional methods is positively (rather than negatively) related to social status as measured by wife's or husband's education and husband's occupation. Although the use of traditional methods increases with the wife's age and with her number of living children, the relation between education and use of traditional methods is little affected by adjusting for wife's age or the number of her living children. These results do not appear to be consistent with the idea that as of 1976 the use of traditional methods was negatively related to status and could account for any contemporary positive relation of status and fertility. It may be pertinent that in the IFS data on recent fertility (births in last five years) for ever-married women married 10-14 years, wife's education was negatively rather than positively related to fertility (CBS and WFS 1978, vol 1, table 6.9).

The fact that use of traditional methods is positively related to status in the IFS might result from more complete

Table 1 Estimates of Total Fertility Rates for the Provinces of Java-Bali, from various Time Periods and Sources

	Jakarta	West Java	Central Java	Yogyakarta	East Java	Bali	Total Java-Bali
1965-70							
FM Survey[a]	NA	6.6	5.3	5.2	5.0	5.9	5.6
1967-70							
1971 Census	5.1	5.9	5.3	4.7	4.6	5.8	
SUPAS I[b]	5.0	5.9	5.5	4.7	4.8	5.8	5.3
SUPAS II[c]	4.9	5.8	5.3	4.8	4.5	5.6	5.1
SUPAS III[d]	–	–	–	–	–	–	5.3
1971-5							
SUPAS I[b]	4.6	5.6	4.7	4.1	4.2	5.1	4.8
SUPAS II[c]	4.6	5.5	4.8	4.3	4.2	5.3	4.8
SUPAS III[d]							4.7
1975							
Last Birth[e] (SUPAS II)	4.5	5.1	4.3	4.2	4.0	4.9	4.6

[a]TFRS calculated by Pregnancy History Method Adjusted by Proportion Currently Married, as reported in Terence H. Hull, Valerie J. Hull and Masri Singarimbun, Indonesia's Family Planning Story: Success and Challenge, *Population Bulletin* 32(6): 42-3.

[b]TFRS calculated by Own-Children Method, based on Child Mortality Estimates derived from SUPAS II.

[c]TFRS calculated by Own-Children Method.

[d]TFRS calculated by Pregnancy History Method, Adjusted by Proportion Ever-Married in 1971 Census.

[e]TFRS calculated by Last Birth Method, with Adjustments by Terence H. Hull.

Source: The data in this table were assembled by Dr Lee-Jay Cho for a draft report of the panel on Indonesia of the Committee on Population and Demography of the National Academy of Sciences

reporting of such methods (among users of them) by better educated women. However, we have no specific reason to believe that this is the case. The interviewers were instructed to probe with specific questions for knowledge about and use of traditional methods after an open-ended question asking for knowledge and use of *any* methods. Further the rates are much higher in Yogyakarta than anywhere else, and Yogyakarta is the place where we have the best independent direct evidence for use of such methods. To argue for general under-reporting we would also have to argue that women in the rest of Java are more reluctant to report use of such methods than those in Yogyakarta. That is, of course, possible.

Since this important issue of the role of traditional methods cannot be settled with the data in hand, in our main analyses we shall consider the social and economic correlates of only modern contraceptive methods first. Then, we will consider what difference it makes if we consider use of *any* method, including the traditional.

Some observers (for example, Hull 1976, p 7) believe that much of the acceptance of family planning under the programme is a result of substitution for traditional methods that would have been used if modern methods were not available. We are not in a position to either confirm or reject this hypothesis with IFS data.

Knowledge of contraception is widespread in Java-Bali although not as nearly universal as in some other countries. The IFS found that 77 per cent of all women interviewed had heard of at least one method of contraception (table 2). Seventy-five per cent knew about a modern method while two per cent knew only of a traditional method. Methods promoted by the national family planning programme are more widely known than non-programme methods: 71 per cent of the women reported that they had heard about the pill and over 40 per cent had heard of the IUD and the condom, but less than 20 per cent of all women had heard of non-programme methods. Among the traditional methods, folk methods which are specific to Indonesia are better known than traditional methods which are not. About 20 per cent of the women reported having heard about the use of herbs and massage. Among women who knew of any method, the average number of methods known is 3.8 (CBS and WFS 1978, vol 1: 41).

Differentials in contraceptive knowledge by region and selected background variables are moderate (table 3). Knowledge of contraception is highest in Bali (87 per cent) and lowest in West Java (63 per cent). It is also higher in urban areas (83 per cent) than in rural areas (74 per cent). A strong positive relationship with level of education is observed: 65 per cent of the respondents with no education knew of a method, with the percentage increasing to over 80 among those with a primary education and to 97 for those with a junior high education. Differentials by husband's occupation are slight, however, with the exception of the professional,

technical and clerical category (93 per cent). There are also only slight differentials by wife's pattern of work.

With regard to the two demographic variables, current age and number of living children, variations in contraceptive knowledge are of the expected pattern. Knowledge of contraceptive methods is lowest for the younger and oldest age groups and highest for the 25-29 age group. Women with more living children are also more likely to have heard about a method than women with fewer living children.

Table 4 shows the distribution of current users by method used and selected background variables. When the use of all methods is considered, only small differentials exist between most regional, demographic and social categories. Use of the pill declines with age and family size while that of the IUD increases. The IFS *Report* suggests that this pattern 'probably reflects the fact that the pill is used more often as a method for spacing of children while the IUD is used as a method for limitation of family size' (CBS and WFS 1978, vol 1: 44).

Different methods appear to be popular in different regions. The pill is the predominant method in West Java, used by 75 per cent of all current users in that province, and also in Central and East Java, used by over 50 per cent of current users. These regions are mostly rural, and as shown in table 4, the pill is the predominant method in the rural areas. This may be a reflection of the wide availability of the pill in the rural areas through the strong community-based distribution system of the BKKBN programme. The most popular method among users in Bali, however, is the IUD, favoured by 69 per cent of users. Hull has pointed out that Balinese women find the method to be acceptable, in part, because Balinese use male birth attendants and therefore are not hesitant about being examined by male doctors (Hull 1978, p 6 and footnote 34). The use of traditional methods is most popular in Yogyakarta, with 55 per cent of all users reporting use of a traditional method. Traditional methods also appear to be more widely used in urban areas than in

Table 2 Per Cent of Ever-Married Women who (a) Had Heard of a Specific Contraceptive Method; (b) Had Ever Used Specific Contraceptive Methods; (c) Per Cent of Currently Married Non-Pregnant Women who Were Currently Using a Specific Method; and (d) Per Cent of All Users Using Methods

	%			
	(a)	(b)	(c)	(d)
Modern methods				
Programme methods				
Pill	70.8	25.1	20.7	
IUD	50.0	7.0	7.8	84.5
Condom	40.7	4.6	2.6	
Other modern methods				
Injection	17.1	0.7	0.3	
Female sterilization	11.3	0.2	0.4	2.2
Male sterilization	7.9	0.0	0.0	
Female scientific	4.2	0.3	0.1	
Traditional methods				
Abstinence	12.8	3.5	1.4	
Rhythm	11.7	2.7	1.2	8.7
Withdrawal	7.4	1.9	0.5	
Douche	3.4	0.4	0.1	
Folk methods				
Herbs	20.1	3.4	1.1	
Massage	19.3	2.0	0.4	4.6
'Uterus inversion'	14.4	0.5	0.1	
Other	0.2	0.2	0.1	
Total	77.0	34.0	37.0	100.0

Source: IFS *Principal Report*, vol 2, tables 2.1.1, 2.4.1, 2.3.2

Table 3 Per Cent of Ever-Married Women who (a) Had Heard of at Least One Modern Contraceptive Method and (b) Had Ever Used a Modern Contraceptive Method, by Selected Background Variables

	%	
Background variable	(a)	(b)
Province		
Jakarta	84.0	28.3
West Java	63.1	19.4
Central Java	80.7	31.7
Yogyakarta	79.7	25.4
East Java	77.9	38.0
Bali	87.4	43.9
Type of place of residence		
Urban	83.2	30.4
Rural	73.5	30.1
Level of education		
No schooling	65.2	23.7
Primary-incomplete	80.6	33.6
Primary-complete	89.4	37.5
Junior high	96.7	50.2
Senior high +	99.2	56.3
Husband's occupation		
Prof, adm, clerical	93.1	46.0
Sales and services	72.1	26.5
Manual	76.4	27.0
Farming	73.1	30.0
Other, never worked	74.6	33.4
Pattern of work		
Before and after marriage	75.7	32.1
After marriage only	70.8	26.9
Before marriage only	82.5	28.9
Never worked	77.0	30.0
Total	75.0	30.0

Source: IFS *Principal Report*, vol 2, tables 2.1.2, 2.4.3

Table 4 Per Cent Distribution of Current Users According to Specific Method Being Used, by (a) Number of Living Children, (b) Current Age, (c) Province, (d) Type of Place of Residence

	Current users								
	Pill	IUD	Condom	Other modern	'World-wide' tradi-tional	Folk	Total	Users as % of exposed	Users as % of currently married
All Java-Bali	56	21	7	2	8	5	100	37	26
(a) Living children									
0	(80)[a]	0	0	0	(12)	(7)	100	4	2
1	71	11	4	1	9	4	100	27	20
2	65	18	5	1	8	4	100	40	31
3	56	21	9	1	7	5	100	47	35
4	50	26	8	2	9	5	100	43	32
5+	46	27	9	4	9	5	100	51	34
(b) Current age									
<25	68	15	5	1	7	4	100	27	22
25-34	58	21	7	2	7	5	100	42	33
35-44	47	26	9	3	10	5	100	42	27
45+	43	28	3	5	16	5	100	36	12
(c) Province									
Jakarta	35	15	15	4	20	11	100	39	28
West Java	75	6	3	4	6	5	100	22	16
Central Java	59	19	10	2	6	4	100	41	28
Yogyakarta	8	18	17	2	54	1	100	51	40
East Java	58	27	4	2	5	5	100	44	32
Bali	14	69	11	3	2	0	100	51	38
(d) Type of place of residence									
Urban	32	18	17	6	18	10	100	40	29
Rural	62	22	5	1	6	4	100	36	26

Source: IFS *Principal Report*, vol 1, table 5.6

[a]Numbers in brackets indicate fewer than 20 cases.

rural areas, a rather surprising finding: 28 per cent of urban users favoured traditional methods compared to 10 per cent of rural users. The *Principal Report* stated that 'these urban-rural differences indicate that the urban population has a tradition of contraception that precedes the family planning programme' (CBS and WFS, vol 1: 43).

2 The Multivariate Analysis

Our main objective is a multivariate analysis of the factors affecting the use of modern contraception. This is, in part, a replication of an analysis for Thailand by Cleland, Little and Pitaktepsombati (1979). Their work was an 'illustrative analysis' commissioned by the World Fertility Survey to serve as a model for analyses of WFS data for other countries. It seemed appropriate to replicate aspects of their work, since the importance of regional variation for contraceptive use which they found for Thailand was apparently present in Indonesia too. However, we will find a significant difference between Thailand and Indonesia with respect to the effects of standards of living. We will call attention as we proceed to some points of similarity and difference between the two countries.

2.1 DEPENDENT VARIABLES

We have chosen to analyse current rather than ever-use of contraception because of the more direct implications for understanding fertility. In any case the two measures overlap considerably, since 76 per cent of the users were current users. Most of the ever-users who are no longer current users had not practised contraception for very long. For reasons already discussed, we will deal separately with the use of modern contraception and of any (including traditional) contraception.

Table 5 Distribution of Exposed Women by Socio-Economic Variables Selected for Analysis

Region		DKI Jakarta	West Java	Central Java	Yogya-karta	East Java	Bali	Total
	No	309	1616	1508	174	1772	125	5504
	%	5.6	29.4	27.4	3.2	32.2	2.3	100

No of living children		0-2	3	4	5+	Total
	No	2752	840	682	1230	5504
	%	50.0	15.3	12.4	22.3	100

Wife's age		15-19	20-24	25-29	30-34	34-39	40-44	45-49	Total
	No	634	1151	1092	966	875	545	242	5504
	%	11.5	20.9	19.8	17.5	15.9	9.9	4.4	100

Husband's occupational status		Prof and clerical, paid	Sales and services, em-ployed	Sales and services, self-emp	Sales and services, small employer	Manual, paid	Manual, self-emp	Manual, small em-ployer	Farming, unpaid family	Farming, family paid	Farming, emp by others	Farming, self-emp	Farming, small employer
	No	487	432	535	38	604	257	43	146	129	916	1733	185
	%	8.8	7.8	9.7	0.7	11.0	4.7	0.8	2.7	2.3	16.6	31.5	3.4

Wife's education		None	Some primary	Completed primary	Jr high+	Total
	No	2277	2157	770	300	5504
	%	41.4	39.2	14.0	5.5	100

Standard of living		Very low	Low	Medium	Medium high	High	Total
	No	700	1348	1242	816	452	4558
	%	15.4	29.6	27.2	17.9	9.9	100

2.2 THE CHOICE OF SUB-POPULATION

Relationships should be clearest if we consider, as closely as possible, the sub-population at risk of using contraception. Therefore, we will confine our analysis to 'exposed women', that is, currently married women who were not pregnant and did not report that they had a fecundity impairment which they thought might prevent them from having another child. There were 9136 women in the total weighted IFS sample of ever-married women aged 15-49, and 5628 exposed women in this age range. When we finally restricted our attention to five independent variables, the sample size was reduced to 5504, since 124 cases were omitted because data were missing for one or more of the five variables. The distribution of the sub-population according to the various categories of the five variables is given in table 5.

2.3 INDEPENDENT VARIABLES

We have available to us on the IFS tape the following socio-economic and demographic variables which appeared most pertinent:

Region of residence (REG)
Number of living children (NLV)
Wife's age (CAGE)
Husband's education (HED)
Wife's education (WED)
Husband's most recent occupation (HOCC)
Husband's status in most recent employment (HWST)
Type of place of current residence (TPRS)
Whether wife worked before or after marriage (PAT)
Place and family character of wife's most recent employment (PLW)
Wife's work status in most recent employment (WWST)
Childhood type of place of residence (CHYP).

We did a number of exploratory cross-tabulations and regressions as a basis for deciding which IFS variables to use in our final multivariate regression analysis. We also explored the value of some new variables constructed by combining some of the variables listed above into new categories we felt were conceptually meaningful in terms of the literature on fertility and contraception. For example, we constructed a single variable combining husband's and wife's education (COED), and we constructed a new variable for the husband's work situation combining elements of his most recent occupation and his work status (HOCST). We finally settled on five variables from the SUPAS III data set and one from SUPAS II which we will discuss in some detail below.

Wife's Education (WED)

The educational level of the wife was summarized by a grouping into four categories: none, some primary, primary graduate and some junior high school or more. This grouping was necessary since so few women in Indonesia have more than primary education. We chose to use wife's education rather than husband's education or a combination of the two, since wife's education predicted contraceptive use as well as the other measures.

As might be expected, wife's education is related to husband's occupational status. The wives of professional and clerical workers have the highest education. Among sales and service or manual workers, the self-employed, essentially marginal non-agricultural workers without regular employment, have the lowest education. The wives of farmers and farm workers all have educational levels substantially below average.

Husband's Occupational Status (HOCST)

We constructed a new variable for husband's occupational status combining elements from a conventional Western occupational grouping with information on husband's work status which distinguished categories of workers of special interest in LDCs. The classification used for this variable is as follows:

Professional and clerical workers
Sales and service workers, employees
Sales and service workers, self-employed
Sales and service workers, small employers
Manual workers, employees
Manual workers, self-employed
Manual workers, small employers
Farming, unpaid family workers
Farming, paid family workers
Farming workers, others
Farming, self-employed
Farming, small employers

This classification has the merit of picking out among manual and sales and service workers the self-employed who employ no one else. These are the usually marginal workers who have no steady employment and little capital (eg hawkers, itinerant barbers, knife sharpeners). It also distinguishes several kinds of workers in the large farming sector. For reasons of sample size we shall sometimes regroup some of the categories.

Number of Living Children (NLV)

We grouped NLV into four categories: 0-2, 3, 4, 5+. 0-2 children is being considered to be a small number of children, 3 or 4 as moderate, and 5+ as large.

Wife's Age (CAGE)

Here we used conventional five-year groupings except for the youngest category: under 20. Considerable error in age-reporting in this, as in other demographic surveys and censuses in Indonesia, may affect relationships of age to other variables. While this judgement is based on the criterion used, the IFS reliability study finds age-reporting more seriously in error than the reporting of number of children ever born.

Region of Residence (REG)

We have given region of residence a primary role in the analysis for several reasons. First, both the BKKBN service statistics and the IFS data show considerable variation among regions. Among the five IFS independent variables, the zero order correlation (*eta*) between use of modern methods and region is highest (by a small margin, cf living children). Regional variation in use of modern methods is to be expected since the programme effort is known to have been more intensive at an earlier point in some regions than others. It is pertinent in this connection that when the BKKBN intensified its efforts in West Java after 1976, with an emphasis on village-based activities, the current user rate in West Java, initially rather low, increased considerably to come much closer to East Java and Bali, which have been highest from an early point on modern user rates in BKKBN statistics as well as in IFS. Region also very probably stands for local cultural variations which are related to fertility and acceptance of contraception. The Princeton studies of the European demographic transition have demonstrated that in many European countries regional difference, based on ethnic, language, or religious differences were determinants of fertility decline, after allowing for such macro variables as education, literacy, industrialization and urbanization. More recently, Cleland, Little and Pitaktepsombati have shown that in the Thailand survey of fertility, region is probably a more important determinant of contraceptive use than wife's age, number of living children, type of place of residence, husband's education or husband's occupation (Cleland *et al* 1979).

For administrative purposes, Java-Bali is divided into six provinces or regions. For brief descriptions of the regions we have drawn heavily on the excellent thumbnail sketches of the regions by Hull, Hull and Singarimbun (1977), and all quoted passages are from this source. The city of Jakarta, as the capital of Indonesia, located on the north coast of West Java, is treated as a Special Province region. It is a metropolitan, industrial and commercial centre with a population close to six million, and is the most densely populated of the regions. 'Much of the population is drawn from Sundanese West Java and Javanese areas of Central Java and East Java. Despite outward signs of development much of Jakarta's population lives in crowded *kampungs* (basically slum areas) and in villages in the city's fringes.'

The second Special Region in Java is the Special Region of Yogyakarta, 'a tiny enclave on the south of central Java. This region is a very special place indeed to millions of Javanese, the seat of the Sultanate, first capital of the Republic and repository of numerous places and objects of immense spiritual power. In this setting, ancient systems of etiquette thrive and religious movements based on meditation and self denial find a ready audience.' Although statistically the Muslim faith is the major religion, people do not take Muslim teaching very seriously; instead local Javanese traditions play an important role in daily life.

Women have an important social and economic role in the household and community. In addition to responsibility for bringing the children up, wives are often the family's main providers. Although husbands and wives are both responsible for the family, a Javanese wife (especially among the Yogyakartanese) may dominate the family. She usually controls the household's finances, but she gives her husband formal deference and consults with him on major issues.

'West Java is the home of the Sundanese ethnic group and large groups of ethnic Javanese. Transportation is relatively good along the northern plain where most of the ethnic Javanese live but difficult in the mountainous southwestern territory of the Sundanese.' This region is a particularly fertile rice-growing and plantation area. It experiences the highest fertility in Java, 'very early marriage, high divorce rates but with quick remarriage. Unlike the rest of Java, Islam is strong and people take the religion seriously'.

The central part of Java is inhabited largely by Javanese. The southern part of this region is less fertile compared to the northern part and has Protestant and Buddhist minorities. Although this region is economically poor compared to the rest of Java the population density (700/km^2) is among the highest in Java. Classical Javanese tradition is probably not as strong as in Yogyakarta. It is probable that wives are less likely to be the main providers in Central Java. Many wives do control household finances and are consulted on major issues, but the husbands play an important part in household decisions.[1]

East Java with 29 million people qualifies as one of the most densely populated provinces in Indonesia. 'The province is a region of rapidly developing light industrial complexes and specialized agriculture, and the hub of eastern Indonesia's transportation network. The government structure is relatively strong and communications are effective even at the provincial fringes – along the barren, hilly, south coast and on the dry northeastern coast, where some of Indonesia's poorest people eke out a living.' As a result of mobilization of 'bureaucratic resources from the governor's office right down to the thousands of hamlets' heads, East Java ranks second among the provinces in the proportion of women using modern contraception'.

Bali, an island located at the tip of Java, has a distinct feature compared to the rest of the regions. The island is predominantly inhabited by Hindus rather than Moslems who predominate in the rest of the regions. Handicraft and tourism are the major economic activities in the province besides agriculture. 'A high proportion of Balinese women work outside the home at laborious jobs, including construction and roadwork.' Before the family planning programme got underway in 1971, 'Bali's level of marital fertility was the highest of the six provinces' (estimated TFR at 5.8 in 1967-71). The fertility rate estimated from IFS shows that Bali now has the lowest TFR among the provinces of Indonesia (TFR – 3.8). The Cho estimate (see table 1) gives a higher TFR in 1975. The family planning

1. This summary statement on Central Java is based on the personal observation of Bondan Supraptilah, a sociologist whose home is in Central Java. These informal observations need firmer empirical verification.

Table 6 Cross-Classification of Region and Selected Background Variables for Exposed Women

Background variable	Region						
	Total %	Jakarta %	West Java %	Central Java %	Yogyakarta %	East Java %	Bali %
No of living children							
<2	50.0	42.1	53.7	44.4	47.1	53.4	45.6
3	15.3	17.2	13.6	17.4	14.9	14.7	14.4
4	12.4	13.6	10.3	14.4	15.5	11.9	15.2
5+	22.4	27.5	22.3	23.9	22.4	20.0	24.8
Wife's age							
15-19	11.5	7.8	14.4	11.0	4.6	11.2	5.6
20-24	20.9	22.0	22.3	21.0	15.5	19.8	22.4
25-29	19.8	20.4	19.6	20.3	17.8	19.5	24.0
30-34	17.6	17.8	17.1	18.6	17.8	16.8	20.8
35-39	15.9	18.5	14.9	13.1	17.8	18.4	18.4
40-44	9.9	10.0	8.1	11.9	15.5	9.5	6.4
45-49	4.4	3.9	3.6	4.1	10.9	4.9	3.2
Husband's occupational status							
Prof & clerical, paid	8.9	27.2	8.4	7.5	12.6	6.9	8.0
Sales & services, paid	7.9	12.8	11.0	5.5	5.8	5.7	2.4
Sales & serv, self-emp	9.7	13.4	13.6	7.2	4.0	8.5	4.8
Sales & serv, small emp	0.7	1.3	0.9	0.5	–	0.6	0.8
Manual, paid	11.0	31.7	12.2	7.6	9.2	9.4	8.8
Manual, self-emp	4.7	3.9	5.1	5.8	5.2	3.2	8.0
Manual, small employer	0.8	1.6	1.4	6.6	–	0.1	1.6
Farming, unpaid family	2.7	–	1.3	3.7	2.9	3.4	3.2
Farming, family paid	2.3	–	4.8	1.9	–	1.3	0.8
Farming, emp by others	16.6	1.3	18.9	18.5	12.6	17.0	4.8
Farming, self emp	31.5	1.3	19.8	36.7	44.8	39.9	56.8
Farming, small employer	3.4	–	2.7	4.4	2.9	3.9	1.6
Wife's education							
None	41.4	21.4	36.0	44.2	51.2	45.3	57.6
Some primary	39.2	32.7	41.8	40.7	27.0	38.6	28.8
Primary	14.0	20.1	18.4	10.7	12.6	12.0	11.2
Jr high+	5.5	25.9	3.8	4.4	8.6	4.1	3.2
Standard of living							
Very low	15.4	0.4	6.6	27.8	16.7	14.1	8.8
Low	29.6	6.3	33.3	30.0	27.4	30.5	31.9
Medium	27.2	15.9	29.5	23.7	31.5	29.9	31.9
Medium high	17.7	28.4	20.5	12.9	19.0	18.2	19.5
High	9.9	49.1	10.1	5.5	6.0	7.3	7.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

programme has been most successful in Bali. 'Though no richer than its neighbors, Bali had relatively many clinics. Despite high marital fertility rates, Balinese women were already delaying marriage and espoused a desire for smaller families. As the family planning program began to reach new acceptors, the strongly organized local communities ("banjar," a traditional center for mutual aid as well as gathering point for recreation and ceremony) took up the task of motivating contraceptive users.' The result has been very impressive. Almost half of the eligible women are using contraception.

The differing socio-economic composition of the relevant subsamples of exposed women residing in the regions is shown in table 6. Jakarta is clearly distinguished from the other regions by its better educated and non-agricultural population. As compared to the remaining regions, Yogyakarta has a higher proportion of husbands in white collar jobs and a higher proportion of wives with high education. The rest of the regions have more or less the same socio-economic composition, with a high proportion of husbands (about one half) engaged in agricultural occupations and a large proportion of wives with no education (40-45 per cent), or some primary education (40 per cent). Bali has the highest proportion of husbands in agricultural jobs. About 57 per cent of husbands in Bali are self-employed farmers. It also has the highest proportion of wives with no education (57 per cent).

Standard of Living (STLIV)

A standard of living index was constructed from SUPAS II data on housing conditions, water supply and the ownership of modern durables. Weights were assigned as follows:

I HOUSING CONDITION

1 Materials of house

Points	*Wall*	*Floor*
2	Brick	Tile, cement, wood, bamboo
1	Brick	Earth, other
2	Wood	Tile, cement
1	Wood	Wood, bamboo
0	Wood	Earth, other
1	Bamboo	Tile, cement, wood, bamboo
0	Bamboo	Earth, other

2 Lighting

2	Electricity
1	Pump lamp
0	Oil lamp, other

3 Source of bathing water

2	Piped water, pumps (inside yard)
1	Piped water, pumps (outside yard)
1	Private well
0	Public well, spring water, rain, river, other

4 Source of drinking water

Score as in (3) above

II OWNERSHIP OF CONSUMER DURABLES

One point each was given for the ownership of the following consumer durables in the household of the IFS respondent: lounge set, buffet, iron, stove, bicycle, sewing machine, radio or cassette player, clock or wristwatch. Two points each were given for the ownership of television, refrigerator, stereo set, motor-cycle or car.

For the purposes of our analysis the standard of living scores were grouped as follows:

Very low (score = 0)	17 per cent
Low (score 1-2)	31 per cent
Medium (score 3-5)	28 per cent
Medium high (score 6-10)	16 per cent
High (score 11+)	9 per cent

Whether More Children Were Wanted

Forty per cent of exposed women said that they wanted no more children. We will consider the additional effect on contraceptive use of wanting more or no more children after the multivariate analysis of the five individual IFS variables and the household standard of living variable.

2.4 VILLAGE-LEVEL CHARACTERISTICS

In our final analysis we will add village-level characteristics to selected IFS variables. In 1976 village heads were asked by the Central Bureau of Statistics to fill in a questionnaire about certain facilities found in the village. Data for villages in the IFS SUPAS III sample were transferred to the IFS tape so that the village characteristics were linked to the individual characteristics of the IFS respondents. Ninety-nine per cent of the IFS sample of exposed rural women lived in 227 villages for which village-level data were available. The characteristics listed in table 7 were selected as those which had variability and could plausibly be expected to be related to reproductive and contraceptive variables. The table also indicates the percentage distribution of the population of exposed women in villages according to these characteristics. A large majority live in villages with a primary school, a minority (21 per cent) in villages with a junior high school or higher level institution, and only a very small percentage (2 per cent) in villages with no school. Sixty-nine per cent of the women were in villages without a health facility; 3 per cent had only an MCH clinic; 12 per cent lived in villages which had a general clinic, polyclinic, or hospital; and 16 per cent lived in villages in which both were present. Only 18 per cent of the women lived in villages with electricity, but a larger proportion – 53 per cent – were in villages with at least one television set, presumably battery operated in most cases. Finally 56 per cent were in a village without either a market or a bank; about 30 per cent had one or the other and 12 per cent had both.

Table 15 indicates, as expected, that the population subgroups with low standards of living are found disproportionately in villages lacking modern social amenities.

Table 7 Percentage Distribution of Exposed Women in Rural Areas by the Characteristics of their Villages

Village characteristic	%	Village characteristic	%
Educational facilities		*Distance to nearest town in district*	
No school	2.2	0-2 km	32.4
Primary only	76.6	3-5 km	33.4
Jr high or jr high and primary	21.2	6+ km	34.2
Total	100.0	Total	100.0
N	4232	N	4243
Health facilities		*Television*	
None	68.9	Yes	53.1
Hospital or clinic only	12.0	No	46.9
MCH only	3.3	Total	100.0
Both	15.8	N	4243
Total	100.0		
N	4243	*Electricity*	
		Yes	17.7
Market and bank		No	82.3
None	56.3	Total	100.0
Market only	15.3	N	4243
Bank only	15.9		
Both	12.5		
Total	100.0		
N	4243		

3 Analysis of the Gross and Net Effects of the Independent Variables on the Use of Modern Contraception

Table 8 shows the relationship of each of the independent variables to the use of modern contraception, first without and then with adjustment (by multiple classification analysis) for the effect of the other variables. Table 9 is the corresponding table for use of any method. The analysis for the standard of living was done separately since this item was not available for about a thousand of the women for whom all other variables were available. Therefore, the multivariate adjustment for region, education, age, number of living children and husband's occupation do not involve the standard of living variable, but the five other variables were adjusted for the standard of living variable. The results are not substantially affected by the omission of standard of living as an adjustment for analysis of the other variables. Adjusting for all other variables including standard of living for the smaller sample for which it was available made only trivial differences in the results.

The five individual variables taken together explain 12 per cent of the variance in the use of modern contraception. Each of these variables makes at least a small statistically significant contribution to explaining the variance. In the Thai WFS (Cleland *et al* 1979) study the total explained variance from a similar set of variables was 13 per cent. The Thai study included a sixth individual variable – type of place of current residence – which had a trivial net effect in either Thailand or Indonesia. Age of wife, number of living children and region were common to the two studies. The Thai study used husband's rather than wife's education and it used a standard occupational code rather than the modified form we have employed.

When we added standard of living to the other variables there was not a significant increase in explained variance. In Thailand, adding the standard of living added one per cent to the explained variance. The standard of living relationship for Thailand did not have the strong curvilinear pattern found for Indonesia. Standard of living is positively related to contraceptive use in Thailand, but not in Indonesia.

Perhaps the most important observation that can be made from tables 8 and 9 is that contraceptive use is at moderately high levels across all demographic and social strata. With a few exceptions, differentials are relatively modest. At least 25 per cent were currently using a modern method and 30 per cent any method in all age groups over 20, for all women with at least three children, for all educational strata and for all occupational strata in which most Indonesians are found. There are larger variations by region.

3.1 DIFFERENTIALS IN CURRENT USE BY REGION

Region is the most important predictor of modern contraceptive use. Both *eta* and partial r are higher for region than for any other variable. Further, the regional differentials are affected very little by control for the other variables. This is indicated by the fact that *eta* and the partial r are identical. It is also apparent in the small variations between the unadjusted and adjusted values by region in tables 8 and 9. Jakarta is the only region for which the adjustment has more than a trivial effect. Since Jakarta has a disproportionate number of better educated women and men in higher status occupations, adjusting for these variables produces a lower net use rate for that province.

3.2 DIFFERENTIALS IN CURRENT USE BY NUMBER OF LIVING CHILDREN

Number of living children is the next most important variable (as measured by *eta* or partial r). Current use of a modern method increases from a low of about 23 per cent for 0-2 living children to 37-41 per cent for 3 or 4 and then to 44 per cent for 5 or more children. Adjusting for region, occupation or education had only a trivial effect on the relationship. The difference between the *eta* of .197 and the partial r of .163 is almost entirely a result of the control for age. However, number of living children is more important than age as a determinant of modern contraceptive use. It is noteworthy that, even after adjusting for the four other variables, among those with few children (0-2) almost one in four were currently using a modern method. Considering the recency of the family planning programme and the diffusion of modern methods, this is a remarkably high figure. It suggests that contraception is being used for spacing. This is supported by the fact that, among those who said they wanted more children, 28 per cent were currently using a modern contraceptive method.

3.3 DIFFERENTIALS IN CURRENT USE BY WIFE'S AGE

Use of a modern method increases from a low of about 13 per cent for women under 20 to a high of 36-38 per cent at age 30-34 up to 40-44. Then there is a drop to 29 per cent

Table 8 Per Cent of Exposed Women Currently Using a Modern Method, by Social and Demographic Characteristics, Unadjusted and Adjusted for Selected Variables

Variable	Unadjusted	Adjusted for REG, NLV and CAGE[a]	Adjusted for all 4 other variables[b]	N
Region (REG)				
Jakarta	26.7	24.7	22.2	309
West Java	19.0	19.5	19.4	1616
Central Java	36.4	35.3	35.5	1508
Yogyakarta	22.6	23.1	22.7	174
East Java	40.5	41.4	41.6	1772
Bali	49.7	47.8	49.4	125
Eta	.200			
Partial r		.201	.200	
No of living children (NLV)				
0-2	22.8	22.5	22.8	2752
3	40.6	38.6	38.6	840
4	37.0	35.9	36.1	682
5+	43.7	46.2	45.6	1230
Eta	.197			
Partial r		.169	.163	
Wife's age (CAGE)				
15-19	13.2	23.5	23.0	634
20-24	30.2	37.2	35.7	1151
25-29	35.1	35.9	34.3	1092
30-34	37.8	33.9	34.5	966
35-39	35.9	29.5	31.1	875
40-44	36.0	28.1	30.2	545
45-49	28.6	20.9	23.6	242
Eta	.155			
Partial r		.105	.088	
Wife's education (WED)				
None	27.9	24.8	25.2	2277
Some primary	34.1	35.6	35.9	2157
Primary	34.1	37.9	37.6	770
Jr high+	41.3	44.1	40.5	300
Eta	.084			
Partial r		.130	.110	
Husband's occupational status (HOCST)				
Professional and clerical	43.8	43.2	38.4	487
Sales & services, employed	30.4	32.6	30.8	432
Sales & services, self-employed	21.7	24.1	24.7	535
Sales & services, small employer	22.6	30.2	26.8	38
Manual, employed	27.2	29.2	28.5	604
Manual, self-employed	26.2	27.1	27.1	257
Manual, small employer	29.6	34.1	31.0	43
Farming, unpaid family	13.5	18.1	18.5	146
Farming, family employed	26.6	34.3	33.6	129
Farming, employed by others	33.3	33.1	35.0	916
Farming, self-employed	35.8	33.0	33.9	1733
Farming, small employer	33.7	32.5	33.2	185
Eta	.138			
Partial r		.112	.092	
Standard of living index (SLI)				
Very low	38.3	35.7	37.2	700
Low	31.3	31.3	32.8	1348
Medium	31.1	31.5	32.3	1242
Medium high	29.2	30.0	28.3	816
High	40.5	41.8	35.9	452
Eta	.080			
Partial r		.071	.057	

[a] When REG, NLV or CAGE is being examined, the two others from the set are adjusted. For WED and HOCST, all three are adjusted.

[b] For the first five IFS variables the adjustment is for the four other variables. For SLI the adjustment is for all five of the preceding variables.

Table 9 Percentage of Exposed Women Using Any Method by Region, Number of Living Children, Wife's Age, Husband's Occupational Status and Wife's Education, Unadjusted and Adjusted for Various Combinations of Other Variables

Variable	Unadjusted	Adjusted for REG, NLV, CAGE[a]	Adjusted for all 4 other variables	N
Region				
Jakarta	38.8	36.5	30.7	309
West Java	21.5	22.2	21.9	1616
Central Java	40.7	39.5	40.1	1508
Yogyakarta	50.5	50.7	50.2	174
East Java	44.2	45.6	46.2	1772
Bali	50.7	48.7	51.0	125
No of living children				
<2	26.1	26.4	26.7	2752
3	46.4	44.2	44.2	840
4	42.5	40.9	41.0	682
5+	50.9	52.7	52.0	1231
Wife's age				
15-19	15.9	27.8	27.4	634
20-24	33.1	41.1	39.1	1151
25-29	40.1	41.1	38.9	1092
30-34	43.0	38.7	39.5	966
35-39	42.0	34.8	36.8	875
40-44	43.2	33.9	36.8	545
45-49	36.1	26.3	29.9	242
Wife's education				
None	31.2	27.7	28.4	2277
Some primary	38.7	40.8	41.1	2157
Primary	39.8	44.3	43.3	770
Jr high+	57.5	57.5	52.5	300
Husband's occupational status				
Professional and clerical	57.1	55.4	48.2	487
Sales & services, employed	36.8	38.9	36.4	432
Sales & services, self-employed	26.0	29.0	29.8	535
Sales & services, small employer	38.9	41.9	37.4	38
Manual, employed	32.1	34.0	33.0	604
Manual, self-employed	30.4	31.4	31.5	257
Manual, small employer	42.6	48.1	44.0	43
Farming, unpaid family	14.9	20.4	21.1	146
Farming, family employed	28.1	37.6	37.1	129
Farming, employed by others	36.0	36.1	38.8	916
Farming, self-employed	39.6	36.5	37.8	1735
Farming, small employer	37.9	37.1	38.3	185
Standard of living				
Very low	42.0	38.6	41.8	700
Low	34.4	34.7	37.0	1348
Medium	34.9	35.7	36.5	1242
Medium high	35.9	36.7	34.1	816
High	54.4	55.1	45.7	452
Total	36.8	36.8	36.8	5504

[a] When REG, NLV or CAGE is being examined, the two others from the set are adjusted. For WED and HOCST all three are adjusted.

among women aged 45-49, many of whom are (or believe that they are) subfecund. Controlling for number of living children increases substantially the net use rates at ages below 30 and decreases net rates after 30 because number of living children and use both increase with CAGE. While NLV and CAGE both have independent effects, the net effect for NLV is greater. The partial r for NLV and use of a modern method is .169 (controlling for REG and CAGE); the corresponding partial r for CAGE is .105 (controlling for NLV and REG).

3.4 DIFFERENTIALS IN CURRENT USE BY WIFE'S EDUCATION

Current use of modern contraception increases moderately with wife's education, from a low of 28 per cent for those with no education to about 34 per cent for those with primary education and a high of 41 per cent for those with more than primary education. Although the difference between the lowest and highest educational categories is analytically important, the concentration of women in the lower educational strata means that education can explain relatively little of the variance in use. Controlling for REG, NLV, and CAGE increases the strength of the education-use relationship, because the poorly educated are older and have more children. The partial r increases from .08 with no controls to .130 for controls with REG and NLV. Adjusting for these two variables decreases the proportion using among those with no education and increases it for those with more education. These controls also make the relationship monotonic since it makes the proportion of users higher for those who graduated from primary school than for those with only partial primary education. When all four other variables are controlled, the relationship is somewhat weaker, mainly because HOCST is positively related to both WED and current use of a modern method.

While the monotonic relationship of WED and use is important, it is again noteworthy that, even after controls, there is significant use of modern contraception in all educational strata. Most of the women are, in fact, in the two lowest educational strata where adjusted use rates are 25 and 36 per cent.

3.5 DIFFERENTIALS IN CURRENT USE BY HUSBAND'S OCCUPATIONAL STATUS

Use rates are highest for professional and clerical workers (table 8). The next highest use rates are in the farming sector, among farmers working for themselves or working with a few employed helpers, and farm workers employed on other than family farms. The lowest use rates were for the small group who reported themselves as unpaid workers on a family farm. Among either sales or service or manual workers, the self-employed (already described as a marginal group) had lower use rates than those who worked for others or employed others. All of these statements apply either to the unadjusted percentages or to those adjusted for the four other variables. Adjusting for REG has the effect of increasing somewhat the use rates in all the urban occupations (professional and clerical, sales and service, and manual) and decreasing the rates somewhat for four of the five farming groups. Adding WED as a control decreases the use rate in the professional and clerical group as expected.

Perhaps the most notable aspect of the occupational data is the relatively high rate of use of modern methods in all of the large farming categories. This appears to indicate that the family planning programme has been successful in bringing information and services for modern contraception to the large farming sector in the villages. Presumably, it also means that families of this sector had a latent readiness for use and some may have previously been using traditional methods.

3.6 DIFFERENTIALS IN CURRENT USE BY STANDARD OF LIVING

How the standard of living index is related to use of contraception is particularly important, because there has been considerable scepticism that the very poor in a country like Indonesia have the motivation to use contraception. Table 10 indicates how contraceptive use rates vary with four different measures of level of living. The standard of living index is a simple summation of the scores on housing and consumer durables.

For each of the four measures there is a pronounced curvilinear relation with relatively high use rates for those with the lowest and highest levels of living and the lowest use rates at an intermediate level of living.

The relatively high rate of use by the very poor is remarkable. Thirty-eight per cent of the couples with the lowest standard of living (the lowest 15 per cent) reported current use of modern contraception. These were couples living in housing made of the poorest materials, with oil-lamp lighting, with water for bathing and drinking available only from a river or a public well, and without even one of the 13 objects which go into the consumer durable index. Similarly 38 per cent of the couples with the lowest reported per capita household expenditures were current users of modern contraception.

The curvilinear relationship of standard of living and use of modern contraception persists when adjusted for the five other variables (table 8). The major change with adjusted values is a reduction of 5 per cent for the group with the highest living standard as a result of the fact that the better educated women have both high living standards and high contraceptive use rates. With adjustment for the five other variables, the highest use rate for modern contraception is for the families with the lowest standards of living.

As a speculation we suggest that two different processes produce the patterns of use by the standard of living and associated measures. The conventional modernization effect of education and higher occupational status produce the rising levels of use in the groups with the higher living levels. At the same time something resembling a Malthusian prin-

Table 10 Percentage Using Modern or Any Contraception by Housing Conditions, Ownership of Modern Consumer Durables, Standard of Living and Household Expenditures Per Capita

		% using modern contraception	Any contraception	N	% of sample
Housing condition index					
Very low	(0)	35.3	39.1	1844	41.2
Low	(1)	25.1	28.1	967	20.4
Medium	(2-3)	34.2	39.1	1139	23.9
High	(4 and above)	34.6	46.5	709	14.7
Ownership of consumer durables index					
Very low	(0)	34.2	37.5	1237	24.9
Low	(1-2)	31.0	34.6	1624	32.7
Medium	(3-5)	30.2	34.6	1354	27.3
Medium high	(6-10)	35.3	47.1	636	12.8
High	(11 and above)	45.8	64.1	109	2.2
Standard of living index					
Very low	(0)	38.0	41.7	706	15.2
Low	(1-2)	31.2	34.4	1369	29.4
Medium	(3-5)	31.1	34.9	1271	27.3
Medium high	(6-10)	29.3	36.0	835	17.9
High	(11 and above)	40.3	54.1	478	10.3
Per capita household expenditures (ruppiahs per month)					
Less than 2000		37.9	42.8	1891	38.1
2000-2999		32.1	36.5	1261	25.4
3000-3999		27.2	31.6	1021	20.6
4000-4999		24.4	29.3	286	5.8
5000-7499		26.3	34.8	308	6.2
7500 and above		31.9	40.4	194	3.9
Total		32.5	37.5	4960	100.0

ciple is at work for the very poor. We speculate that those who live in the direst poverty adopt contraception in significant numbers when they are linked to the outside world with higher living standards and are presented with the idea of and means for family limitation by a legitimate organization that reaches the village level.

This interpretation is consistent with the findings of a recent anthropological field investigation in several Balinese villages. In a report on this work Edmondson (1981) writes:

> the current low fertility in the village, achieved by late age at marriage and the use of traditional and modern methods of fertility control, has been motivated by long-term adaptation of individuals to changing economic variables. This adaptation has taken the form of widespread changes in household economic and reproductive strategies. The economic variables have consisted, in part, of increased economic pressures caused by multigenerational population growth, fragmentation of landholdings, and saturation of traditional village-level work opportunities. At the present, only 50% of the households in the study owned land. Additionally, traditional work opportunities such as rice-hulling, weaving, and village marketing have been severely depleted in recent years. . . In short, agriculture and other traditional employment is no longer sufficient to support the burgeoning labor supply. At the same time, education related work . . . surfaced as the only new employment opportunities. While these jobs are few in number . . . parents are willing to make large capital investments in education in the hope that at least one of their children will be able to find work in these areas.

The conventional wisdom of recent years is that the very poor in LDCs want to have a large number of children because, for them, children are a net economic asset even when they are young, apart from the security they offer in old age. Studies by White (1975) and Nag, White and Peet (1978), for example, provide evidence that children can be a net economic asset in particular places. Mueller (1976) has made a contrary argument. In any case, it is plausible that there are situations in which the resources per capita are so small that having additional children is not rational from the point of view of the individuals involved. We do not know what leads some groups, but not others, to practise birth control in that situation. There is some evidence suggesting

the extensive use of abortion and infanticide to keep village population growth in check, as in premodern Japan for example. It is possible that in Indonesia, where there is often extreme pressure of population on scarce land resources, the family planning programme may have helped large numbers of couples to define their desperate situation as being partly a result of having too many children. Large numbers of traditional-minded villagers, while ambivalent about such a definition, might be led to adopt it by the very strong pressure of authorities against whose influence they are weak. We are suggesting that a possible socially coercive element in the programme could not be so successful if there were not latent, if ambivalent, motives for family limitation in the situation.

It is important to note that in Thailand (Cleland *et al* 1979), unlike Indonesia, those with the poorest standard of living had the lowest rates of contraceptive use. A possible explanation is that the Thai family planning programme apparently does not involve the strong political and administrative pressures for acceptance found in Indonesia.

4 Multivariate Analysis of the Use of Any Method

About five per cent of the exposed women reported currently using a traditional method, as compared with 32 per cent using a modern method. Since traditional methods are such a small part of total use, as reported in the IFS, the analysis of any method receives a much more condensed treatment than was given to modern methods.

The use of traditional methods is more strongly related than use of modern methods to each of the five independent variables (table 11). Particularly notable is the stronger positive relation of traditional method use to HOCST and

Table 11 Percentage of Exposed Women Using Traditional Methods[a] of Contraception, by Five Independent Variables, Unadjusted and Adjusted for REG, CAGE, WED

Characteristic	% using a traditional method		Characteristic	% using a traditional method	
	Unadj	Adj for REG, CAGE, WED		Unadj	Adj for REG, CAGE, WED
Wife's education			*Husband's occupational status*		
None	3.3	2.6	Professional and clerical	13.3	9.9
Some primary	4.6	5.2	Sales and services, paid	6.4	5.7
Primary	5.7	6.6	Sales and services, self-emp	4.3	5.2
Junior high	16.2	14.5	Sales and services, small employer	11.3	10.5
Region[b]			Manual, employed	4.9	4.5
Jakarta	12.1	11.9	Manual, self-employed	4.2	4.3
West Java	2.5	2.7	Manual, small employer	13.0	13.1
Central Java	4.3	4.2	Farming, unpaid family	1.4	2.4
Yogyakarta	27.9	27.6	Farming, family employed	1.5	3.3
East Java	4.2	4.3	Farming, employed by others	2.7	3.0
Bali	1.0	0.9	Farming, self-employed	3.8	3.6
			Farming, small employer	4.2	5.0
Number of children living[c]			*Standard of living*		
0-2	3.4	3.9	Very low	3.7	4.3
3	5.8	5.6	Low	3.1	4.0
4	5.5	5.0	Medium	3.8	4.2
5+	7.2	6.5	Medium high	6.8	6.2
			High	14.0	10.8
Wife's age[d]					
Under 20	2.7	4.3			
20-24	2.9	3.9			
25-29	5.0	5.2			
30-34	5.2	4.8			
35-39	6.1	5.3			
40-44	7.1	5.8			
45-49	7.5	5.4			

[a] Obtained by subtracting use of modern methods from use of any method.

[b] Adjusted for effects of CAGE and NLV.

[c] Adjusted for effects of REG and CAGE.

[d] Adjusted for effects of REG and NLV.

WED. The net result is that *eta* for use of any method is greater than for modern methods for each of the five independent variables:

Variable	Partial r		*Eta*	
	Method:		Method:	
	Modern	Any	Modern	Any
REG	.200	.207	.200	.207
NLV	.163	.173	.197	.224
CAGE	.088	.077	.155	.173
HOCST	.092	.100	.138	.172
WED	.110	.134	.084	.132

Partial r (controlling for the four variables in each case) is also larger for any use than for modern method use for all the independent variables except CAGE. The rank order of partial r is the same for both use variables. *Eta* is higher for NLV than for REG of any method, but even this exception is absent when partial r values are considered. REG has the highest partial r for either measure of use.

In table 9 we show the use of any method for subcategories of the five independent variables, without adjustment and after adjustment for REG, NLV, and CAGE and for all four other independent variables. The considerable use of traditional methods in Yogyakarta and Jakarta increases substantially the percentage using any method in those provinces. Adjusting for NLV and CAGE has minor effects on REG. Controlling for all four independent variables has the effect of reducing the any method use rate in Jakarta because of the disproportionate concentration there of the high status categories of HOCST and WED which have especially high use rates. The very high any method use rate in Yogyakarta is a result of the high use rate for traditional methods and is not a function of the other four variables.

Use rates for subcategories of NLV, CAGE, WED, and HOCST follow patterns of ordering that are similar for modern and any methods, before and after adjusting for other variables. In every case, the any method rate is higher than the rate for modern methods only.

5 The Relation of whether More Children Are Wanted to the Use of Contraception

Forty per cent of the exposed women said they wanted no more children than they had. Sixty per cent said they wanted more or were uncertain. As expected those who wanted no more children used contraception (modern and traditional) more than those who wanted more children (table 12). It is surprising that so many of those who wanted more children were using contraception – 22 per cent for modern methods and 26 per cent for any. After adjustment for the five variables used in our main multivariate analysis, the percentages increased to 24 and 28 respectively. The *eta* value is higher than for any other variables related to either modern or any contraception. The partial r for modern contraception (.179) and for any contraception (.221) (controlling for five other variables) is higher than that for any of the variables except REG (controlling for four other variables).

Adding whether more children are wanted (WAMOR) to the five variables previously considered increases the total explained variance from .12 to .15 for modern methods and from .14 to .18 for any method. The effect of controlling WAMOR in addition to the other variables produces little effect on the net percentages for REG, WED, or HOCST. However it does have a noticeable effect on NLV and CAGE, because the percentage wanting no more and the percentage using a modern method both tend to increase with age and number of living children. The effect is shown for wife's age:

Wife's age	Unadj	Adj for NLV, WED, REG and HOCST	Adj for NLV, WED, REG, HOCST and WAMOR
Under 20	13.2	23.0	26.3
20-24	30.2	35.7	38.0
25-29	35.1	34.3	35.5
30-34	37.7	34.5	33.8
35-39	35.8	31.1	29.2
40-44	36.1	30.2	26.1
45-49	28.6	23.6	17.1

While such effects for NLV and CAGE are significant, it is perhaps more significant that controlling for this measure of motivation only modestly increases explained variance or accounts for the effects of the other variables.

Table 12 Current Use of Modern or Any Contraceptive Methods, by whether More Children Were Wanted, Unadjusted and Adjusted for the Effects of REG, CAGE, NLV, WED and HOCST

Whether wants more children	Proportion using modern methods		Proportion using any method		N
	Unadjusted	Adjusted[a]	Unadjusted	Adjusted[a]	
Yes[b]	22.4	23.7	25.8	27.5	3312
No	46.3	44.4	53.3	50.7	2191
Total	31.9	31.9	37.8	36.8	5503
Eta^2	.063		.078		
Partial r^2		.032		.049	
Multiple r^2		.147		.178	

[a] Adjusted by multiple classification analyses for REG, CAGE, NLV, WED and HOCST.

[b] Includes uncertain. In the total currently married fecund sample, 39 per cent wanted to stop childbearing, 10 per cent were undecided and 51 per cent wanted no more.

6 Multivariate Analysis within Regions

Within regions, after adjustment of three other IFS variables the most consistent patterns are for number of living children and wife's education. Use of modern contraception increases monotonically with number of living children or wife's education in all regions, with only one reversal.

The curvilinear pattern for standard of living is found in West, Central and East Java. A monotonic positive relation is found in Jakarta. The relationship is negative in Yogyakarta. In Bali the relationship is irregular. Thus, the expected relation is found only in the metropolitan centre.

There are no consistent patterns of relationship for husband's occupation or wife's age.

The high levels of use in Bali are found in 25 of the 28 subcategories considered in table 13. The values are second highest for East Java in 22 of the 28 comparisons.

Table 13 Per Cent of Exposed Women Currently Using a Modern Method, by Province and Adjusted for Background Variables (Unweighted Samples)

			Province						
Variable	Controls	Categories	Jakarta	West Java	Central Java	Yogya-karta	East Java	Bali	N
NLV	CAGE, HOCST, WED	0-2	10.6	15.4	22.7	13.8	26.9	32.2	2702
		3	35.5	25.5	39.5	25.3	48.6	59.7	859
		4	36.1	14.5	39.9	27.7	51.1	62.4	742
		5+	41.2	25.3	52.3	36.3	60.2	70.4	1332
CAGE	NLV, HOCST, WED	Under 20	25.9	14.2	24.5	17.2	27.2	32.2	546
		20-24	32.6	17.9	43.7	20.1	46.3	45.5	1144
		25-29	33.0	19.4	45.0	24.6	38.6	54.6	1132
		30-34	20.6	22.2	30.7	36.3	46.9	60.1	1025
		35-39	33.6	19.3	30.9	27.7	39.5	51.0	943
		40-44	17.2	20.4	32.3	14.6	37.6	42.9	575
		45+	28.7	20.4	17.9	5.6	27.4	28.2	270
HOCST	NLV, CAGE	Prof and clerical	38.5	34.2	42.2	30.7	48.2	47.3	710
		Sales and services, emp	25.2	21.7	35.2	32.5	41.4	44.5	578
		Sales and services, self-emp	18.4	9.0	32.0	31.5	31.4	42.0	534
		Manual, employed	23.6	15.8	31.9	18.1	35.8	55.3	856
		Manual, self-employed	18.9	22.1	28.1	9.5	28.0	41.8	293
		Farming, unpaid family	8.4	16.1	35.5	11.6	25.6	40.2	233
		Farming, paid		23.7	30.1	14.3	44.0	46.1	673
		Farming, employer		13.9	38.9	23.7	42.0	53.0	1758
WED	NLV, CAGE, HOCST	No schooling	13.8	10.8	31.9	19.6	31.0	45.4	2207
		Primary, incomp	18.8	21.7	36.6	25.5	44.0	56.0	2041
		Primary, comp	36.7	20.6	42.8	27.1	50.9	56.0	862
		Junior high+	39.4	38.0	32.6	26.4	49.5	69.0	525
Mean for total			26.7	19.0	35.2	22.6	39.9	50.4	5635
STLIV	NLV, CAGE HOCST, WED	Very low	15.1	21.6	37.6	33.1	47.7	41.5	700
		Low		16.3	37.1	20.6	41.4	49.5	1348
		Medium	23.0	17.6	32.6	21.7	42.1	54.1	1242
		Medium high	24.1	17.8	30.3	21.4	32.7	51.0	816
		High	33.7	25.4	40.2	13.6	36.7	47.8	452
Mean for total			28.0	18.5	35.5	22.9	40.3	50.5	4558

7 Community-Level Characteristics

It is possible to consider whether certain characteristics of the villages in which the IFS respondents lived are related to contraceptive use rates. In 1976 village heads were asked by the Central Bureau of Statistics to fill in a questionnaire about certain facilities found in the village. Data for villages in the IFS SUPAS III sample were transferred to the IFS tape so that the village characteristics were linked to the individual characteristics of the IFS respondents. Table 14

Table 14 Per Cent of Exposed Women in Rural Areas Using Modern Contraception and Any Contraception by Village Characteristic

	Modern method		Any method		
Village characteristic	Unadj	Adj for REG, NLV, CAGE	Unadj	Adj for REG, NLV, CAGE	N
Educational facilities					
No school	28.1	23.0	30.0	25.0	94
Primary school only	34.4	34.3	37.8	37.9	3240
Junior high/sr high	29.9	30.6	35.8	35.8	898
					4232
Health facilities					
None	35.6	34.6	39.6	38.7	2922
Hospital or clinic only	27.3	31.0	29.7	34.2	509
MCH only	31.2	29.6	35.4	30.5	142
Both	27.9	29.8	33.0	34.6	671
					4243
Market and bank					
None	35.9	35.2	39.5	38.6	2389
Market only	28.2	28.7	32.9	33.4	648
Bank only	27.5	28.1	31.4	32.7	674
Both	35.2	36.6	39.6	41.3	532
					4243
Distance to nearest city in district					
0-2 km	30.9	31.9	35.9	37.4	1375
3-5 km	36.3	35.2	40.3	38.8	1418
6+ km	32.6	32.6	35.5	35.4	1450
					4243
Television					
Yes	30.0	32.8	35.0	37.8	2255
No	37.0	33.9	39.7	36.5	1988
					4243
Electricity					
Yes	23.3	26.8	28.9	33.3	752
No	35.4	34.7	39.0	38.0	3491
					4243

Table 15 Percentage Distribution of Rural Women at Various Standard of Living Levels by Characteristics of the Villages in which They Live

Village characteristic	Standard of living					N
	Very low	Low	Medium	Medium high	High	
Educational facilities						
No school	0.9	1.2	3.0	5.7	0.0	92
Primary school only	81.7	80.5	77.4	68.0	46.7	3020
Junior high/sr high	17.4	18.3	19.6	26.4	53.3	854
Total	100.0	100.0	100.0	100.0	100.0	
N	695	1306	1137	634	195	3966
Health facilities						
None	74.8	70.2	67.5	66.8	51.4	2735
Hospital or clinic only	12.5	11.1	11.7	12.9	11.8	470
MCH only	3.8	3.3	3.4	3.8	1.5	135
Both	8.9	15.4	17.5	16.5	35.4	638
Total	100.0	100.0	100.0	100.0	100.0	
N	697	1312	1140	634	195	3978
Market and bank						
None	68.3	59.5	53.7	51.3	29.5	2252
Market only	15.9	13.8	15.3	15.4	18.2	600
Bank only	5.5	15.4	18.3	20.2	25.9	628
Both	10.4	11.3	12.7	13.2	26.4	498
Total	100.0	100.0	100.0	100.0	100.0	
N	697	1312	1140	635	195	3979
Distance to nearest city in district						
0-2 km	27.5	26.4	31.3	38.0	62.7	1259
3-5 km	24.6	37.9	36.0	35.5	20.0	1344
6+ km	47.8	35.6	32.7	26.5	17.3	1376
Total	100.0	100.0	100.0	100.0	100.0	
N	697	1312	1140	635	195	3979
Television						
Yes	42.1	46.6	56.8	58.8	82.6	2086
No	57.9	53.4	43.2	41.2	17.4	1892
Total	100.0	100.0	100.0	100.0	100.0	
N	697	1312	1140	634	195	3978
Electricity						
Yes	10.5	15.2	16.2	23.5	49.5	703
No	89.5	84.8	83.8	76.5	50.5	3273
Total	100.0	100.0	100.0	100.0	100.0	
N	697	1312	1140	634	195	3976

indicates the village characteristics available to us and how they are related to contraceptive use. Adjusting for region, number of living children and wife's age results in only small changes in levels of contraceptive use and is more likely to reduce rather than increase any differentials by village characteristics. As shown in table 14, the differentials in level of contraceptive use among those living in villages with and without electricity or television or at varying distances from a city are reduced when the three variables REG, NLV and CAGE are controlled.

Table 15 indicates as expected that the population subgroups with low standards of living are found disproportionately in villages lacking modern societal amenities and at greater distances from subdistrict (*kecamatan*) capitals.

The relationship of village characteristics to contraceptive use is not consistent with conventional wisdom. In terms of modernization hypotheses, we might have expected that use rates for modern contraception would be highest the more advanced the educational facilities, if electricity was available, if health care facilities were present, if the village had a market and bank, and if it was located nearer to the city. But there is no consistent support for these conven-

tional hypotheses. In fact, for a number of facilities the relationship is counter-intuitive. For example, for the minority of rural respondents in villages with television, electricity or health facilities, the proportion using contraception was lower than in the villages without electricity or health facilities.

The patterns of contraceptive use in relation to village-level characteristics support instead a generalization already made on the basis of individual characteristics: similar moderately high level of contraceptive use occurs in populations with quite different characteristics. Poverty and the absence of modern facilities do not appear to be a negative factor for modern contraceptive use in Indonesia. People living in villages with the social amenities or close to *kecamatan* capitals do not in any consistent way have higher contraceptive use rates. This results from the fact that the curvilinear relationship of standard of living to modern contraceptive use is found in village populations with and without the various social amenities and at various distances from the *kecamatan* capital. This is illustrated for several of the village characteristics in table 16.

We speculate that such results on either the individual or community level are linked to the character of the Indonesian programme in the context of Malthusian pressures. We have previously characterized the Indonesian programme as having a strong administrative structure reaching down to the village level where it is capable of bringing the pressure and sanctions of recognized authority and peer pressure to bear on individuals. A large number of those on whom pressure is brought are very poor, predominantly in agriculture with holdings too small for adequate subsistence. Under such circumstances the poor have adopted contraception in sizable numbers. We believe that the motivation arises from the convergence of need and forceful presentation of contraception as a potential solution. The poor may be powerless to resist the pressures of constituted authority, and their very limited resources for supporting additional children may make the arguments of the authorities seem plausible. At the higher end of the status hierarchy, individuals who are better off are led to contraceptive use in part by programme pressure but with the different motivation flowing from modernization. We think that both modernization and Malthusian pressure provide motivation in a situation where legitimate authority presents contraception as a partial solution and communication to the outside world suggests that alternatives are possible. Although not all villages have health or maternal and child health clinics, substantially all (94 per cent) report that family planning services were available in the village. (These may be the 'village family planning post' run by women's organizations or other social organizations or mobile teams visiting the village at regular intervals.)

Whether or not the explanations we offer are correct, the unusual facts about the kinds of populations which have adopted modern contraception quickly in Indonesia need explanation. What is required is research which links the facts evident in the survey to better political, cultural and social data and analysis of how this remarkable situation has developed. There is some significant evidence on the nature of administrative and peer pressure in a study by Murdijanto Purbangkoro (1978, pp 67-8) of the 'special drives' in three villages of East Java in 1977. The special drives were special efforts by the Governor of East Java in a short period at the end of each fiscal year to mobilize government leaders and co-opted volunteers to meet and

Table 16 Per Cent of Exposed Rural Women Using Modern Contraception, by Household Standard of Living, by Village Characteristics

	Standard of living				
Village characteristic	Very low	Low	Medium	Medium high	High
Electricity					
Yes	24	17	31	19	33
No	40	35	33	34	51
Distance to nearest city in district					
0-2 km	43	31	30	22	40
3-5 km	37	33	38	41	45
6+ km	36	32	30	31	45
Health facilities					
None	40	35	36	33	47
Hospital or clinic only	32	24	24	28	19
MCH only	25	30	29	46	50[a]
Both	41	26	27	22	40
Educational facilities					
Primary only	39	33	34	33	43
Jr high/sr high	33	27	32	24	41

[a]Less than five cases.

surpass the quota of acceptors in an intensive effort in the final months of the fiscal year. He writes in a summary:

> The issue of coercion, about which many rumors persist, remains problematical. The fact that a majority of special drive acceptors in all villages but Tulungrejo perceive that coercion was employed is important and is perhaps more so than other 'more objective' standards. Unfortunately, the term coercion is not easily defined. The Indonesian term most commonly used for coercion is 'terpaksa' which is literally defined as 'forced' or 'compelled.' However, it has a connotation in Indonesian culture of fatalism, of forces at work which are beyond the ability of the individual to influence. In other words, 'terpaksa' implies situations which both directly and indirectly compel the individual to certain types of behavior. In the case of the special drive, these would involve the use of physical force to directly obtain compliance as well as the application of more subtle societal, group or peer pressures to change behavior.
>
> As far as can be determined . . . the objective of the special drive is to compel in the more subtle sense. Such compulsion is to be achieved by confronting those reluctant individuals, whose initial resistance is so great as to block experimentation with family planning or with the IUD, with such overwhelming arguments, both verbal and symbolic (in the sense of demonstrating that family planning and acceptance of the IUD are approved, used and supported by those community leaders whose status and opinions have traditionally been influential in the lives of the average villager), that the individual is compelled to accept because of the force of the arguments used.
>
> It should be pointed out that such an approach to behavior modification is not unusual in Indonesia, especially in East Java. The role of authority figures, particularly in terms of moral persuasion, has traditionally been very strong.
>
> The obvious flaw, however, with such an approach is that local officials who are themselves poorly motivated to perform in the public interest but who are under intense pressure, both from higher administrative levels as well as from peers and other competing villages, to achieve results may be tempted to abuse their powers and apply direct coercion to ensure high performance.

He reports that in a number of villages all eligible women who were not acceptors were called together by the village leader at the time of the special visit of a medical-family planning team and higher administrative authorities. While the women waited in line with their children for a physical examination, they were approached by the visitors with a strong argument for acceptance. Those who did not accept at that time were then visited at home by members of the visiting team. About half of the acceptors and local informal leaders interviewed after the drive reported coercion. Nevertheless, many women did not accept despite the pressure. Purbangkoro felt that the drive was most successful where the programme had been carefully explained beforehand and where there was adequate medical follow-up.

Purbangkoro recommended in his report the discontinuation of the special drives partly on the grounds that it was counter-productive in many cases and that 'experience from other provinces of Indonesia indicates that good performance can be obtained without such tactics'.

To the extent that there has been pressure from authority for acceptance of contraception, it is possible to argue that contraceptive use rates may have been overestimated, both in the service statistics and in the various surveys. This might have been the case if some village residents felt under pressure from local authority to accept contraceptives (even if they did not use them) and to report such use to survey interviewers perceived as representing authority. It seems implausible to us that all of the different data sets would incorrectly estimate similar high levels of contraceptive use.[1] Important future tests of validity will come from good data on fertility levels and trends which could be related to trend data on contraceptive use in the provinces and in Indonesia as a whole.

Analyses of fertility trends for the period from 1971-5 to 1974-8, now being done by relating data from the large-scale 1979 Sussenas survey to the IFS and earlier surveys, should provide a test of the relation between fertility decline and the levels of modern contraceptive practice reported in the IFS in this report.

1. In addition to the service statistics and the SUPAS II and III data mentioned earlier, a study in 1975 in four areas of West and Central Java reported considerably higher contraceptive use rates than the BKKBN figures for all of West and Central Java at that time (Singarimbun, Hull and Mayer, 1978, pp 93-101). High continuation rates were found in several studies. (See Teachman *et al*, 1977, pp 44-61.)

8 Summary and Discussion

(i) Among the IFS variables considered, region has the strongest relation to current use both before and after adjusting for other variables. Adjusting for other variables only affects (reduces) the use rate for Jakarta significantly, because that province has a disproportionate number of well-educated wives and husbands in professional and clerical occupations. The importance of region is consistent with the results for Thailand in the analysis by Cleland *et al* (1979). It is also consistent with the findings of the Princeton historical study about the importance of local regions in affecting the levels and rates of decline of fertility during Europe's demographic transition.

Why should region affect the use of modern contraception? One answer is that regions differ culturally in ways that affect fertility independently of the other kinds of demographic and social variables considered in this and other studies. But an explanation involving 'culture' does little more than to give a name to all the residual influences after taking into account a few of the standard variables. The important remaining question is just what aspects of culture affect the reproductive pattern?

For Indonesia another possible answer is that the family planning programme was differently implemented by the provinces which are semi-autonomous in the programme. It is well known, for example, that administrative effort and commitment and mobilization of local leadership to recruit acceptors are especially strong in East Java which has high contraceptive use rates.

While we had no adequate measures of such differential programme effort, one indication of the differential availability of contraception by region is given by the number of family planning clinic hours per 1000 married women 15-44 years old:

Region	Clinic hours per 1000 married women 15-44[a]
Bali	22.7
East Java	12.9
Central Java	8.1
Yogyakarta	11.6
Jakarta	8.2
West Java	6.4

[a]These data are for 1976. Figures for other months in 1974 and 1975 show similar results.

Except for the reversal of Central Java and Yogyakarta the rank order of clinic availability is the same as the rank order for estimated current use. It is, of course, possible to argue that the number of clinic hours is a response to meet differentials in pre-existing demand determined by regional cultural differences. Such cultural differences may directly affect both the demand and the readiness of central and provincial BKKBN authorities to push the programme strongly in one rather than another province. That programme effort does have an important role may be indicated by the fact that estimated use rates increased sharply in Central Java after 1975 when special efforts were made to increase greatly the availability of family planning services.

The fact that substantial use of modern contraceptives was found in all strata of the population including the poor, the uneducated and the rural suggests that the programme had a significant effect, since it was especially directed to these groups which make up a large part of Indonesia's population. It seems implausible that use rates would have reached such high levels in Indonesia across such a broad spectrum of subgroups without the programme.

Just what it is about region that produces these distinctive effects is a question that should be pursued in further research, since the issue is important not only in Indonesia but in other settings as well.

(ii) A relatively small percentage (12 per cent) of the variance in current use of a modern method can be explained by the joint effect of the five variables considered in the main multivariate analysis. However, there are small but significant differentials between categories of each of the variables used.

(iii) The number of living children has a greater effect on use than the wife's age in a multivariate analysis.

(iv) Wife's education and husband's occupational status each have small effects on use rates. However, the effect of wife's education is greater than that of husband's occupation when effect is measured by the partial r, controlling the effects of the four other variables. The use rates by husband's occupational status do not follow the pattern expected from a Western model, since use rates for several large groups in the farming sector are second only to the use rates for the much smaller professional and clerical group, and are higher than the rates for sales and service workers or manual workers. Among the sales and service and manual workers, the marginal self-employed subgroup has lower use rates than others in those occupational strata.

(v) If the wife wants no more children, use rates are relatively high on either a gross or net basis, as might be expected. Perhaps as important is the fact that those who want more

children also have a considerable, if lower, use rate.

(vi) The high rates of use in families with the lowest standard of living is especially important, since it contradicts the conventional wisdom that families who are desperately poor will have no interest in family limitation. The relationship of standard of living to contraceptive use was curvilinear with relatively high use values for those with the lowest and highest living standard. We suggested that this may result from the convergence of two forces: modernization may increase contraception for higher status groups; sheer Malthusian pressure coupled with access to new influences including the information and services of the family planning programme increases contraceptive use for the poor. These results are potentially important and should be pursued with research on the social, cultural and political situation of the poor in different regions. Apart from the other explanations we have suggested, it is possible that many of the poor adopt contraception because they are powerless to resist the strong pressure of local officials to help them meet the mandated goals for local areas. This may account for the absence of such a curvilinear relationship for the standard of living variable in Thailand where local community leaders are not under such great pressure to meet acceptor targets.

(vii) The characteristics of the rural villages in which the vast majority of Indonesians live also did not relate to modern contraceptive use in expected ways. The results parallel those for individual standard of living. Villages with modern social amenities or close to *kecamatan* capitals did not have higher contraceptive use rates as might be expected from modernization theory. For some criteria, for example, availability of electricity or television, the results were counter-intuitive: higher levels of contraceptive use in places without the facilities. This was true despite the fact that those with higher standards of living were disproportionately found in villages with modern social amenities and near *kecamatan* capitals. The curvilinear relation of household standard of living and contraceptive use was found in villages with and without the modern amenities.

(viii) Perhaps more important than any of the differentials we have found is the fact that use rates are relatively high across regional, demographic, and social strata before and after adjusting for other variables. The demand for contraception apparently pervades all major population strata.

Note

After this paper was completed, we had access to an unpublished paper by Budi Soeradji and Sri Harijati Hatmadji ('Contraceptive Use in Java-Bali: a Multivariate Analysis on the Determinants of Contraceptive Use', which is forthcoming in the WFS *Scientific Reports* series). Their results are somewhat different from ours, but these differences probably result from the fact that, with the tape and variables they used, they had to drop a substantial number of cases from the sample because of incomplete data on variables not used in our analysis.

Appendix A — Sampling Error Measures

We have abstracted from tables III.1 and III.2 of *Principal Report*, vol 1, pp 134-5, the following estimates of the standard error for use of modern or any methods by exposed women, for subgroups of various sizes:

Sample size	Standard error
30-50	.080
51-100	.060
101-200	.045
201-400	.035
401-700	.025
701-1000	.022
1001-1500	.020
1501-2000	.016
2001-3000	.015
3001-5000	.013

DEFT is an indication of the 'design effect' of a complex sample in increasing sampling error as compared with a simple random sample.

$$\text{DEFT} = \frac{\text{Standard error for the actual clustered sample}}{\text{Standard error for a comparable unrestricted random sample}}$$

DEFT is 1.67 for current use of any method, by exposed women. DEFT is estimated as 1.70 for current use of a modern method by exposed women (estimated on assumption that ratio of DEFT for ever-use of any method by ever-married women to the current use by exposed women) can be applied to ever-use of a modern method by ever-married women. These DEFT values are relatively high and indicate that there is considerable areal clustering in the use of contraception. This is consistent with our finding of province as an important correlate of contraceptive use. DEFT indicates similar effects in smaller areas used in the sampling design.

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