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**AN APPROACH TO THE RECONCILIATION OF
DEMOGRAPHIC SURVEY DATA
FROM THE PHILIPPINES**

by

Thomas W. Pullum, PhD

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SPECIAL NOTE

This is the second in a series of Occasional Papers published by the Population Technical Assistance Project (POPTECH). The series is designed to disseminate to the population community insights that have arisen or lessons that have been learned from assignments undertaken by the POPTECH project for the U.S. Agency for International Development.

Author Thomas W. Pullum addresses the puzzling development that, in the most recent national demographic surveys undertaken in the Philippines, estimates of fertility and contraceptive prevalence have not always been consistent from one survey to the next. The Philippines experience with demographic surveys is virtually unmatched among developing countries, with a sequence of surveys that dates back to the late 1960s. As more surveys are undertaken in other developing countries, however, it is expected that inconsistencies among those surveys may become a recurring problem. Therefore, the methods to reconcile the data used in this report are presented in some detail, in the hope that they may be useful in other settings.

Dr. Pullum's major conclusion is that the choice of indicators is an important key to the reliability of survey data. He recommends that the primary index of fertility be the Total Fertility Rate, not the Crude Birth Rate, and that the main measure of contraceptive prevalence be the percentage of currently married women who are using program methods, rather than all methods.

The specific estimates that are presented here may be superseded by subsequent analyses, several of which were being conducted at the time this paper was prepared.

It is hoped that the insights in this paper will be useful to others wishing to conduct similar types of analyses.

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GLOSSARY

ASFR	Age-Specific Fertility Rate
CE	Contraceptive Effectiveness
CEB	Children Ever Born
CBR	Crude Birth Rate
CPS	Contraceptive Prevalence Survey (1986)
CDR	Crude Death Rate
CPR	Contraceptive Prevalence Rate (percentage of currently married women using program methods)
NDS	National Demographic Survey (1973 and 1983)
RPFS	Republic of the Philippines Fertility Survey (1978)
TCPR	Total Contraceptive Prevalence Rate (percentage of currently married women using program and non-program methods)
TFR	Total Fertility Rate
UPPI	University of the Philippines Population Institute
USAID	United States Agency for International Development
WFS	World Fertility Survey

EXECUTIVE SUMMARY

Interest in the levels of fertility and contraceptive use in the Philippines is widespread. For decades the Philippines has had a high level of population growth, and there is currently an increasing awareness of the impact of this growth upon health, the age distribution, and economic development.

The Philippines has had a population policy and national program since the mid-1970s, and a sequence of demographic surveys going back to the late 1960s virtually unmatched in developing countries. These surveys have monitored the levels of fertility and contraceptive use, as well as many other related demographic phenomena such as migration, labor force participation, quality of housing, age at marriage, extent of breastfeeding, etc., much more thoroughly than is possible with the sequence of censuses.

This report is concerned with apparent fluctuations and inconsistencies in estimates of fertility and contraceptive prevalence from the most recent national surveys. It was motivated in part by the preliminary results from the 1986 Contraceptive Prevalence Survey (CPS). Those preliminary estimates, developed by the University of the Philippines Population Institute (UPPI), were never circulated beyond the USAID office in Manila and are presented in this report solely as a starting point for the investigation. It is expected that UPPI will issue revisions to those figures and to one or two rates from previous surveys. Revisions issued by UPPI will take precedence over any given in this report.

The fluctuations and inconsistencies are of two types. First, the sequence of estimates since about 1970 of the Crude Birth Rate (CBR: births per 1000 population) and the Total Contraceptive Prevalence Rate (TCPR: the percentage of currently married women who are using any method of contraception) shows an erratic pattern. It is unusual, by comparison with other countries, for such rates to show anything other than a steady, monotonic trend once fertility has begun a decline--as it definitely did in the Philippines in the 1960s. Second, the rates indicated little change during the late 1970s, and possibly an increase in the CBR, when the program was known to be strong, and a sharp decline in fertility (and increase in prevalence) in the early 1980s, when the program appeared to be weaker. These unexpected results have raised questions about the quality of the surveys and the estimation procedures. Moreover, there is no question that they--particularly the evidence of an upturn in the CBR in the late 1980s--have had a negative effect on the morale of the national program and on its value as perceived by the government of the Philippines.

The methods developed in this report may be useful in other settings, and for that reason are presented in some detail. They consist mainly of checking for correspondences, which theoretically should link the retrospective information in one survey with the retrospective information in a subsequent survey. It is normal to analyze two surveys as completely separate entities, and to compare them only to infer trends, rather than to establish their validity. The validations proposed here can be used when the trends from two surveys seem inconsistent in terms of one survey showing either too much or too little change relative to the other one.

Our investigation led to the following main conclusions. First, the two most recent surveys, the 1983 National Demographic Survey (NDS) and the 1986 CPS, appear to be quite consistent with each other in their fertility histories, leading to the conclusion that the apparent decline in fertility and increase in prevalence in the early 1980s is real. These changes may have been a result of the program's momentum in the late 1970s, which did not manifest itself as soon as expected, or may be due to non-program factors. By 1984 the CBR was in the vicinity of 31 and the Total Fertility Rate (TFR) was around 4.6.

Second, the published rise in the CBR from 1975 to 1980 was probably due to the mix of data sources, in particular the use of fertility rates from the surveys and age distributions from the 1970, 1975, and 1980 censuses. Other methods using the surveys alone produce a more regular and consistent series of estimates. We believe that the decline in fertility has been monotonic, although the increasing proportion of women in their twenties has caused the decline to be slower in the CBR than in the TFR, and the decline from 1975 to 1980 was small.

Third, the apparent fluctuations in contraceptive prevalence have been due to the inclusion of withdrawal and abstinence, which are not program methods, are not verifiable or effective (as actually practiced) and are sensitive to the interviewing practices of the different surveys. We do not completely understand why these figures fluctuate so much, but note that the proportions of women who are sterilized or are using other program methods have monotonically increased. The changes in prevalence of program methods are consistent with changes in the Total Fertility Rate for the full sequence. It is estimated that in 1986, 32 percent of all currently married women aged 15-49 were using program methods, and another 11 percent were using non-program methods.

It is recommended that in the future, the TFR be the primary index of fertility, rather than the CBR (or, even worse, the Crude Rate of Natural Increase or the Crude Growth Rate), and that the TFR be used for setting targets and monitoring change. This is simply the average completed number of children and is in

fact conceptually far less abstract than the CBR. It is also recommended that the prevalence of program methods, rather than all methods, be the basis for setting targets and monitoring change. It is unreasonable to hold the family planning program responsible for changes in the age distribution or for changes in the (reported) use of non-program methods. The sequence of national demographic and prevalence surveys should be continued, along with financial support for their timely analysis.

AN APPROACH TO THE RECONCILIATION OF DEMOGRAPHIC SURVEY DATA FOR THE PHILIPPINES

1. Introduction

1.1 Background

Interest in the levels of fertility and contraceptive use in the Philippines is widespread. For decades the Philippines has had a high level of population growth, and there is currently an increasing awareness of the impact of this growth upon health, the age distribution, and economic development.

The Philippines has had a population policy and national program since the mid 1970s, and a sequence of demographic surveys going back to the late 1960s virtually unmatched in developing countries. These surveys have monitored the levels of fertility and contraceptive use, as well as many other related demographic phenomena such as migration, labor force participation, quality of housing, age at marriage, extent of breastfeeding, etc., much more thoroughly than is possible with the sequence of censuses.

1.2 Purpose of Report

This report is concerned with apparent fluctuations and inconsistencies in estimates of fertility and contraceptive prevalence from the four most recent national surveys: the 1973 National Demographic Survey (1973 NDS); the 1978 Republic of the Philippines Fertility Survey (1978 RPFS), conducted jointly with the World Fertility Survey (WFS) program; the 1983 NDS; and the 1986 Contraceptive Prevalence Survey (1986 CPS).

Its first purpose is to reconcile and revise various existing estimates of the Crude Birth Rate (CBR), the Total Fertility Rate (TFR), and the contraceptive prevalence rate in the Philippines during the past several years, in order to develop baseline estimates of fertility and contraception for the next phase of the national family planning program. A second purpose is to recommend measures of fertility and contraception that can be used to specify targets and monitor progress in the future, as well as data sources to produce ongoing estimates of change.

The catalyst for the report was the appearance of the preliminary results from the 1986 survey. These were questioned by some because they were not consistent either with trends of the immediately preceding survey or with the perceived effectiveness of the family planning program.

These figures remain unpublished, are considered tentative, and are undergoing further analysis. The University of the Philippines Population Institute (UPPI), which carried out the original analysis, is carrying out further analyses and is expected to issue revisions both to these estimates, and to some estimates from earlier surveys. This report, prepared on the basis of a technical assistance assignment undertaken in March 1988, is an independent effort to review the figures in the CPS.

In addition, a much more extensive reconciliation of three surveys (those of 1973, 1978, and 1983) is currently under way. That analysis is being conducted primarily by John Casterline of Brown University, with USAID and Population Council support. The present author is a consultant to that project, which is examining trends in breastfeeding, nuptiality, and the timing of the first birth, as well as fertility and contraception. Dr. Casterline furnished draft copies of the tabulations and report for possible use. That material has not been used, and it remains for UPPI (and Casterline and Pullum) to integrate these separate efforts.

This reconciliation effort has been limited because of the brief time available. It will be concerned solely with national estimates, although it would be preferable to replicate the analysis for regions and important subgroups, such as urban/rural place of residence and various educational levels. The UPPI analysis will extend to such subgroups. Both the 1973 NDS and 1978 RPFS will be accepted as baselines and the estimates from those surveys will not be revised. A more complete analysis would go back to the raw data files from the RPFS, at least, and possibly the 1973 NDS.

Because of the other reconciliation efforts that are under way, it is recommended that no revision based on this report be issued at this time. Its findings should be considered informal, and revisions issued by UPPI should take precedence over any given in this report.

2. The Problem

Table 1 provides a picture of the sequence of estimates of the four surveys. The fertility estimates from these surveys are centered on 1970, 1975, 1980, and 1984, respectively, and the prevalence estimates are current at the time of each survey.

Table 1

Results of Four Most Recent Surveys

	1973 <u>NDS</u>	1978 <u>RPFS</u>	1983 <u>NDS</u>	1986 <u>CPS</u> - preliminary
	1970	1975	1980	1984
CBR	39.2	34.8	36.3	31.8
TFR	5.90	5.20	4.96	4.84
	1973	1978	1983	1986
TCPR	24.4	37.1	32.1	43.9

The fluctuations and inconsistencies are of two types. First, the sequence of estimates since 1970 of the Crude Birth Rate (CBR: births per 1000 population) and the Total Contraceptive Prevalence Rate (TCPR: the percentage of currently married women who are using any method of contraception) shows an erratic pattern. It is unusual for such rates to show anything other than a steady, monotonic trend once fertility has begun a decline--as it definitely did in the Philippines in the 1960s. Second, the rates indicated little change during the late 1970s, and possibly an increase in the CBR, when the family planning program was known to be strong, and a sharp decline in fertility (and increase in prevalence) in the early 1980s, when the program appeared to be weaker. These unexpected results have raised questions about the quality of the surveys and the estimation procedures. Moreover, there is no question that they--particularly the evidence of an upturn in the CBR in the late 1980s--have had a negative effect on the morale of the national program and on its value as perceived by the government of the Philippines.

The estimates from the first two surveys were generally accepted at the time that they were released. The reported decline in fertility and increase in contraception between the two surveys were regarded as good news. When the estimates from the 1983 NDS became available, however, there was considerable surprise that (apparently) the CBR had risen and the TCPR had fallen since the mid-1970s. This was unexpected, partly because it is unusual for a decline in fertility and a rise in prevalence to reverse once begun, and partly because the late 1970s had been a period of heavy inputs into the national family planning program. The inclination was to reject the 1978 RPFS because it broke the trend. This was difficult, however, because of the international expertise and high standards of the World Fertility Survey (WFS) that had been utilized in that survey. Furthermore,

if the 1983 NDS were accepted in preference to the RPFS, then it appeared that the CBR had fallen by only three points in 10 years.

Thus, most analysts came to accept the RPFS and to look elsewhere for reasons behind the apparent increase in the CBR from 1975 to 1980, at the same time the TFR was dropping slightly. The generally accepted explanation was that changes had occurred in the age distribution, which increased the relative size of the most fertile age groups of women. Analysts who adopted this explanation recommended that the program pay more attention to the TFR than to the CBR, because the TFR is not affected by changes in the age-sex distribution and nuptiality, factors that are outside the purview of the program. The CBR retained its prominence, however, partly because it is a direct input into population and economic projections, and partly, perhaps, because it gave support to the critics of the program.

The preliminary results from the 1986 CPS, when given to USAID/Manila at the very end of 1987 as part of a contractual agreement, were perplexing for the opposite reason. They showed a large decline in the CBR and an increase in the TFCR, which indicated another reversal in direction. These changes did not correspond with the widely held impression that the program was stagnating in the early and middle 1980s. In order to restore consistency, it was tentatively suggested that the 1983 NDS take the role of an outlier and be discarded.

3. Findings

3.1 Weights for the 1986 CPS

An obvious error in the initial analysis of the CPS was that all estimates were calculated without weights to correct for the different sampling fractions used in the survey's 25 strata (an urban and a rural stratum for each of the 12 regions, plus a stratum for Metro Manila, which is all urban). The original sample design called for approximately 2,000 ever-married women in each region and in Metro Manila, a total of about 26,000 respondents. The reason for the unusually large survey--the largest ever conducted in the Philippines--was to permit the calculation of continuation rates for specific methods in each region, and this interest in regional estimates required approximately the same sample size for each region. Thus the smaller regions were over-sampled, and the larger regions were under-sampled. In addition, the urban/rural balance within each region is different in the sample than it is in the population.

The author has calculated weights that will bring the percentage distribution of ever-married women aged 15-49 in the CPS, across the 25 strata, into exact agreement with the

corresponding distributions in the NDS. These weights would be applied to everyone in the respective strata, regardless of whether they appeared in the household survey (the initial screening survey in which eligible respondents--ever-married women aged 15-49--were identified) or in the detailed survey of ever-married women. Minor modifications could be made to these weights, on the basis of projected changes from 1983 to 1986 in the relative sizes of the 25 strata in the actual population. It is possible that UPPI staff will choose to make such modifications, but at this point we are not aware of satisfactory data for making projections, and do not believe that minor adjustments to the weights that have already been calculated would make much difference.

The net effect of using these weights is to decrease even further the estimated levels of fertility in the early 1980s. A weighted TFR of 4.65 was calculated from the 25 stratum-specific estimated TFRs already produced by UPPI's fertility rate program. This is substantially below the estimate of 5.20 for 1980. UPPI will re-run its fertility rate program with weights, which was not possible while the author was in Manila, to refine this estimate further.

The weights produce a new estimate of 43.2 percent for the Total Contraceptive Prevalence Rate (TCPR) in 1986 for ever-married women aged 15-49. This figure is slightly lower than the unweighted estimate of 43.9 percent but is still substantially above the 1983 figure of 32.1 percent. These new calculations will be discussed in detail in Sections 3.4 and 3.5.

3.2 Consistency of the NDS and CPS Birth Histories

3.2.1 Purpose and Method of the Comparison

With doubt having been cast on the results of both the NDS and the CPS at one time or another, an investigation was undertaken to establish whether the two surveys were internally consistent with respect to the retrospective birth histories gathered for each. The idea was that if these histories were generally in agreement, this would validate the data for both.¹ Furthermore, if the data were considered valid, then the conclusion would be that the apparent decline in fertility and increase in prevalence in the early 1980s should be considered real.

It is common practice to analyze every new survey as if

¹Comparative Study No. 9, World Fertility Survey, London, June 1981 and Comparative Study No. 11, World Fertility Survey, London, May 1980

it had no predecessors, and to construct estimates of fertility and contraception without any calibration with earlier estimates. In the Philippines and a few other countries, there has been a series of quite comparable surveys at regular intervals, so it is possible to examine the overlap between successive surveys. We shall make a series of comparisons between the NDS and CPS birth histories using the births prior to the first survey, i.e. through the end of the calendar year 1982. The comparisons are designed to identify discrepancies that might have occurred because of biases in the inclusion of women, underreporting in one survey relative to the other, or differences in the timing of births in one survey relative to the other.

The comparisons are as follows:

- 1) Mean cumulative number of children ever born to each cohort;
- 2) Number of births recorded for 1978-82 to each cohort; and
- 3) Ratio of the number of children born between 1978-82 and 1938-82 for each cohort.

Each comparison was chosen for a reason. This first is seen as providing the most reliable type of information available; women are highly unlikely to give incorrect information on the number of children they have had (other than not mentioning children who died early or misreporting a birth date). The second, by focusing on 1978-82, throws light on 1980, the mid-point between the two dates, and thus offers a way to establish a second estimate for the TFR, in addition to that provided by the NDS for that specific year. The third is less important, but does offer a way to pursue the issue further if important discrepancies are found in the first two comparisons.

Theoretically, in these comparisons there should be perfect agreement--except perhaps for factors such as higher maternal mortality for women of higher parity, which over time would produce an under-representation of such women, and possible systematic misreporting of age. Because the two surveys were only three years apart, these effects should be negligible.

Deviations will be expressed in the form of a CPS figure minus the corresponding NDS figure, but only occasionally in these comparisons is it possible to say which of the two surveys is closer to "the truth," or whether the truth lies somewhere in between.

3.2.2 Specification of Cohorts of Women

The three comparisons will be made separately for successive birth cohorts of women. This section will briefly indicate how those cohorts are defined.

All the surveys in the Philippines have been conducted in two stages: first a household survey, which establishes the entire population of the household and incidently identifies the ever-married women between 15-49 in the household; and second, an ever-married women survey, which involves in-depth questioning of these women about birth histories, contraceptive practice, etc.

The household surveys, rather than the surveys of ever-married women, are used to compute the number of women born each calendar between 1933 and 1971 who were age 15-49 at the time of interview for the NDS or the CPS. For easier presentation, in most of the analyses these single-year cohorts will be summarized into the six five-year groupings of cohorts that appeared in both surveys: 1938-42, 1943-47, 1948-52, 1953-57, 1958-62, and 1963-67.

The distributions of the relative sizes of these cohorts were themselves checked for consistency. Table 2 gives the percentage in each five-year cohort out of the 15,982 women from the NDS and the 29,419 women from the CPS who were born between 1938 and 1967, and the difference (CPS minus NDS).

Table 2

Age Distribution of Women in NDS and CPS
Percentage in Each Cohort

Cohort	NDS	CPS	CPS-NDS
1938-42	10.5	10.2	-0.2
1943-47	10.7	11.2	+0.5
1948-52	13.4	14.7	+1.3
1953-57	17.1	17.3	+0.2
1958-62	21.8	21.5	-0.3
1963-67	26.5	25.0	-1.5
TOTAL	100.0%	99.9%	0.0%

These figures, like others reported below, are rounded from numbers with more decimal places, accounting for minor discrepancies. The differences appear small, but the calculated value of chi-square for this comparison is 25.9, with 5 degrees of freedom, which is highly significant statistically. Moreover, there is a pattern to the discrepancies. The "excess" of the CPS over the NDS is greatest for the 1948-52 cohort, and steadily declines for the earlier and subsequent cohorts.

Although the deviations between the two surveys are significant and follow a pattern, they are probably not serious. First, the comparison is based on a combined total of 45,401 cases, an extremely large case base for a chi-square statistic, and the value of chi-square is proportional to the size of the sample. Second, because the deviations are most positive for the middle cohorts (or age groups) and most negative for the earliest and latest cohorts, the implication is that the mean or median is almost exactly the same in the two surveys. Finally, age-specific rates and sums such as the TFR will not be affected at all by variations in the sizes of denominators, and a crude rate will be only slightly affected by deviations, which average only seven-tenths of a percent in absolute value.

3.2.3 Mean Cumulative Number of Children Ever Born to Each Cohort

The first of the three comparisons is based on a calculation of the mean number of births through 1982. The number of births divided by the number of women will be the mean cumulative number of children ever born (CEB) for each cohort. The same procedure is applied to both the NDS and the CPS. It is then possible to verify whether there is agreement between the two estimates of the mean numbers of children born to each cohort through 1982.

Chi-square was used to test for the statistical significance of any discrepancies in the mean number of children born through 1982. The following table gives the results of this comparison.

Table 3

Mean CEB through 1982

Cohort	NDS	CPS	CPS-NDS	Chi-Square
1938-42	5.49	5.28	-0.21	9.0
1943-47	4.79	4.48	-0.31	23.6
1948-52	3.47	3.30	-0.16	11.2
1953-57	2.16	2.13	-0.03	0.8
1958-62	0.79	0.84	+0.05	7.6
1963-67	0.08	0.10	+0.02	7.6

Chi-square can be calculated for each cohort; each term has one degree of freedom. The sum of these terms, 59.7, has six degrees of freedom. If there were perfect agreement between the two surveys, except for sampling error, then the expected value of the chi-square statistic would be equal to its degrees of

freedom. The total chi-square and each component, except that for 1953-57, is much larger than expected and highly significant. In Table 4 and other tables, chi-square is larger when the difference between the NDS and CPS is larger, but also when the difference is based on more cases. Thus, for example, the reason that the chi-square statistic for the 1963-67 cohort is much larger than that for the 1948-52 cohort, even though the estimates differ by the same amount, .02, is that far more women were counted in the 1963-67 cohort and therefore it is highly likely for that cohort that the difference is systematic and not just due to sampling error.

There is a pattern to the deviations. The discrepancy is most serious for the three oldest cohorts, in which the CPS figures are 6 percent lower than those in the NDS. For the two youngest cohorts, the CPS is 9 percent higher than the NDS. Because of this crossover, the means aggregated over the cohorts 1938-67 are essentially the same: The CEB for those cohorts is 2.11 in the NDS and 2.10 in the CPS, with a non-significant chi-square of only 0.8 with one degree of freedom. In other words, the two surveys are in extremely close agreement when all cohorts of women are combined, although when the six cohorts are considered separately, discrepancies emerge.

It is difficult to explain the pattern of deviations across cohorts. If there were high maternal mortality, and it increased with parity, then a similar survey should indeed show under-representation of older high-fertility women. Given that the two surveys were only three years apart, however, the shortfall in the later survey is too pronounced to be explained by high maternal mortality. Moreover, this hypothesis cannot account for an observed surplus of births, relatively speaking, in the younger cohorts in the second survey (see following section for discussion of this phenomenon).

3.2.4 Mean Number of Births During 1978-82 to Each Cohort

The second comparison is the same as the preceding one except that the numerator of each ratio is the number of births recorded for the five years 1978-82. This is the more critical interval for agreement, because it is the most recent five-year interval that is common to both surveys. Fortunately, good agreement is found, except for a type of inconsistency that can be explained. The following table gives the results of the comparison.

Table 4

Mean CEB 1978-1982, Calculated According to 5-Year Cohorts

Cohort	NDS	CPS	CPS-NDS	Chi-Square
1938-42	0.61	0.60	-0.01	0.3
1943-47	0.96	0.94	-0.02	0.9
1948-52	1.19	1.17	-0.02	0.6
1953-57	1.25	1.22	-0.03	1.0
1958-62	0.68	0.73	+0.05	7.6
1963-67	0.08	0.10	+0.02	7.3
TOTAL	0.71	0.73	+0.02	6.7

Each of the chi-square statistics given in the table has one degree of freedom. The sum of the cohort-specific chi-squares is 17.7 with 6 degrees of freedom. This is highly significant, but is based on a very large number of cases--a total of 45,401 women and 32,903 births. It appears that fertility during the five years 1978-1982 was not significantly different in the NDS and CPS for the cohorts spanning 1938-57; the differences for 1958-67, however, are large enough to conclude that they are not random, and they cause the overall difference to be significant. The difference (+0.05) for the 1958-67 age group is the same in this exercise as it was in the preceding calculation based on all children ever born, suggesting that the explanation for both discrepancies may be the same.

To investigate the cause of the differences, the data for these cohorts were disaggregated into ten single-year cohorts and five single years of births. The 50 ratios of numbers of births to numbers of women were then classified into seven groups according to the approximate age of the woman at the time of the birth and re-aggregated. The age at birth was estimated as the year of childbirth (1978 through 1982) minus the year of the woman's birth (1958 through 1967). Table 5 gives the age groups, the rates for those age groups in the NDS and CPS, the difference, and the value of chi-square for each line.

In this calculation, the CPS estimate of fertility during 1978-82 is consistently higher than the NDS estimate for women born between 1958 and 1967. Births in both surveys were obtained solely from the questionnaires for ever-married women, with the denominators coming from the household surveys. The criterion for eligibility for the full questionnaire was whether or not the woman was ever married, not whether she had ever had a birth.

Table 5

Mean CEB 1978-1982
According to Age at Time of Birth for the
1958-67 Age Cohort

Age Group	NDS	CPS	CPS-NDS	Chi-Square
21 and above	0.180	0.186	+0.006	0.4
20	0.147	0.165	+0.018	4.3
19	0.108	0.115	+0.007	0.9
18	0.060	0.075	+0.015	7.4
17	0.030	0.041	+0.011	7.4
16	0.014	0.019	+0.004	2.9
15 and below	0.002	0.003	+0.001	3.9

Thus, a woman with an illegitimate child, if she were not married in 1983, would not have been included in the NDS; but if she were married by 1986, both she and that illegitimate birth would have been included in the CPS. Because births for both surveys were obtained solely for ever-married women and because pre-marital fertility does exist in the Philippines, although at low levels, it is to be expected that the later survey will tend to show more births for any specific cohort and period, and that this effect will be most observable for young women.

If this explanation is correct, then similar discrepancies should exist between all surveys, with every survey under-estimating the fertility of young women. In particular, the CPS has probably under-estimated the fertility of young women during the 1983-86 interval. It is recommended that this hypothesis be examined further using earlier surveys.

At any rate, the two surveys agree closely for the years 1978-82, even if the difference is greater than could occur by chance. The NDS undercount of births to young women is not serious enough to prevent close agreement on the Crude Birth Rate for 1978-82, as will be seen below.

3.2.5 Ratio of Children Born During 1978-1982 to the Cumulative Number Ever Born

The third comparison is based on the ratio of children born in the five years 1978-1982 to children born through 1982. This particular check does not actually utilize the distribution of women from the household survey and is therefore particularly suited to a check for internal consistency in the birth histories even if there were biases in the denominators--that is, different patterns of inclusion and omission of women.

The following table presents the results of this comparison.

Table 6

Children Born During 1978-1982, Compared with
CEB 1938-1982

Cohort	NDS	CPS	CPS-NDS	Chi-Square
1938-42	0.112	0.114	+0.002	0.1
1943-47	0.201	0.211	+0.010	3.1
1948-52	0.343	0.357	+0.014	4.5
1953-57	0.579	0.575	-0.004	0.2
1958-62	0.865	0.869	+0.004	0.3
1963-67	0.994	0.990	-0.004	0.1

The sum of the chi-square terms in this table, each of which has one degree of freedom, is 8.7, with six degrees of freedom. This chi-square is far from being statistically significant. There is also no pattern to the deviations. This comparison indicates that the NDS and CPS do not differ significantly in their relative allocation of births to the interval 1978-82 and the years before 1978.

A final comparison was made, based on the ratio of ever-married women to all women in each cohort. This ratio was calculated for each of the single-year cohorts, and then a three-year lagged comparison was made because the NDS and CPS were three years apart. That is, the proportion ever married in the 1933 cohort in the NDS was compared with the proportion ever married in the 1936 cohort in the CPS, etc.; and finally the proportion ever married in the 1967 cohort in the NDS was compared with the proportion ever married in the 1970 cohort in the CPS. Those proportions will not be presented here, and no statistical test will be given, because there is no reason why the lagged proportions should agree exactly. These are not, strictly speaking, two different estimates of the same population quantity, and they could differ because of trends in age at marriage between 1983 and 1986. The level of agreement was remarkably close, however, even for the young cohorts, which can be interpreted as evidence that there were no differential biases in the two surveys in the definition of marital status.

The agreement of most of our comparisons leads to the first overall main conclusion of this study--that the two most recent surveys, the 1983 NDS and the 1986 CPS, appear to be quite consistent with each other in their fertility histories. Some of the differences have indeed been statistically significant, due to the very large numbers of cases in the combined surveys, but the actual magnitudes of the differences have been small. This leads to the conclusion that the apparent decline in fertility

and increase in prevalence in the early 1980s is real. These changes may have been a result of the program's momentum in the late 1970s, which did not manifest itself as soon as expected, or may be due to non-program factors.

3.3 Revision of Crude Birth Rates

Having established the consistency of the two surveys, it remains to investigate why there was such a wide discrepancy between the CBR for 1980 (36.3) and that for 1984 (31.8) and how the 1980 CBR could have risen after 1975, reversing the downward trend that appeared to have established itself during the 1970s.

The usual methodology for calculating the CBR will be described very briefly. By definition, the CBR is the total number of births to a population in an interval of time, divided by the mid-interval size of the population; this ratio is multiplied by 1000 in order to be more easily interpreted as the number of births per 1000 persons. Ideally, the numerator of this rate comes from a complete registration of births, and the denominator is a projection from the most recent census data.

In developing countries such as the Philippines, a different kind of hybridization of data sources is used. First, a fertility survey is used to calculate Age-Specific Fertility Rate (ASFR) for the time interval under consideration, e.g. 1978-82. Second, a census is used (projected if necessary) to calculate the ratio of women in each five-year age group to the total population, at the mid-point of the time interval, e.g., mid-1980. If the Age-Specific Fertility Rate are multiplied by the corresponding age-specific ratios of women and the products are added, it can be shown algebraically that the result has the form of the estimated total number of births in the population divided by the total population size. Multiplying by 1000 then gives the estimated CBR.

UPPI combined ASFRs from the 1978 RPFS with the 1975 census age-sex distribution to get a CBR for 1975; combined ASFRs from the 1983 NDS with the 1980 census age-sex distribution to get a CBR for 1980; and combined ASFRs from the 1986 CPS with a projection to 1984 of the 1980 census to get a CBR for 1984. There is absolutely nothing wrong with this methodology if the surveys and censuses are free of error. The problem is that each estimated CBR requires the calculation of seven ASFRs and seven corresponding ratios of women, i.e. fourteen numbers instead of the two that are in the basic definition, and relies heavily on the quality of the censuses as well as the surveys.

It happens that the 1970, 1975 and 1980 censuses show major inconsistencies with one another in their age-sex distributions. Although not shown here, the calculation of

survival ratios (for example, looking at the reported sequence of women 15-19 in 1970, 20-24 in 1975, and 25-29 in 1980, all from the same birth cohort) produces implausible and in some cases wild results. The age distributions for women show sufficient discrepancies between censuses that it would be preferable to use a method that relies as much as possible on the surveys alone and that involves the calculation of the smallest number of possible rates or ratios.

The author has applied two alternative methods. The first is quite simple. A survey is used to calculate the General Fertility Rate, which is the ratio of all births to women 15-49 in an interval of time, divided by the number of women 15-49 at the midpoint of that time interval; this is multiplied by the estimated ratio of women 15-49 to the total population as estimated from the censuses--and then by 1000. The ratio of women 15-49 to the total population is quite stable across the censuses, in contrast to the five-year age ratios, and is in the range of .23 to .24. Thus this method also requires the combination of survey and census data, but with just one number from each source rather than seven.

The second method is more complex, and will not be described in detail, but involves the reverse survival of the survey population using a range of plausible assumptions about mortality. In particular, it is assumed that the Crude Death Rate was in the range of 7 to 11 deaths per 1000 population from the mid-1970s to the mid-1980s.

As a result of these new methods, it is estimated that the CBR was 35 in 1973-77; 34 in 1978-82; and 31 in 1983-85. The recalculations suggest that the previous 1980 estimate was about two points too high and that the 1984 figure was also too high, by about one point. These recalculations lead to the second major conclusion in this report--that over the period of the four surveys, the CBR has fallen gradually and steadily, despite some slowdown in the late 1970s.

Based on this recalculation, it is proposed that 30 be adopted as the 1988 baseline CBR figure for the next phase of the population program.

3.4 Recalculation of Fertility Rates

Unlike the CBR, the published TFR estimates have shown a steady and consistent decline, descending gradually from 5.90 (1973) to 5.20 (1978) to 4.93 (1983) to 4.84 (preliminary estimate for 1986) (see Table 1). Both these rates and the Age-Specific Fertility Rates issued by UPPI for the CPS appear to be essentially correct except for the matter of the weights (see Section 3.1): that is, the rates within strata appear to be

correct. The main reason for accepting the rates is that they were calculated with the same computer program that was used for both the RPFS and the NDS, and there is no evidence of inconsistencies.

Because of limited time and the complexity of the computer program for fertility rates used by UPPI, the program was not re-run with weights during the assignment in Manila. The author simply entered the unweighted Age-Specific Fertility Rates for the 25 strata, (which had been given to USAID in the preliminary report), into a specially written microcomputer program, to obtain preliminary estimates of the weighted age-specific and Total Fertility Rates for the urban and rural sectors and the total Philippines. UPPI will subsequently recalculate these rates using its mainframe computer program; those estimates will be more accurate.

The following table gives the revised estimates of these rates for 1984, per 1000 women. As calculated by UPPI, these rates are approximately five-year rates and are centered on January 1, 1984, rather than July 1, 1984.

Table 7

Recalculation of CPS and TFR Using Weights

	Urban	Rural	Total
15-19	27	55	44
20-24	145	225	194
25-29	192	271	241
30-34	174	228	207
35-39	114	179	155
40-44	52	84	72
45-49	11	20	17
TFR	3.58	5.31	4.65

This calculation, when set against comparable figures for the NDS, shows that, not only was the decline of the TFR greater than when unweighted figures were used, but that the declines were consistent throughout. There is a decline for almost every age and residence group, amounting to a TFR decline of 5.3 percent for urban women, 6.0 percent for rural women, and 6.3 percent for all women (it is not strictly necessary mathematically for the overall decline to be in the range of the declines for the two subgroups).

As a final confirmation of the decline in fertility, a calculation is made for the NDS and CPS of the ratio of the average number of births in the three calendar years before each

survey to the total number of women age 15-49, regardless of marital status, at the time of each survey. This measure is an approximation of the General Fertility Rate. For the NDS, using years 1980-82, the ratio is $7208/(3 \times 10843) = .2216$. For the CPS, using years 1983-85, the ratio is $13323/(3 \times 22149) = .2005$. The ratio is 9.5 percent smaller for the CPS than for the NDS. The magnitude of this decline differs from the decline in the TFR because the time periods are different.²

These preliminary calculations lead to the third major conclusion of this report: namely, that the existing estimates of the TFR are essentially correct, and that although the decline from 1975 to 1980 was small, over the four surveys it has been monotonic. It has also been steeper than the decline in the CBR because the TFR is not affected by the increasing number of women in their twenties. That change in the age distribution has worked against the decline in the CBR.

As a conservative extrapolation of the observed trend, it is suggested that the baseline TFR for mid-1988 be estimated as 4.5.

3.5 Contraceptive Prevalence

3.5.1 Explanation of Fluctuation in TCPR

In the Philippines, methods are grouped into four categories: (A) reversible clinical methods (pill, IUD, injection), (B) sterilization (ligation, vasectomy), (C) other program methods (condom, rhythm, vaginal methods), and (D) non-program methods (withdrawal, abstinence, other). (C) includes combinations of program and non-program methods, with the exception that the combination of withdrawal and condom is counted as a non-program method. All four methods are included in the TCPR, whereas what will be termed the Contraceptive Prevalence Rate (CPR) includes only the first three.

The widely fluctuating TCPRs reported in the successive surveys (24.4 reported for 1973; 37.1 for 1978; 32.1 for 1983; and a preliminary estimate of 43.9 for 1986) reflect the inclusion of non-program methods, primarily abstinence and withdrawal, among methods being reported. If contraceptive prevalence is based only on program methods, the fluctuations

²The author has left at UPPI a new computer program which may simplify the calculation of fertility rates in the future, but at the time of this report that program was not yet operational and cannot be used as a check until the rates have been issued.

disappear and there is instead a monotonic increase in prevalence, with the CPR increasing from the 18.4 reported in 1973 to 25.2 in 1978 and 26.5 in 1983. This is consistent with the changes in the TFR for the same period (see Table 8).

Table 8
Reported Trends in Contraceptive Prevalence

	1973 NDS	1978 RPFS	1983 NDS	1986 CPS*
(A) Reversible Clinical Methods	9.5	7.2	8.1	8.4
(B) Sterilization	0.9	5.3	9.5	11.3
(C) Other Program Methods	<u>8.0</u>	<u>12.7</u>	<u>8.9</u>	<u>12.2</u>
Total for Program Methods (CPR)	18.4	25.2	26.5	31.9
(D) Non-Program Methods	<u>6.0</u>	<u>11.8</u>	<u>5.6</u>	<u>11.4</u>
Total for All Methods (TCPR)	24.4	37.1	32.1	43.3

*The 1986 estimates are for currently married women aged 15-49, the same age range used for fertility rates. The author suspects that the published estimates for the earlier years are for the age range 15-44. Because of the small proportion of women in the last age group, their inclusion or omission will not affect inferences about overall trends.

This finding is important in light of the reaction of program critics, who expressed surprise when the TCPR fell after a period of heavy program inputs (as in the mid-1970s) or rose after a period of apparent program stagnation (as in the early 1980s). It also explains the apparent failure of the increased TCPR to translate into a decreased CBR, as when the 1978 TCPR reached an all-time high (37.1) to be followed by a rise in the CBR between 1978 and 1983 (from 34.8-36.3). The explanation is primarily that non-program methods have low use-effectiveness and are not verifiable, and therefore it is unlikely they have much effect on the CBR or TFR.

Although the apparent increase between 1978 and 1983 was very small, the impression of stagnation is offset when program methods are weighted according to the use-effectiveness

of the methods in their category, as follows: (A) 0.8; (B) 1.0; and (C) 0.6 respectively. This weighting produces an index of contraceptive protection that increases fairly evenly, from 13.3 to 18.7 to 21.3, a progression that reflects mainly an improved method mix, due in turn to an increase in the percentage of people sterilized (5.3 percent in 1978 and 9.5 percent in 1983). This steady upward trend in use of effective methods is consonant with the steady decline in the TFR over the corresponding time frame.

Even if the TCPRs are deemed irrelevant in the context of program effectiveness, the question remains as to why non-program methods appear to fluctuate as radically as they do. It is particularly difficult to accept the relatively high levels in the 1978 and 1986 surveys. The conclusion is that these probably are not reliable figures. Differences in interviewing techniques may have elicited higher estimates of use in those two surveys. In the 1986 CPS, the increase in non-program methods was due to increased reporting of withdrawal. On Luzon, the Tagalog word for withdrawal is the same as the word for "natural," and with the increasing emphasis on natural family planning, it is possible that some confusion arose. (Such linguistic cues should be checked further.)

Based on the conclusion that the prevalence rate for program methods was 32 in 1986, and that since 1973 the increase has been steady, a baseline figure of 33 is proposed as the CPR for 1988.

3.5.2 Use of Program Methods by Age

To examine the changes in program methods from 1983 to 1986 as reported in the NDS and CPS, new tabulations broken down by five-year age groups have also been made. The figures for 1986 will differ somewhat from those in the preliminary UPPI reports because of the use of weights.

For some reason the new figures are slightly lower than those already reported for 1983 (i.e., 24.9 instead of 25.2). This is probably because of the slippage in the age range mentioned in the footnote to Table 8. Since consistent definitions have been used in the 1983 and 1986 calculations given below, it can be assumed that the figures reliably reflect the nature of the change between the two surveys.

Table 9 gives the estimated weighted percentage of women using program methods in each survey, the increase from 1983 to 1986, and the relative increase from 1983 to 1986.

Table 9

Estimated Weighted Percentage of Women Using Program Methods in the NDS and CPS

Age Group	1983 NDS	1986 CPS	1983-1986 Increase	Relative Increase (Percentage)
15-19	7.5	9.1	1.6	21
20-24	17.1	21.0	3.9	23
25-29	27.5	33.1	5.6	20
30-34	33.6	40.0	6.4	19
35-39	33.0	40.0	7.0	21
40-44	24.7	35.5	10.8	44
45-49	13.2	20.0	6.8	52
ALL AGES	24.9	31.8	6.9	28

Table 10 provides results of another calculation, which shows the median age of those who use program methods as reported for 1983 and 1986:

Table 10

Median Age for All Method Use

Methods	1983 NDS	1986 CPS
Reversible	30.3	30.0
Sterilization	35.9	36.2
Other program	32.3	33.3
Non-program	32.7	30.1

Roughly speaking, to the extent that the data can be taken at face value, a rise in the median age means that earlier adopters have simply aged and/or the new users are older and their use of contraceptives will have less impact on fertility. The two noteworthy changes here are that (1) the median age of "other program" users went up by one year and (2) the median age of "non-program" users fell by 1.6 years. These changes could have resulted from transfers between the two categories, or incorrect classification. One positive interpretation that could be placed on the younger age of the non-program users in 1986 is that they are beginning family planning earlier and may be in a preparatory phase to moving into the recognized program categories.

3.5.3 Sequencing of CPR and TFR to Assess Program Impact

It is an indication of consistency that, over the past 15 years, apparently fertility has been falling as contraceptive prevalence has been increasing. If fertility had declined without an increase in prevalence, then the mechanism behind the fall would be unclear and the decline would be suspect. Similarly, an increase in prevalence without a decline in fertility would be difficult to accept. It is important to note, however, that the impact of contraception should properly be observed AFTER contraception, rather than before. A possible sequencing is shown in Table 11.

The apparent increase in prevalence in 1986 should actually show up in reduced recent fertility in the 1988 NDS, which will soon go into the field. It will soon be possible to extend the table with results from that survey.

Table 11

Time Relationship Between CPR and TFR

	CPR	TFR
1968-72 (1973 NDS)		5.90
1973 (1973 NDS)	18.4	
1973-77 (RPFS)		5.20
1978 (RPFS)	25.2	
1978-82 (1983 NDS)		4.96
1983 (1983 NDS)	26.5	
1982-86 (CPS)		4.65
1986 (CPS)	31.8	

3.6 Comparisons with Other Countries

To summarize, the estimated 1988 baseline figures suggested above are 30 for the CBR, 4.5 for the TFR, and 33 for the CPR.

For another check on the internal compatibility of this set of numbers, a comparison will be made with estimates developed by the WFS for 18 countries that participated in the WFS program during the middle and late 1970s. Table 12 (p. 22) includes all of the countries described in WFS Comparative Studies #9 and #11³ except for Jordan, which is an outlier with a TFR of 6.99.⁴

Figures 1, 2, and 3 (pp. 23, 24, and 25) show (1) the observed combinations of the CBR and TFR; (2) the TFR and the percentage of currently married women using an efficient method (the CPR); and (3) the TFR and the percentage of currently married women using any kind of method (the TCPR). On the first two figures, the estimated combination of values for the Philippines in 1988 (indicated with a shaded mark) is comfortably within the range observed in other countries.

Using the 18 countries in the WFS Comparative Studies, the correlations among these quantities have also been calculated. Although the correlation between the TFR and the proportion using efficient methods is quite strong, at $-.75$, the correlation between the TFR and inefficient methods is much weaker, only $-.28$. Also, the correlation between the proportion using efficient methods and the proportion using inefficient methods is only $.09$. The returns from inefficient methods, either in terms of impact upon the TFR or in terms of spillover to efficient methods, are small--although it is possible that women shift to more efficient methods over time.

³It is acknowledged that each survey might be biased to some degree in the same way--for instance, that each might have left out information on illiterate women--but this is considered a remote possibility.

⁴Other countries are reported in later WFS publications, but they are mainly in Africa, the Middle East, and Latin America, and are not as representative as those in the earlier publications of the levels of fertility and contraception found in the Philippines.

In Table 12, fertility estimates refer to the three years before the survey--which in the case of the Philippines was the 1978 RPFS. Because of the different reference period, the estimates of the TFR and CBR differ slightly from the ones presented earlier for 1973-77. (Note: the estimates for the Philippines of TFR=4.845, and particularly CBR=32, are lower than other figures from the RPFS.) Current use of contraception is divided into "Inefficient" and "Efficient" methods, which correspond roughly to non-program and program methods, respectively.

Table 12

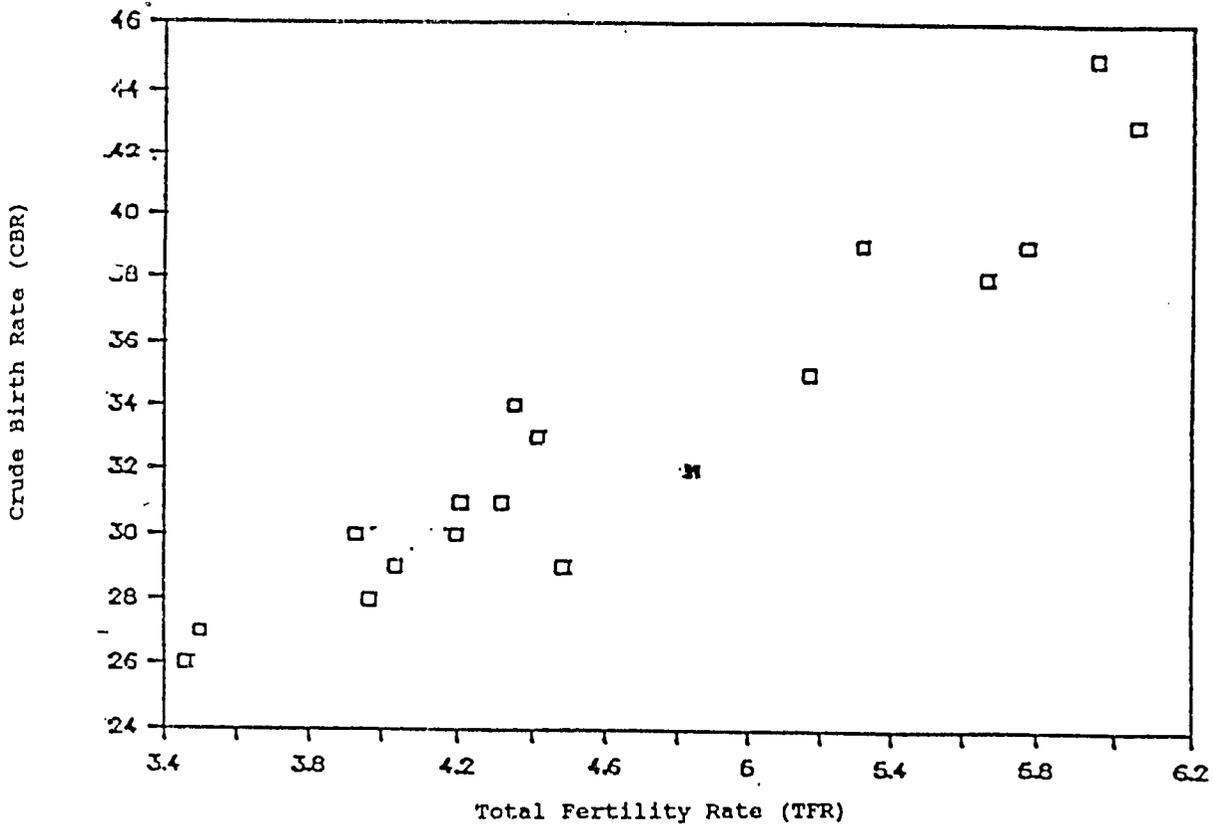
Comparison of CPR, TFR, and CBR for 18 Countries: WFS

	<u>Contraceptive</u>	<u>Prevalence</u>	<u>TFR</u>	<u>CBR</u>
	Inefficient	Efficient		
Bangladesh	3	5	6.055	43
Fiji	6	35	3.930	30
Indonesia	3	23	4.210	31
Korea	8	27	4.040	29
Malaysia	9	24	4.320	31
Nepal	0	2	5.955	45
Pakistan	1	4	5.770	39
Philippines	20	16	4.845	32
Sri Lanka	13	19	3.455	26
Thailand	3	30	4.200	30
Colombia	12	31	4.415	33
Costa Rica	11	53	3.500	27
Dom. Republic	6	26	5.320	39
Guyana	7	25	4.355	34
Jamaica	2	37	4.485	29
Mexico	7	23	5.660	38
Panama	8	46	3.970	28
Peru	20	11	5.170	35

Source: from countries participating in the World Fertility Survey, generally in the late 1970s. Prevalence figures from WFS Comparative Study No. 9, p. 46, and TFR and CBR from WFS Comparative Study No. 11, p. 15.

In Figure 1, when the CBR is regressed upon the TFR, the best-fitting line through the 18 points is $CBR = 3.79 + 6.34 \times TFR$ (with $R^2=.90$). That is, a decrease in the TFR of one child corresponds to a reduction of 6.3 in the CBR; a reduction in the TFR of half a child corresponds to a reduction of 3.2 in the CBR; and so on. On this best-fitting line, a TFR of 4.5 would imply a CBR of 32 rather than 30. All the possible combinations of the CBR and TFR that have been reviewed here are below the line; apparently the Philippines is consistently below the line, probably because of the low fertility of the large category of women 15-19 relative to other developing countries.

FIGURE 1:
OBSERVED COMBINATIONS, CBR & TFR

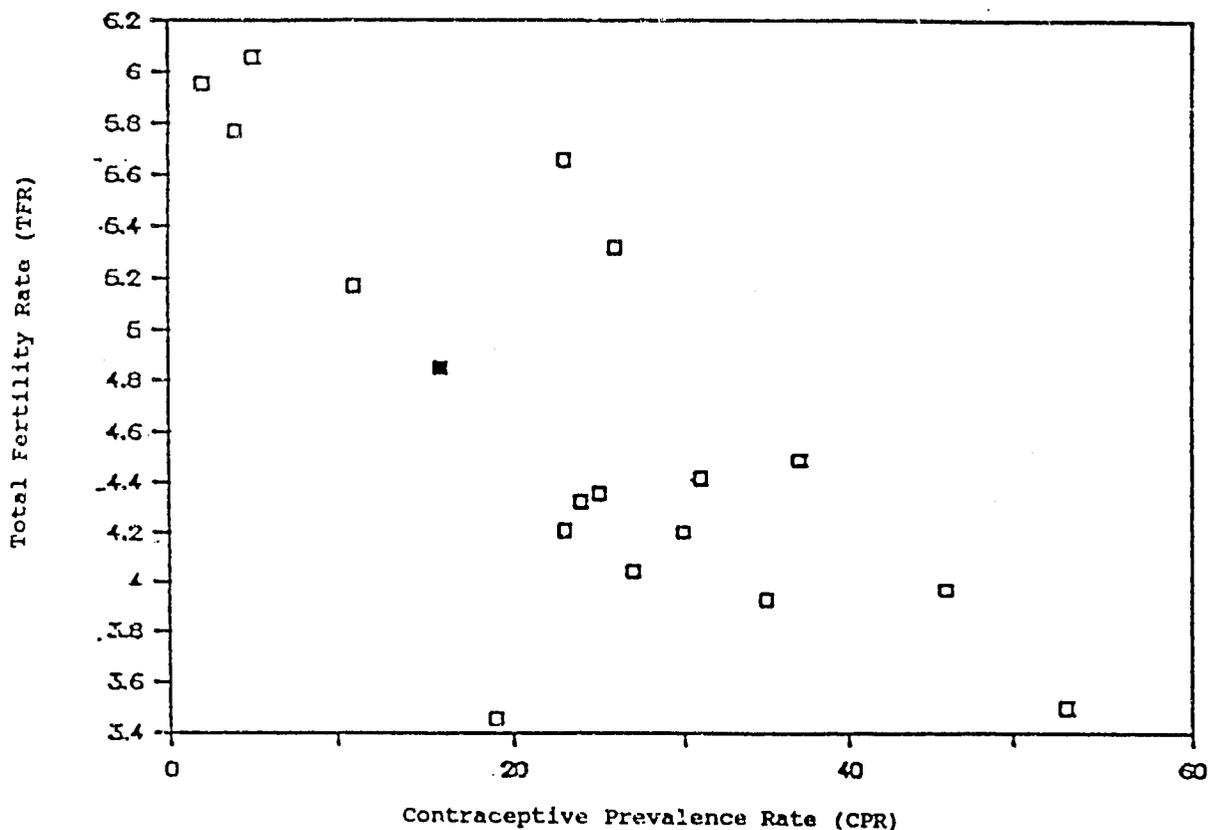


Source: Data from WFS Comparative Studies Nos. 9 and 11.

Note: The shaded mark shows the estimated combined value for the Philippines.

In Figure 2, when in turn the TFR is regressed upon the CPR (efficient methods only), the best-fitting line is $TFR = 5.74 - .045 \times CPR$ (with $R^2 = .56$). Thus an increase of 10 points in the CPR corresponds to a decrease of approximately half a child (.45) in the TFR. This relationship establishes the correspondence in targets for change in the CPR and the TFR. If 33 percent of currently married women were using efficient methods--which is not quite the same as program methods--then the TFR implied by the regression line would be 4.3. Although not the same as 4.5, this estimate is close, given that program methods in the Philippines include some methods with low use effectiveness.

FIGURE 2:
OBSERVED COMBINATIONS, TFR & CPR

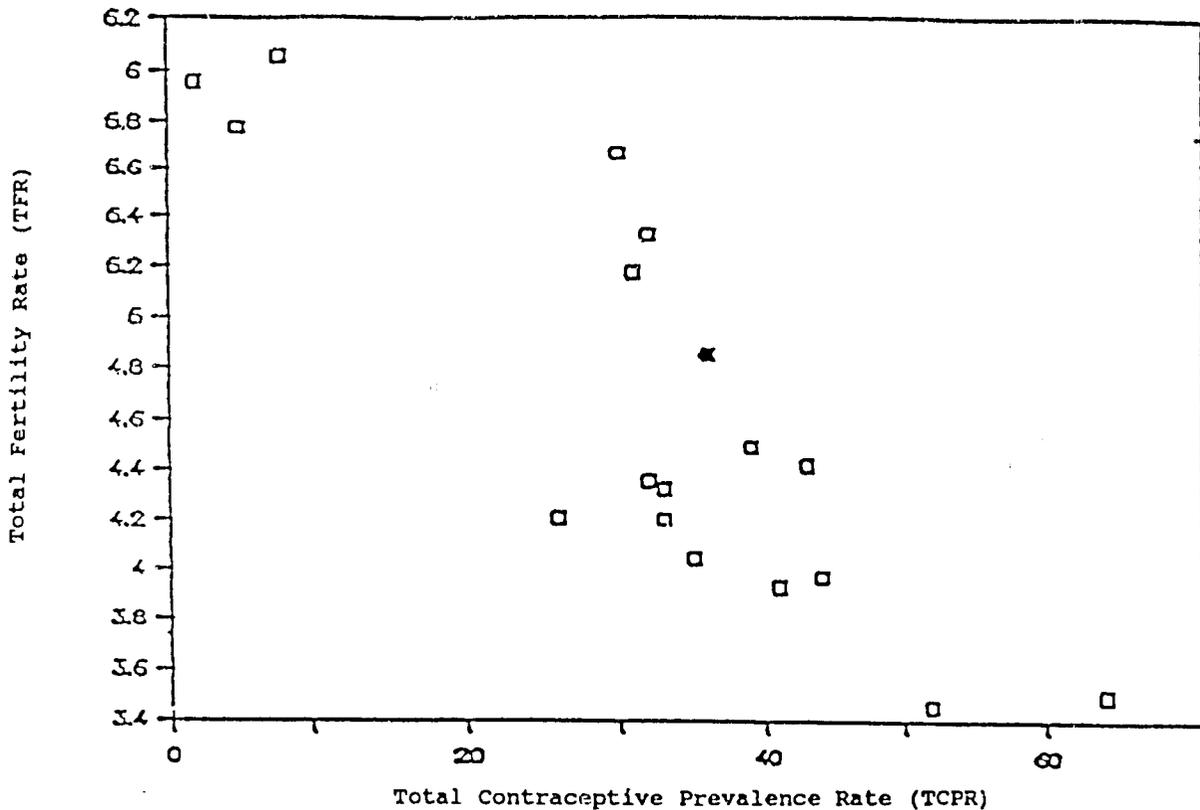


Source: Data from WFS Comparative Studies Nos. 9 and 11.

Note: The shaded mark shows the estimated combined value for the Philippines.

Figure 3 is included simply because the TCPR has been used in the Philippines in the past, although its use in the future is not recommended.

FIGURE 3:
OBSERVED COMBINATIONS, TFR & TCPR



Source: Data from WFS Comparative Studies Nos. 9 and 11.

Note: The shaded mark shows the estimated combined value for the Philippines.

4. Interpretation

The conclusions of this analysis--that there was a decline in fertility and a rise in contraceptive prevalence in the Philippines during the early 1980s, and that this trend can be extrapolated through the middle 1980s--may be unexpected. Many factors point to the probability that the program should have been ineffective during this period: the low level of political commitment to family planning during the interval, alleged problems in the management of the program, the stagnation of the economy, and increasing religious conservatism, among others.

The focus here has been upon data reconciliation. It

is also desirable, however, to reconcile the quantitative results with the other more impressionistic evidence that fertility decline is unlikely in the recent and present political and economic climate.

The results of this study do not dispute that fertility is high and prevalence is low in the Philippines, compared with most other countries in the region. Nor is there any doubt that the Crude Rate of Natural Increase is presently above 2 percent per year, although it is probably closer to 2 percent than to 3 percent. The study simply presents evidence that there has been a slow monotonic pattern of change since the early 1970s--in fact, since the mid-1960s, if the results from the 1968 NDS were included in the sequence.

It is possible that too much of a mental linkage has been constructed between the pace of fertility change and the inputs into the program. The program has primarily served to make information, methods, and facilities available to the population and secondarily to change attitudes--for example, to convince parents that the health and education of their children are more important than the sheer number of their children. Both of these emphases, on means and on goals, are important. Other important forces of change in attitudes toward fertility and fertility control, apart from the program, must also be taken into account. These are connected with the urbanization of the population, its high level of literacy and exposure to the mass media, and the deep penetration of Western ideas, including the concepts of economic and political self-determination. Many aspects of the Filipino culture are very far indeed from the stagnation that is alleged to have characterized the family planning program--or even the economy--during the past several years. These cultural changes may have played a role in the steady changes noted here. It would be helpful to examine changes in the reported desire for additional children, which this report has not considered at all.

In short, the family planning program should not be credited single-handedly with responsibility for either the success or the failure that may be attached to the uninterrupted decline in fertility and the increase in the prevalence of effective contraception. The program is not the only agent of change.

5. Recommendations for the Program

5.1 Specifying Target Measures

It is one thing to monitor the Philippine population and project future changes; it is something quite different to set targets and objectives. Confusion has consistently arisen in

the past because program targets have not been distinguished from estimates, and projections were simply the extrapolation of previous trends. Further confusion has arisen because objectives have been specified in terms of the growth rate or the CBR, indicators that are affected by factors beyond the purview of the program.

It is strongly recommended that targets be specified in terms of the cross-sectional estimate of the completed number of children a woman will have, that is, the Total Fertility Rate. Other indicators are sensitive to changes in the age distribution, the sex ratio, the marriage rate, the death rate, or migration. It is possible to translate a change in the TFR into a change in the CBR or the growth rate, making reasonable assumptions about future levels of the other factors. It is unreasonable to hold the family planning program responsible for changes in the age distribution, etc. It is particularly unreasonable to set targets for declines in the Crude Death Rate and then hold the family planning program responsible for the effect of such a decline upon the Crude Rate of Natural Increase.

In fact, the TFR is the measure of fertility that is used in the Philippine development plan.

The target of the program should be expressed in terms of a steady reduction in the TFR, at a rate of .1 to .2 of a child per year. A reduction of more than .2 per year would be difficult to achieve, considering the levels of change observed in other countries; a reduction of less than .1 per year may well occur with minimal program inputs, in the pattern of changes since 1970, and may not be sufficiently ambitious.

The main measure of contraceptive prevalence should be the percentage of currently married women who are currently using program methods. Data on non-program methods such as abstinence or withdrawal should definitely be collected, but these methods should not be included in the rate. It is truly ironic that the greatest criticism of the program has been based on the apparent fluctuation in the use of methods that are not publicized or served by the program and which have the lowest level of verifiability and efficacy. The central fact is that the prevalence of program methods has risen steadily--although not so rapidly as hoped.

The prevalence rate is a crude rate, in the same sense as the Crude Birth Rate, because it is undifferentiated with respect to age. Obviously, use in the ages of higher fertility will have more impact than use in the ages of lower fertility, and a sterilization at a lower parity will have more impact than sterilization at a higher parity. Moreover, methods differ in their use-effectiveness. Measures that adjust for age and/or parity composition and for the mix of use-effectiveness will

better serve to evaluate the likely effect upon the TFR and the success of the program. A variety of such measures can be developed; the simplest would be an age-standardized contraceptive effectiveness rate, in which each user would be weighted by the effectiveness of her method.

It is reasonable to aim at an annual increase of approximately two points in the percentage of currently married women who are using program methods. A model should be used to ensure compatibility between the targeted changes in fertility and contraception.

5.2 Monitoring the Program

The scheduled 1988 NDS should help to elucidate many of the issues raised in this report. It will continue a sequence stretching back to 1968 and will provide better estimates of fertility at the beginning of the next phase of the program. Results from this survey should be available by the middle of 1989; emphasis should be placed on quick preparation of a preliminary report. On the basis of that survey, it should be possible to make a good pre-censal estimate of the 1990 population. Another NDS should be planned for 1993.

It is recommended that another CPS be conducted in 1989 or at the latest in 1990. The main emphasis of such a survey should be on fertility and contraception, as with the 1986 CPS, avoiding the addition of blocks of information that are included in the NDS. Such a survey need not be on the same scale as the 1986 CPS, in terms of sample size, if the cost of a large sample would jeopardize the survey. Method-specific continuation rates at the regional level are helpful but are a good deal less important than good estimates of fertility and current prevalence.

Complete pregnancy histories should be collected in all surveys. It is clearly quite important in the Philippines to be able to calibrate each survey with the ones that preceded it, as attempted earlier in this report. It will be difficult to accept unexpected results unless such calibration is possible.

Another source of data for monitoring the program, the Commission on Population's management information system, needs to be strengthened. An independent review of that system is under way, and no specific recommendations will be made here.

UPPI should continue to play the major role in the analysis of future surveys, if it continues to be interested in doing so. Moreover, USAID and other agencies should be receptive to proposals from UPPI that will assist in its institutional development.

Future analysts, at UPPI or elsewhere, are strongly encouraged to analyze each new survey with reference to the ones that preceded it. The Philippines has an unusually rich sequence of national surveys. New computer programs and demographic methods should always be checked and calibrated against earlier surveys. Distributions and rates should always be compared with their earlier values and with subsequent estimates or projections. Departures from anticipated levels should be carefully explored before they are accepted as real. Comparison and reconciliation should be a part of every new analysis.