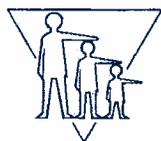




ZIMBABWE FURTHER ANALYSIS

Contraceptive Use Dynamics in Zimbabwe: Postpartum Contraceptive Behaviour



Zimbabwe National
Family Planning Council



Demographic and Health Surveys
Macro International Inc.

Zimbabwe Further Analysis

Contraceptive Use Dynamics in Zimbabwe: Postpartum Contraceptive Behaviour

William Sambisa
Siân Curtis

Macro International Inc.
Calverton, Maryland, USA

July 1997

This report summarizes the findings of one of five further analysis projects for the 1994 Zimbabwe Demographic and Health Survey (ZDHS). Macro International Inc. coordinated and provided technical assistance for the further analysis project. Funding was provided by the U.S. Agency for International Development (USAID).

The ZDHS further analysis is part of the worldwide Demographic and Health Survey (DHS) programme, which is designed to collect data on fertility, family planning, and maternal and child health. Additional information about the Zimbabwe further analysis project may be obtained from the Central Statistical office, P.O. Box 8063, Causeway, Harare, Zimbabwe (Telephone: 706-681, Fax: 708-854). Additional information about the DHS programme may be obtained by writing to: DHS, Macro International Inc., 11785 Beltsville Drive, Calverton, MD 20705 (Telephone 301-572-0200 and Fax 301-572-0999).

Recommended citation:

Sambisa, William and Siân Curtis. 1997. *Contraceptive Use Dynamics in Zimbabwe: Postpartum Contraceptive Behaviour*. Zimbabwe Further Analysis. Calverton, Maryland: Macro International Inc.

Preface

One of the important contributions from the 1994 Zimbabwe Demographic and Health Survey Project is the extensive further analysis of the data. This analysis was funded by USAID/Zimbabwe and was envisaged to inform health and family planning programme evaluation and policy development. It was undertaken by various individuals and institutions in Zimbabwe in collaboration with Macro International. The present paper represents one of the significant “fruits” of that investment. It presents the findings of the second of a two-part analysis entitled “Contraceptive Use Dynamics in Zimbabwe” and provides a useful description of the relationship between contraceptive initiation following the birth of a child and postpartum factors including breastfeeding, abstinence, and amenorrhoea. The first part of the analysis was published previously and focused on patterns of contraceptive discontinuation, contraceptive failure, reasons for discontinuation, and factors related to these “behaviours”.

We extend our gratitude to the Zimbabwe National Family Planning Council (ZNFPC) and the Family Planning Service Expansion and Technical Support (SEATS) Project who encouraged the involvement of Mr. William Sambisa in this study.

Martin Vaessen
DHS Project Director

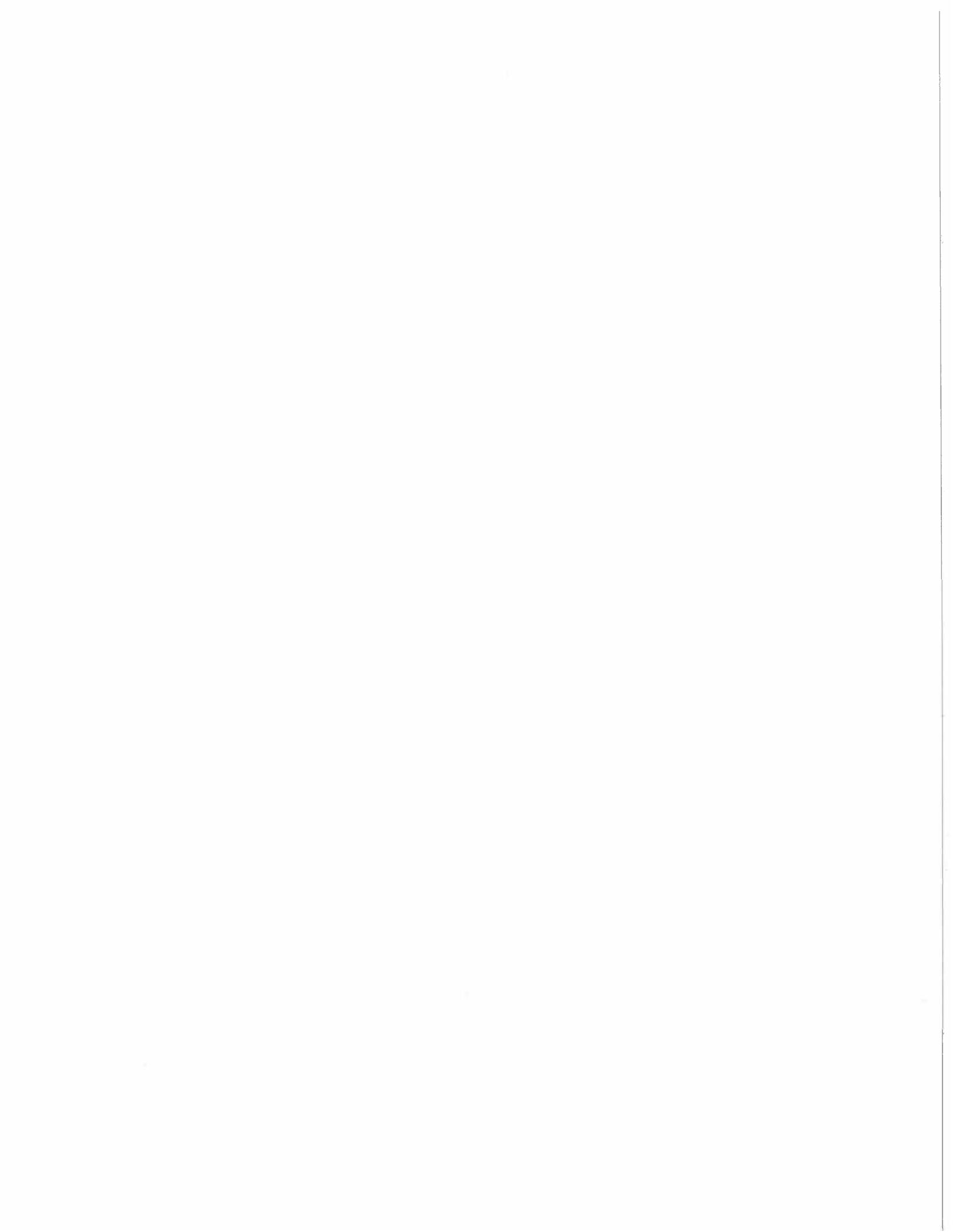
Summary

This analysis examines the postpartum initiation of contraceptive use in Zimbabwe and its relationship with breastfeeding, postpartum amenorrhoea, and postpartum abstinence. The analysis utilizes longitudinal data collected in the monthly calendar of events of the 1994 Zimbabwe Demographic and Health Survey (ZDHS). Contraceptive use is widespread following recent births in Zimbabwe: nearly 80 percent of mothers start using a contraceptive method within two years following a birth. Contraceptive initiation is concentrated in the early postpartum period with 65 percent of mothers initiating contraceptive use within six months postpartum. At the same time, breastfeeding is almost universal and prolonged. The median duration of breastfeeding is 18.7 months and 88 percent of mothers are still breastfeeding at 12 months postpartum. The median duration of postpartum amenorrhoea is 11.5 months, consistent with the long duration of breastfeeding. In contrast, the median duration of postpartum abstinence is much shorter at only 3.9 months.

These findings suggest a widespread and prolonged overlap between contraceptive use and breastfeeding and postpartum amenorrhoea in Zimbabwe. More than 70 percent of recent births are followed by an overlap between contraceptive use and breastfeeding with 54 percent followed by an overlap between pill use and breastfeeding. However, most postpartum pill use appears to be of progestin-only pills consistent with current medical guidelines and the Zimbabwe Government health policy. Nearly 60 percent of births are followed by an overlap between contraceptive use and postpartum amenorrhoea and the median duration of an overlap when it occurs is 12 months. This finding suggests considerable redundant use of contraception in Zimbabwe and raises questions about the efficiency of current postpartum family planning policy in light of concerns that redundant use of contraception may result in shorter birth intervals than might have been achieved under alternative policies. However, our analysis shows that contraceptive continuation rates are higher among women who initiate use early in the postpartum period than among women who initiate use later. This finding suggests that women who initiate use early in the postpartum period are likely to achieve similar birth intervals as women who initiate use later, although birth interval lengths were not examined directly in this analysis. Overlap between contraceptive use and postpartum abstinence is less common and the median duration of an overlap when it occurs is three months.

Contrary to findings in other countries, we found no evidence of a relationship between postpartum contraceptive use and the duration of breastfeeding or postpartum amenorrhoea, but we found evidence of a negative association between postpartum contraceptive use and the duration of postpartum abstinence. The timing of contraceptive initiation does not coincide with weaning, except for a minority of women. About 10 percent of women start using contraception in the month they resume menstruation and around 21 percent initiate contraceptive use in the month they resume sexual relations.

Demographic and socioeconomic differentials exist in postpartum contraceptive behaviour and in breastfeeding, postpartum amenorrhoea, and postpartum abstinence patterns. Postpartum contraceptive use is more widespread and occurs earlier in urban areas compared with rural areas and among educated women. Older, high parity women are less likely to use contraception postpartum and fertility preferences appear to have little effect on postpartum contraceptive behaviour. Early postpartum contraceptive use is particularly common in the Harare/Chitungwiza province where 81 percent of mothers initiate contraceptive use within three months postpartum. This in turn results in very high levels of an overlap between contraceptive use and breastfeeding, postpartum amenorrhoea, and postpartum abstinence.



Introduction

Zimbabwe is recognized as one of the first countries in sub-Saharan Africa to experience the onset of fertility transition (Freedman and Blanc, 1991). The Total Fertility Rate (TFR) for women, age 15 to 44 declined from 6.6 in 1981 to 1984 to 4.2 in 1994 (Freedman and Blanc, 1991, Central Statistical Office (CSO) and Macro International Inc., 1995). At the same time, the prevalence of modern contraceptive use among currently married women has risen from 27 percent in 1984 to 42 percent in 1994 (CSO and Macro International Inc., 1995). Caldwell, Orubuloye, and Caldwell (1992) argue that strong demand for birth spacing is likely to be a major factor driving demand for contraceptives in sub-Saharan Africa and that, unlike the European and Asian fertility transitions, the African fertility transition is likely to be characterized by widespread use of contraceptives between births. In addition, in Zimbabwe, the Ministry of Health and Child Welfare (MOHCW) in collaboration with the ZNFPC has introduced a policy to give mothers at least a three-month supply of contraceptives soon after delivery. In this context, postpartum use of contraceptives is expected to be widespread.

Since breastfeeding is prolonged and almost universal in Zimbabwe, early adoption of contraceptives following the birth of a child is likely to result in an overlap between contraceptive use and breastfeeding. Concerns have been raised about the potentially harmful effects of the use of hormonal contraceptives during lactation (World Health Organization (WHO) task force on oral contraceptives, 1988) and recent research has questioned the benefits of early introduction of contraception following a birth (Winikoff and Mensch, 1991). In addition, breastfeeding affords some contraceptive protection through extending the period of postpartum amenorrhoea and in many parts of sub-Saharan Africa there are traditions of prolonged postpartum abstinence. Early postpartum adoption of modern contraceptives may, therefore, be redundant if it overlaps with postpartum amenorrhoea and postpartum abstinence. In a recent comparative study of contraceptive use during lactational amenorrhoea, Zimbabwe was identified as having a high overlap between contraceptive use and lactational amenorrhoea in the 0 to 3-months postpartum period, and was one of five countries to experience a moderate overlap in the 4 to 7-month postpartum period (Laukaran et al. 1994).

Historically, the TFR in Zimbabwe has been higher than predicted, given the contraceptive prevalence (Adamchak and Mbizvo, 1990, Freedman and Blanc, 1991) and Boohene and Dow (1987) suggested that redundant use of contraception during postpartum amenorrhoea might explain the apparent inconsistency between the two figures. Subsequently, Adamchak and Mbizvo (1990) demonstrated that adoption of contraception following a birth generally occurs within the first six months postpartum in Zimbabwe and that this behaviour, combined with long durations of postpartum amenorrhoea, results in a considerable overlap between lactational amenorrhoea and contraceptive use which in turn accounts for a large part of the discrepancy between contraceptive prevalence and fertility.

Given this background, postpartum contraceptive behaviour and its relationship with other postpartum practices is of considerable interest in Zimbabwe from both a demographic and family planning policy perspective. The earlier studies cited above suggest that an overlap between contraceptive use and breastfeeding and lactational amenorrhoea is common in Zimbabwe but the studies have been limited by the cross-sectional nature of the data available. In particular, they have been unable to examine the timing of initiation of contraceptive use following a birth relative to other events, such as resumption of sexual relations, resumption of menses, and weaning, at the individual level. The estimates of redundant contraceptive use obtained are at the aggregate level and rest on the assumption that postpartum contraceptive behaviour is independent of breastfeeding and amenorrhoea status. However, there is a well-documented negative relationship between breastfeeding and contraceptive use (Jain and Bongaarts, 1981; Millman, 1985; Pebley, Goldberg and Menken, 1985) and several studies have demonstrated a strong link between initiation of contraceptive use and resumption of menstruation (Knodel et al, 1985; Laukaran and Winikoff, 1985; Becker and Ahmed, 1994).

In this paper, we use data from the 1994 ZDHS to examine postpartum contraceptive behaviour and its relationship with breastfeeding, lactational amenorrhoea, and postpartum abstinence at the individual level. The 1994 ZDHS included a calendar of recent reproductive events, including monthly contraceptive use, which provides the longitudinal data necessary to conduct an individual level analysis and presents a significant advance over previous cross-sectional data. The analysis presented is primarily descriptive and aims to provide an overview of postpartum behaviour in Zimbabwe.

Background

The Government of Zimbabwe has taken an active role in promoting breastfeeding. In 1981 Zimbabwe, along with the other member states of the World Health Assembly, adopted the International Code of Marketing of Breastmilk Substitutes, and in 1985 the Government of Zimbabwe enacted the Infant Nutrition Public Health Amendment Act which set up the grounds for the official promotion of breastfeeding augmenting existing traditional breastfeeding practices. Following this act, in 1986 the Government instituted three months maternity leave with three-fourths pay and two half-hour nursing breaks per day for mothers during the first six months postpartum to encourage breastfeeding among mothers in formal employment.

To further strengthen its support for breastfeeding, the Zimbabwe Government signed the Innocenti Declaration on the protection, promotion, and support of breastfeeding. The Innocenti Declaration advocates that every facility providing maternity services and care of newborn infants should adopt the "Ten Steps to Successful Breastfeeding" (UNICEF and WHO, 1993). In a 1992 study conducted by the Zimbabwe Infant Nutrition Network (ZINN) about one-third of health facilities, indicated that they routinely communicated a breastfeeding policy to all healthcare workers and one-third emphasized the importance of having such a policy (ZINN, 1992). In addition, breastfeeding support groups such as ZINN, La-Leche League of Zimbabwe, and the Zimbabwe Lactational Consultants Association have been formed.

This acceptance of breastfeeding as an important integral component of infant feeding has helped to sustain the long duration of breastfeeding recorded in Zimbabwe. According to the 1988 and 1994 ZDHS, the median duration of breastfeeding was 19.3 and 18.8 months, respectively (CSO and IRD/Macro Systems Inc., 1989; CSO and Macro International Inc., 1995). In recent years, the MOHCW has launched promotional campaigns for breastfeeding including enlisting mass media to provide information to the public about the benefits of breastfeeding. However, these campaigns have emphasized the nutritional benefits of breastfeeding rather than the contraceptive benefits and both the MOHCW and ZNFPC have promoted postpartum use of contraceptives.

The ZNFPC in collaboration with the MOHCW introduced a policy to give mothers at least three months supply of progestin-only pills soon after delivery. If the woman has no problems with the initial supply, she is given up to a further 12-months supply of progestin-only pills. Mothers are also given several condoms after delivery (ZNFPC, 1995). This policy was introduced to satisfy an unmet need for contraception in Zimbabwe and to utilize the opportunity provided by contact with health services at the time of the birth to supply contraceptives to women. About 70 percent of deliveries in the three years before the 1994 ZDHS occurred at a health facility (CSO and Macro International Inc., 1995) thus large numbers of women can be reached through this policy.

While Lactational Amenorrhoea Method (LAM) is acknowledged as a potential family planning method, it is not actively promoted in service delivery settings in Zimbabwe. LAM is included, although in brief format, in the family planning training curriculum of ZNFPC. The MOHCW has adopted the Baby Friendly Initiative to strengthen breastfeeding in hospitals and maternity units, but LAM is not emphasized strongly in the training guidelines. Controversy surrounds the promotion of LAM as a family planning method. The family planning programme states that LAM can only be included in the method mix when such issues as the transmission of the HIV virus through breast milk have been clarified. In addition, although

breastfeeding is prolonged in Zimbabwe, supplementation begins at an early age. For example, among children age 0 to 3 months, only 16 percent are exclusively breastfed while 59 percent receive breast milk and supplements (CSO and Macro International Inc., 1995).

In Zimbabwe, traditional cultural norms prohibit sexual intercourse with nursing mothers. It is believed that intercourse during the nursing period may cause the baby to become ill. If the husband is polygynous, it is relatively easy to practice postpartum sexual abstinence with a wife who is nursing, while in monogamous marriages, postpartum abstinence was often enforced by the physical separation of the husband and wife. The wife frequently would return to her parents' home shortly before the birth and remain there for some time afterwards. Alternatively, the wife's mother would come to stay with her daughter after a birth thereby encouraging postpartum abstinence. These practices have declined in recent years and studies in the Chivi and Chipinge district of Zimbabwe have reported a decline in the traditional length of postpartum abstinence (Mhloyi, 1987). This decline is particularly pronounced in urban areas. According to the 1988 and 1994 ZDHS, the median duration of abstinence was 4.3 and 3.5 months, respectively (CSO and IRD/Macro Systems Inc., 1989; CSO and Macro International Inc., 1995). The decline in postpartum abstinence is associated with changes in socioeconomic conditions, especially women's education.

Data and Methods

The 1994 ZDHS was undertaken by the CSO with technical assistance from Macro International Inc. through the Demographic and Health Survey (DHS) programme funded by the U.S. Agency for International Development (USAID). The main objective of the 1994 ZDHS was to provide up-to-date information on fertility levels, nuptiality, sexual activity, fertility preferences, awareness and use of family planning methods, breastfeeding practices, nutritional status of mothers and young children, early childhood mortality, maternal mortality, maternal and child health, and awareness and behaviour regarding AIDS and other sexually transmitted diseases.

The 1994 ZDHS was based on a nationally representative sample of 6,128 women, age 15 to 49 and 2,141 men, age 15 to 54. A new feature in the 1994 ZDHS female questionnaire was the calendar used to collect information about recent events in the respondent's life (Appendix A). Only those events that occurred in the five calendar years preceding the year of the survey are captured (i.e. since January 1989). The calendar consists of 72 boxes on the vertical axis and 4 columns on the horizontal axis. The 72 boxes (each box representing one month of time) are divided into 6 sections (each representing one year or 12 months of time). The four columns are used to record pregnancies, live births, terminations of pregnancies, and monthly contraceptive status (column 1), reasons for discontinuation of contraception (column 2), monthly marital status (column 3), and place of residence and migration (column 4). The data collected in column 1 enables us to identify the month in which contraception was first adopted following each live birth since January 1989.

In addition to the data on postpartum initiation of contraceptive use collected in the calendar, information was collected in the health section of the questionnaire on the duration of breastfeeding, duration of postpartum abstinence, and duration of postpartum amenorrhoea following each live birth since January 1991. Based on the date of birth of each child, it is possible to match the information on breastfeeding¹, postpartum amenorrhoea, and postpartum abstinence to the data on postpartum contraceptive initiation from the calendar for all births in the three years preceding the survey². Postpartum contraceptive initiation is defined as first contraceptive use in the pregnancy interval following the birth (i.e. if no contraceptive use

¹The definition of breastfeeding used in DHS surveys includes both full and partial breastfeeding. Therefore, weaning refers to the cessation of all breastfeeding not to the end of full breastfeeding.

² If there was a discrepancy in the durations of postpartum abstinence, amenorrhoea, or breastfeeding reported for each child in a multiple birth, the longest value was used.

occurs before the next pregnancy, the birth is classified as not being followed by contraceptive initiation). The final sample included 2,002 live births that occurred in the period 3 to 35 months before the survey³.

For some births, the full duration of breastfeeding, amenorrhoea, or abstinence is unknown because weaning, menstruation, or resumption of sexual activity has not occurred by the end of the analysis period (survey date minus 3 months). Similarly, some women have not initiated contraception by the end of the analysis period. Table 1 presents the percentage of births that have incomplete (censored) durations of breastfeeding, postpartum amenorrhoea, postpartum abstinence, and postpartum nonuse of contraception. The percentage of observations that are censored ranges from 16 percent for the duration of postpartum abstinence to 53 percent for the duration of breastfeeding. The exclusion of these right-censored observations would bias our results so life table methodology, which allows censored observations to be included, is used for the analysis. For further discussion of life tables, see Namboodiri and Suchindran, 1987. All analysis was conducted using SPSSPC and Lotus. The information on contraceptive initiation was extracted from the calendar using the CAL2SPSS programme provided with the DHS Further Analysis Plan on Contraceptive Use Dynamics (Curtis and Hammerslough, 1995).

Table 1 Percentage of births that are followed by incomplete (censored) durations of breastfeeding, postpartum amenorrhoea, postpartum abstinence, and postpartum nonuse of contraception, Zimbabwe 1994

Duration	Percent incomplete
Breastfeeding	52.8
Amenorrhoea	35.3
Abstinence	15.6
Postpartum nonuse of contraception*	22.3
Number of births	2,002

* Duration from birth until either contraceptive use or the next pregnancy occurs

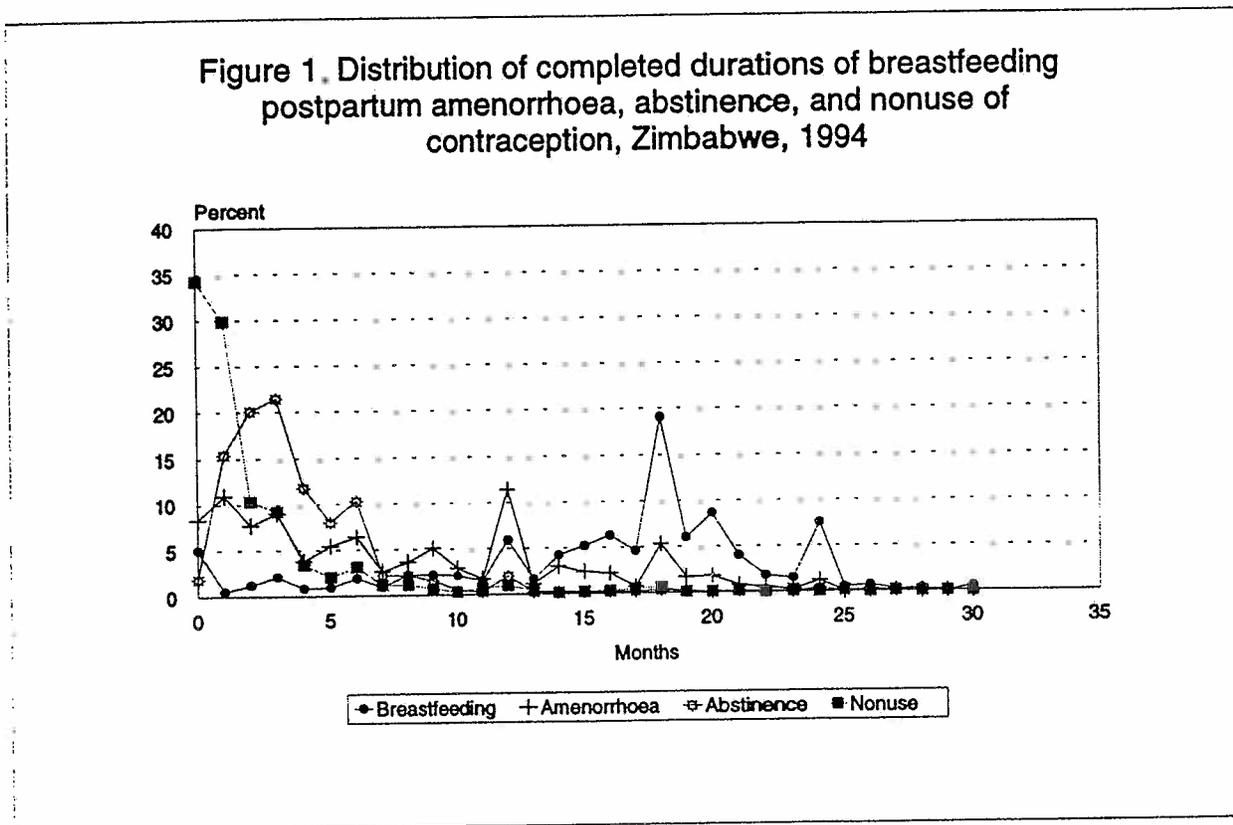
Data Quality

The analyses in this paper rely on reasonably accurate reporting of the timing of weaning, resumption of menstruation, resumption of sexual activity, and initiation of contraceptive use following recent births. The use of a calendar is likely to improve the reporting of the timing of contraceptive initiation because the calendar data collection approach has been shown to provide superior quality data than alternative retrospective data collection techniques for longitudinal information (Goldman, Moreno and Westoff, 1989). Nevertheless, the timing of all the events of interest is likely to be subject to recall error which could affect our results⁴.

³ The three months immediately before the survey were excluded from the analysis to allow for underreporting of first-trimester pregnancies which could bias the estimated duration of postpartum amenorrhoea, time until the next pregnancy, and postpartum contraceptive discontinuation rates.

⁴ The calendar used in DHS-II surveys included columns for recording breastfeeding, postpartum amenorrhoea, and postpartum abstinence. The collection of breastfeeding, postpartum amenorrhoea, and postpartum abstinence in the calendar may have improved the reporting of these events by allowing reconciliation of these events with other events in the calendar. These columns were dropped in DHS-III surveys (including Zimbabwe) to reduce the interview burden associated with the calendar. The implications of this change in questionnaire design for the quality of the postpartum behaviour data have not been investigated.

One symptom of poor recall is heaping of events on significant dates or prominent durations such as 6, 12, 18, and 24 months. Figure 1 presents the distribution of completed durations of breastfeeding, postpartum amenorrhoea, postpartum abstinence, and postpartum nonuse of contraception. The duration of breastfeeding is quite severely heaped on 12, 18, and 24 months, particularly 18 months. There is also marked heaping of the duration of postpartum amenorrhoea at 12 months and, to a lesser extent, at 18 months. There is much less heaping of the duration of postpartum abstinence and of the duration of postpartum nonuse of contraception.



One objective of this analysis is to examine the extent to which postpartum contraceptive use overlaps with breastfeeding, postpartum amenorrhoea, and postpartum abstinence. If the duration of postpartum nonuse of contraception coincides with the duration of the other behaviours of interest through heaping, inaccuracies in recording the occurrence of an overlap could result. The lack of heaping in the duration of postpartum nonuse of contraception, combined with the fact that the heaping in the durations of breastfeeding and postpartum amenorrhoea are at much higher durations than typically reported durations of postpartum nonuse of contraception, suggests that inaccuracies in the reporting of durations is unlikely to affect the measurement of the occurrence of an overlap between contraceptive use and other postpartum behaviours. However, the duration of an overlap is likely to be affected. At the aggregate level, there should not be any systematic bias in the estimated duration of an overlap if the heaping reflects both rounding up and rounding down of the actual duration to an equal extent. Figure 1 suggests that the heaping is drawn from both above and below the preferred duration and does not provide any evidence of a strong systematic tendency to round up or round down the reported figure.

Background Characteristics

Another objective of this study is to ascertain the importance of the characteristics of mothers as correlates of postpartum contraceptive behaviour and the relationship between postpartum contraceptive use and other postpartum behaviours. Six background characteristics of mothers have been identified for this analysis: age, fertility intention, parity, area of residence, province, and education level. These characteristics have generally been associated with contraceptive use in Zimbabwe and are therefore expected to be associated with postpartum contraceptive behaviour. Age of the respondent refers to the age of the woman at the time of the birth. Fertility intention reflects whether the woman wanted additional children after the index birth⁵, and parity includes all births up to and including the index birth. The remaining three variables are measured at the time of the survey.

Postpartum Behaviour

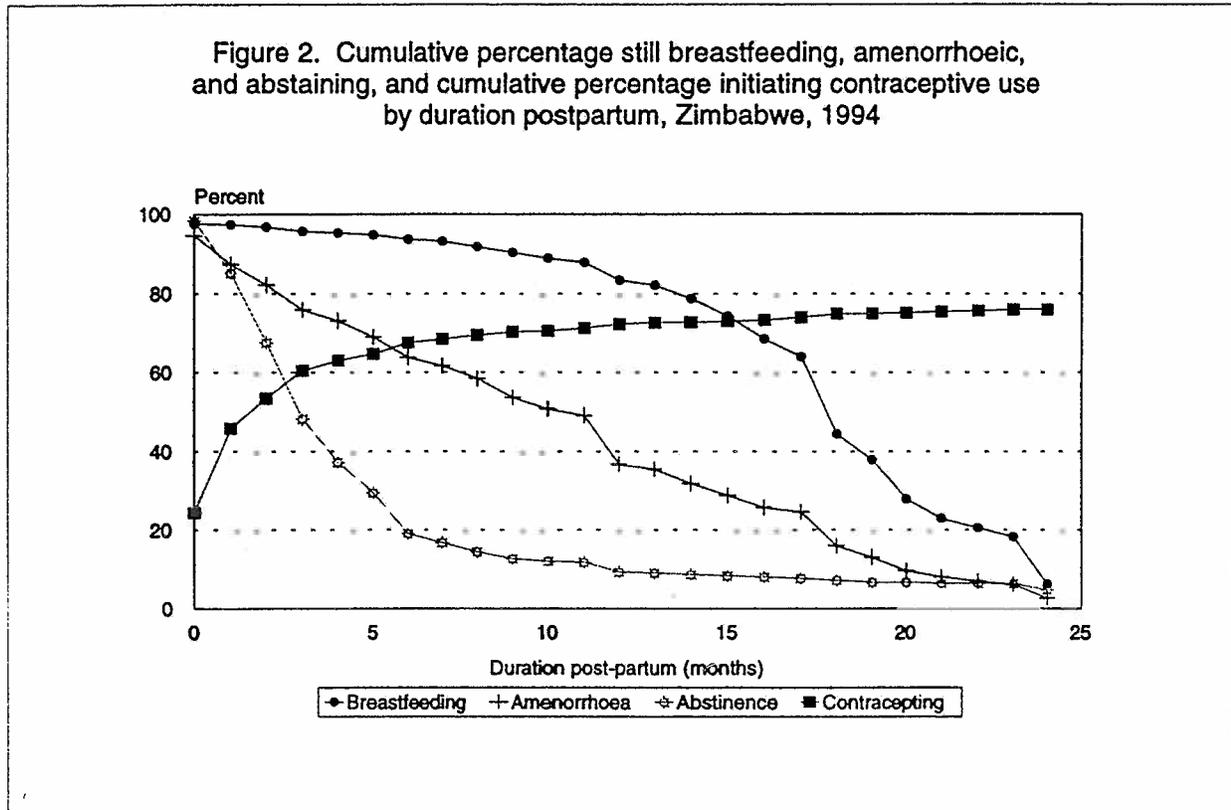
Figure 2 presents the cumulative percentage of mothers who have initiated contraceptive use by each duration postpartum together with the percentage who are still breastfeeding, still amenorrhoeic, and still abstaining at each duration⁶. Contraceptive use is extremely widespread following recent births in Zimbabwe; almost 80 percent of mothers use contraceptives in the two years after a birth. Initiation of contraceptive use increases rapidly with time, especially between the first and sixth month postpartum, and over 60 percent of mothers begin using a contraceptive within six months of a birth. After the sixth month, the percentage of mothers initiating contraceptive use gradually levels off. At the same time, 95 percent of mothers are breastfeeding at six months postpartum, and about 70 percent are amenorrhoeic. Therefore, there must be a considerable overlap between breastfeeding and contraceptive use and between postpartum amenorrhoea and contraceptive use. At 12 months postpartum more than 80 percent of mothers are still breastfeeding and slightly less than 40 percent are still amenorrhoeic, which suggests that the duration of an overlap between contraceptive use and breastfeeding and postpartum amenorrhoea is also likely to be prolonged. The percentage of mothers who have not resumed sexual relations declines rapidly and by six months postpartum only about 20 percent are still abstaining. Therefore, there is likely to be relatively little overlap between contraceptive use and postpartum abstinence except in the first three months after a birth.

The contraceptive method-mix in Zimbabwe is dominated by the pill; more than two-thirds of current modern contraceptive use among married women is pill use (CSO and Macro International Inc., 1995). The dominance of pill use is of particular interest in the postpartum period because of concerns over hormonal contraceptive use during lactation. Figure 3 presents the cumulative percentage of mothers who have initiated pill use, use of other methods, or who became pregnant by duration postpartum. The likelihood of initiating pill use postpartum is very high compared to adopting non-pill family planning methods. This is illustrated by the sharp increase in the proportion of women initiating pill use, from 17 percent in the first month postpartum to 54 percent by 12 months postpartum. The percentage of mothers who initiate other methods of family planning levels off at a much lower rate; only 17 percent of mothers initiate use of other methods in the year after a birth. The proportion of mothers who did not use a method and became pregnant is very low with

⁵ Fertility intention after the index birth is inferred by whether the next birth was reported as wanted (then or later) or unwanted. If the index birth was not followed by another birth, intention is inferred by whether or not the woman reported that she wanted another child at the time of the survey.

⁶ The period of contraceptive nonuse following a birth may be terminated either by initiation of contraceptive use or by another pregnancy. These two events represent competing outcomes. Therefore, the cumulative percentages who have initiated contraceptive use are obtained from a multiple decrement life table. The percentages of mothers who are still breastfeeding, still amenorrhoeic, and still abstaining are obtained from ordinary single decrement life tables.

only 3 percent becoming pregnant in the first 12 months postpartum⁷. This low level of pregnancy reflects the fact that so many mothers use contraception in the postpartum period as well as low fecundity among those who do not initiate contraceptive use due to the prolonged period of postpartum amenorrhoea observed in Figure 2.

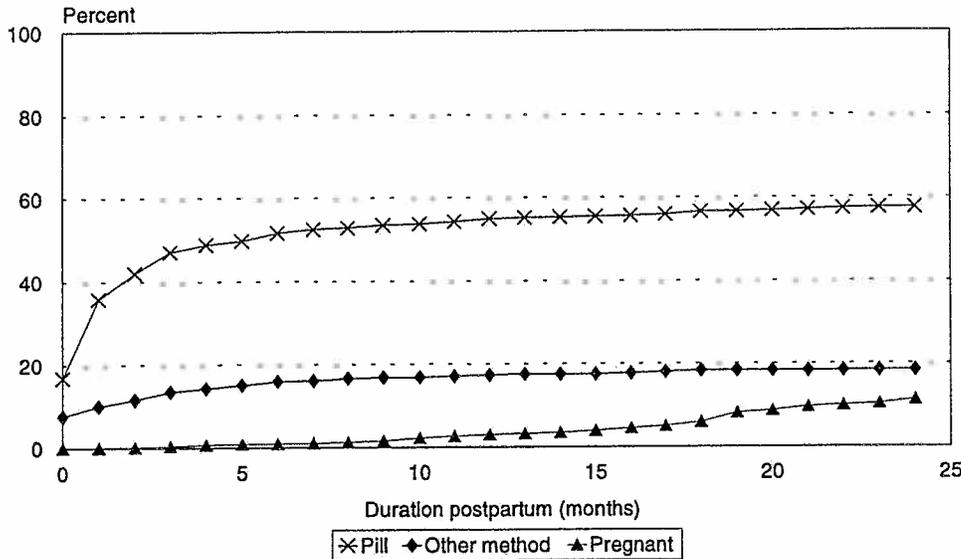


Differentials in postpartum behaviour

Table 2 examines postpartum contraceptive behaviour by background characteristics. The median duration until contraceptive initiation (or pregnancy) is about three months. The probability of adopting contraception is higher among urban women than among rural women at every postpartum duration. For example, three months after a birth, 72 percent of urban women have adopted a contraceptive method compared with 47 percent of rural women. Provincial differences in postpartum contraceptive behaviour are quite pronounced. More than 75 percent of mothers in Mashonaland East, Midlands, and Harare/Chitungwiza adopt a contraceptive method in the year following a birth while in Matabeleland South, less than 50 percent of mothers do so. Postpartum contraceptive use occurs particularly early in Harare/Chitungwiza where 81 percent of mothers adopt a method within three months of a birth.

⁷ The cumulative percentages presented in Figure 3 are obtained from a multiple decrement life table and are based only on the first event (pill use, other method use, or pregnancy) following the birth. Therefore, the pregnancy rate at each duration presented in the figure reflects only pregnancies that occurred before contraceptive use. The total pregnancy rate among all mothers at each duration postpartum may be higher than this because some women who initiated contraceptive use at a given duration postpartum may subsequently become pregnant either through contraceptive discontinuation or through contraceptive failure. How much higher depends on the level of contraceptive discontinuation and contraceptive failure among these women.

Figure 3. Cumulative percentage of mothers who have initiated use of the Pill, use of other methods, and who become pregnant by duration postpartum, Zimbabwe, 1994



Postpartum contraceptive use increases with education at every postpartum duration but the differential is a little more pronounced in the early postpartum period. There are no strong differentials in postpartum contraceptive behaviour between those mothers who want additional children and those who do not. Age and parity differentials in postpartum contraceptive use are also modest, although older mothers (over age 35) and those who have had at least four births are less likely to adopt contraception by each duration postpartum than their counterparts.

Breastfeeding is nearly universal in Zimbabwe; about 97 percent of the women indicate that they breastfed for at least three months and the median duration of breastfeeding is 19 months (Table 3). There are only modest differences in the median duration of breastfeeding by background characteristics. Provincial differentials are the most pronounced; the median duration of breastfeeding ranges from 20 months in Masvingo province to 17 months in Bulawayo province. There is very little difference in the percentage of mothers who are still breastfeeding at three months postpartum by any of the background variables considered but differentials widen with increasing duration postpartum so that by the end of the second year, there are marked differentials in breastfeeding behaviour. The percentage of mothers still breastfeeding at 24 months postpartum is much higher in rural than in urban areas and increases with both age and parity. Educated women are less likely to be breastfeeding after two years than their less educated counterparts.

Table 2 Percentage of mothers initiating contraceptive use by 3 months, 6 months, and 12 months postpartum and median duration of postpartum nonuse of contraception by background characteristics, Zimbabwe 1994

Background characteristic	Proportion using contraception			Median duration *	Number of births
	3 months	6 months	12 months		
Area of residence					
Urban	71.5	78.5	82.3	1.5	534
Rural	46.9	59.9	67.3	3.4	1,468
Province					
Manicaland	43.6	53.3	64.9	4.3	246
Mashonaland Central	45.5	66.0	74.5	3.4	172
Mashonaland East	54.9	70.2	79.2	2.2	203
Mashonaland West	59.4	68.9	74.8	2.1	233
Matabeleland North	38.2	47.0	51.5	7.8	151
Matabeleland South	29.1	35.5	43.5	13.1	118
Midlands	58.5	75.1	81.4	2.2	277
Masvingo	45.7	58.4	63.3	3.3	216
Harare/Chitungwiza	81.3	85.4	89.0	1.3	279
Bulawayo	51.6	60.2	65.5	2.7	106
Education					
None	38.2	47.3	57.3	6.5	251
Primary	50.3	63.2	69.3	2.9	1,020
Secondary or more	63.1	73.2	78.9	1.9	732
Fertility intention					
Want more	53.3	65.2	72.6	2.5	1,292
Want no more	53.5	64.0	68.6	2.5	706
Age					
Under 25	55.3	67.0	75.1	2.4	967
25-34	54.8	66.8	71.0	2.2	761
35-49	43.2	51.7	58.7	1.9	264
Parity					
0-1	54.9	65.5	73.3	2.4	528
2	58.5	70.4	77.8	2.2	418
3	57.2	71.1	75.5	2.0	281
4 or more	48.3	59.0	64.9	3.2	775
Total	53.5	64.8	71.3	2.5	2,002

* Duration from birth until either contraceptive use or the next pregnancy occurs

Table 3 Percentage of mothers who breastfed for at least 6 months, 12 months, and 24 months, and median duration of breastfeeding by background characteristics, Zimbabwe 1994

Background characteristic	Percentage Breastfed at least			Median Duration	Number of births
	6 months	12 months	24 months		
Area of residence					
Urban	97.1	82.6	7.4	18.1	534
Rural	96.7	89.9	22.0	19.0	1,468
Province					
Manicaland	94.4	84.0	18.9	18.5	246
Mashonaland Central	97.5	90.7	26.3	19.4	172
Mashonaland East	96.8	94.7	18.1	18.9	203
Mashonaland West	96.3	85.6	20.8	18.9	233
Matabeleland North	96.8	89.3	26.8	18.9	151
Matabeleland South	97.8	89.1	19.6	18.7	118
Midlands	96.8	85.6	14.9	18.3	277
Masvingo	97.5	92.2	24.4	19.8	216
Harare/Chitungwiza	98.1	86.5	8.3	18.2	279
Bulawayo	96.2	79.4	4.0	17.1	106
Education					
None	97.4	88.9	33.2	19.3	251
Primary	96.9	89.8	21.6	19.0	1,020
Secondary or more	96.4	84.6	8.1	18.3	732
Fertility intention					
Want more	96.3	85.4	15.1	18.6	1,292
Want no more	97.7	92.5	25.0	19.2	706
Age					
Under 25	96.2	87.6	10.1	18.4	967
25-34	97.2	85.7	24.2	18.9	761
35-49	98.0	94.8	32.3	20.4	264
Parity					
0-1	96.6	87.0	6.2	18.3	528
2	95.8	85.5	12.4	18.5	418
3	96.5	86.5	18.1	18.7	281
4 or more	97.6	90.1	29.5	19.9	775
Total	96.8	87.8	18.2	18.7	2,002

Table 4 Percentage of mothers who were still amenorrhoeic at 6 months, 12 months, and 24 months postpartum, and median duration of postpartum amenorrhoea by background characteristics, Zimbabwe 1994

Background characteristic	Percentage still amenorrhoeic at			Median Duration	Number of births
	6 months	12 months	24 months		
Area of residence					
Urban	63.7	41.4	4.5	9.2	534
Rural	71.0	52.1	6.7	12.2	1,468
Province					
Manicaland	74.4	48.8	2.1	11.6	246
Mashonaland Central	74.2	53.1	9.04	12.2	172
Mashonaland East	70.2	49.8	7.0	11.9	203
Mashonaland West	67.3	55.5	10.0	12.5	233
Matabeleland North	74.1	51.7	10.3	12.1	151
Matabeleland South	73.7	50.2	5.3	12.0	118
Midlands	61.2	46.4	4.4	9.9	277
Masvingo	70.6	53.6	5.6	12.4	216
Harare/Chitungwiza	64.6	41.4	5.3	10.0	279
Bulawayo	64.7	42.5	0.0	8.2	106
Education					
None	73.3	53.6	10.6	12.2	251
Primary	72.3	52.7	6.8	12.2	1,020
Secondary or more	63.0	42.6	3.5	9.4	732
Fertility intention					
Want more	66.8	45.9	4.5	10.2	1,292
Want no more	73.3	55.5	9.3	12.4	706
Age					
Under 25	64.5	45.7	4.9	10.0	967
25-34	72.2	51.3	7.1	12.1	761
35-49	76.7	55.4	7.5	12.4	274
Parity					
0-1	59.5	40.4	4.0	8.2	528
2	67.5	47.3	4.4	10.7	418
3	71.3	50.4	8.9	12.0	281
4 or more	75.6	55.6	7.0	12.4	75
Total	69.1	49.1	6.1	11.5	2,002

Nationally, the data indicate a median duration of postpartum amenorrhoea of 12 months (Table 4) and it is more than eight months in every subcategory of each background characteristic of the mother examined. Modest differentials are observed in amenorrhoea patterns and these differentials generally mirror the breastfeeding differentials discussed above reflecting the influence of infant feeding patterns on the return of menses. For example, the median duration of amenorrhoea for mothers with no education and for mothers with primary education is 12 months while for mothers with at least secondary education, it is only 9 months.

Table 5 documents the bivariate association between postpartum abstinence and selected characteristics of the mother. Overall, the median duration of abstinence is slightly less than four months. There is almost a 50 percent drop between three months and six months postpartum in the proportion of women abstaining in almost every subgroup examined. Provincial differences in the median duration of abstinence are observed; the median duration ranges from three months for the Harare/Chitungwiza province to six months in the Matabeleland South province. Generally, the patterns in postpartum abstinence behaviour are similar to the patterns observed in breastfeeding behaviour. There is an inverse relationship between the median duration of postpartum abstinence and educational attainment of mothers. Rural mothers tend to abstain for longer periods than urban mothers, as do older mothers when compared with their younger counterparts. There are no systematic differences in postpartum abstinence behaviour by parity. There is also little difference in the median duration of abstinence by fertility intention although mothers who want additional children are less likely to be abstaining 12 months after a birth than mothers who do not want additional children.

Relationship between postpartum contraceptive use and other postpartum behaviours

The analysis presented above provides a general overview of postpartum behaviour in Zimbabwe. Several studies have found a negative association between contraceptive use and breastfeeding (Jain and Bongaarts, 1981; Millman, 1985; Pebley, Goldberg and Menken, 1985). Since breastfeeding behaviour is strongly associated with the duration of postpartum amenorrhoea, this finding suggests a negative association between contraceptive use and the duration of postpartum amenorrhoea. In addition, in their theory of African fertility decline, Caldwell et al. (1992) argue that contraceptive use may be substituted for postpartum abstinence thus implying a negative association between contraceptive use and postpartum abstinence. In the next analysis, we investigate whether these negative associations between postpartum contraceptive use and other postpartum behaviours hold true in Zimbabwe.

Table 6 presents the median duration of breastfeeding, amenorrhoea, and abstinence by postpartum contraceptive behaviour. Overall, the median duration of breastfeeding is around 19 months among mothers who used the pill, mothers who used another method, and mothers who were still not using a postpartum contraceptive method at the end of the observation period (three months before the survey). However, among mothers who did not use a method and became pregnant, the median duration of breastfeeding is only 15 months. This group may include mothers whose child died, thereby ending breastfeeding, and who wished to "replace" the deceased child. The median duration of postpartum amenorrhoea is slightly *higher* among mothers who used the pill after birth (12.2 months) than among mothers who used another method (10.8 months) and those who were still not using a method three months before the survey (10.1 months). Those mothers who did not use a method and became pregnant experienced the shortest duration of postpartum amenorrhoea, consistent with their shorter average breastfeeding duration.

The median duration of postpartum abstinence by postpartum contraceptive status is slightly less than four months among mothers who used either the pill or another contraceptive method and among mothers who did not use a method and became pregnant. However, among mothers who were still not using a postpartum contraceptive method at the end of the observation period, the median duration of postpartum abstinence was almost seven months. This finding is consistent with the theory of substitution of contraceptive use for postpartum abstinence. Another partial explanation might be that initiation of contraceptive use is timed to

coincide with the resumption of sexual behaviour and, therefore, those mothers who abstain for longer periods will tend to initiate contraceptive use later in the postpartum period so are more likely not to have initiated use by the end of the observation period.

Table 5 Percentage of mothers who were still abstaining from sex at 3 months, 6 months and, 12 months postpartum, and median duration of postpartum abstinence by background characteristics, Zimbabwe 1994

Background characteristic	Percentage still abstaining at			Median Duration	Number of births
	3 months	6 months	12 months		
Area of residence					
Urban	56.4	21.3	9.6	3.3	534
Rural	71.7	32.4	12.8	4.3	1,468
Province					
Manicaland	74.1	41.3	13.1	5.2	246
Mashonaland Central	78.6	36.1	18.5	4.3	172
Mashonaland East	59.3	19.7	9.21	3.4	203
Mashonaland West	67.6	29.4	10.7	4.1	233
Matabeleland North	83.0	43.2	19.2	5.2	151
Matabeleland South	87.6	52.1	21.7	6.1	118
Midlands	61.4	19.1	6.6	3.5	277
Masvingo	62.2	23.6	8.6	3.7	216
Harare/Chitungwiza	49.0	16.8	7.23	3.0	279
Bulawayo	83.5	38.2	16.2	4.4	106
Education					
None	80.4	43.9	18.1	5.5	251
Primary	72.1	29.8	10.2	4.0	1,020
Secondary or more	57.1	24.1	11.8	3.4	732
Fertility intention					
Want more	66.6	27.7	10.0	3.8	1,292
Want no more	69.7	32.7	15.4	4.1	706
Age					
Under 25	68.3	30.0	13.8	3.9	967
25-34	62.7	27.7	8.2	3.7	761
35-49	78.8	32.4	14.5	4.7	274
Parity					
0-1	69.1	36.1	18.5	4.1	528
2	61.8	21.3	8.0	3.6	418
3	68.3	29.1	11.4	3.9	281
4 or more	69.6	29.5	9.3	4.0	775
Total	67.6	29.5	11.8	3.9	2,002

Table 6 Median duration of breastfeeding, postpartum amenorrhoea, and postpartum abstinence by first contraceptive method used in pregnancy interval following the index birth, Zimbabwe 1994

Contraceptive method	Median duration			Number of births
	Breastfeeding	Amenorrhoea	Abstinence	
Pill	18.9	12.2	3.5	1,080
Other method	18.8	10.8	3.8	341
No method	15.1	8.7	3.8	135
Unknown*	19.1	10.1	6.6	446
Total	18.7	11.5	3.9	2,002

*Mother has not used contraception or got pregnant again by the end of the observation period (i.e. censored)

Overlap between contraceptive use and other postpartum behaviour

Figure 4 shows the probability of acceptance of postpartum contraception (pill and other methods) relative to the time of weaning⁸. For pill use, there is a very pronounced peak in the probability of initiating use around 18 months before weaning which reflects the pattern of early postpartum initiation of contraceptive use combined with long durations of breastfeeding already discussed. The probability of initiating use of the pill then declines as the duration before weaning decreases but there is a second pronounced peak in the month of weaning. After weaning, the probability of initiating use of any method is very low. A similar pattern is observed for initiation of other methods but the probability of initiating use of other methods is much lower than the probability of initiating pill use, particularly more than nine months before weaning, and there is not the pronounced peak in the probability of initiating other methods approximately 18 months before weaning. The pattern described above suggests that the majority of mothers initiate pill use very soon after the birth of their child, regardless of their breastfeeding intentions, but there appears to be a second group of mothers who wait until the time of weaning to begin using contraceptives.

The probability of accepting contraception in relation to the month of resumption of menstruation is shown in Figure 5. There is a very pronounced peak in the probability of initiating contraceptive use in the month that menstruation resumes, suggesting that some mothers (about 10 percent) wait until menstruation resumes to begin contraception. The peak is particularly pronounced for the pill, but some caution should be exercised in interpreting this finding because the combined contraceptive pill typically induces bleeding about three weeks after initiation, which is likely to be reported as the resumption of menstruation. Therefore, with monthly data such as that collected in the DHS calendar, it is not possible to determine which came first—menstruation or use of the combined pill. Another important feature of Figure 5 is that many mothers initiate use of both pills and other methods well before the resumption of menstruation, particularly 9 to 18 months before. Indeed, while nearly 8 percent of mothers initiate pill use in the same month in which menses resumed, the largest percentage in any single month, more than 40 percent of mothers initiate pill use before the resumption of menstruation. This is consistent with the early initiation of contraceptive use and long durations of postpartum amenorrhoea observed in the previous analyses.

⁸ Figure 4 is calculated by combining together five separate life tables to take into account the fact that both the negative and positive durations (relative to weaning) can be censored and that some mothers have experienced neither weaning nor contraceptive initiation by the end of the observation period. The same procedures also have to be applied to produce Figures 5 and 6. Details are not presented here but are available on request from the authors.

Figure 4. Probability of initiating use of pill and other methods relative to weaning, Zimbabwe, 1994

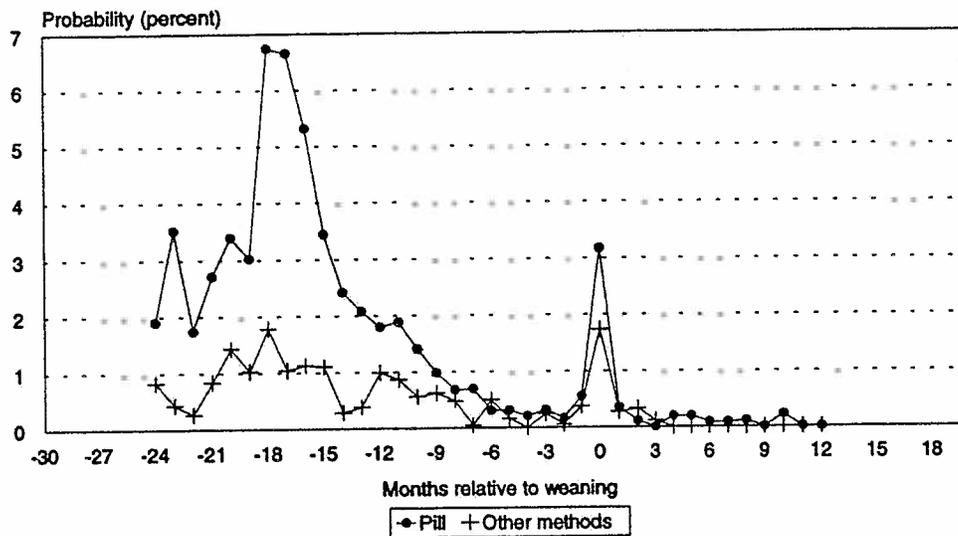


Figure 5. Probability of initiating use of pill and other methods relative to resuming menstruation, Zimbabwe, 1994

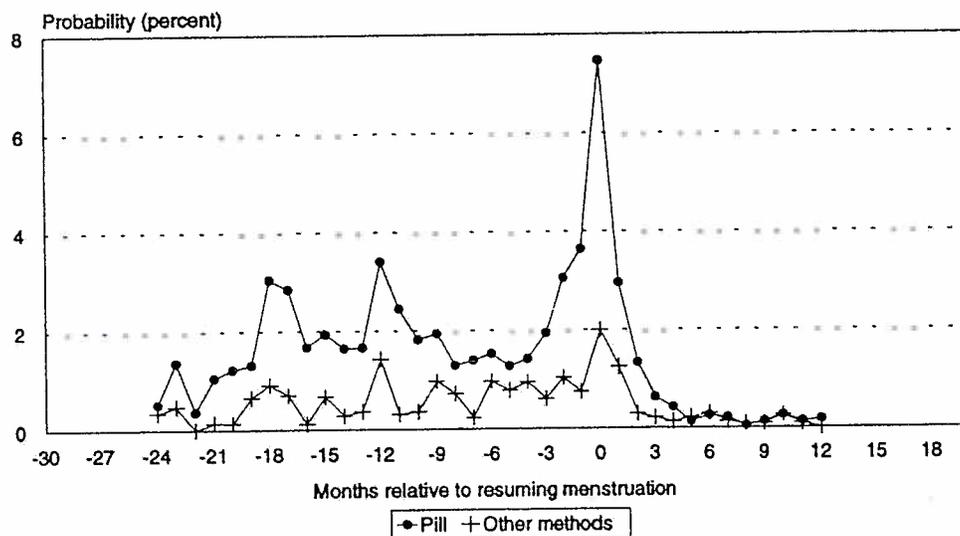


Figure 6 presents the probability of adopting contraceptive use relative to the month of resumption of sex postpartum. About 20 percent of mothers begin to use contraceptives in the same months that they resume sexual relations. The probability of initiating contraceptive use is very low in the individual months following resumption of sex, but many mothers do initiate contraceptive use up to six months before resuming sex. The relatively high probability of initiating contraceptive use in the three months before the resumption of sex may in part reflect the fact that both contraceptive initiation and resumption of sex tend to occur early in the postpartum period so there is little scope to initiate use long before resuming sex, but may also indicate that some mothers may initiate contraceptive use in anticipation of the resumption of sexual relations.

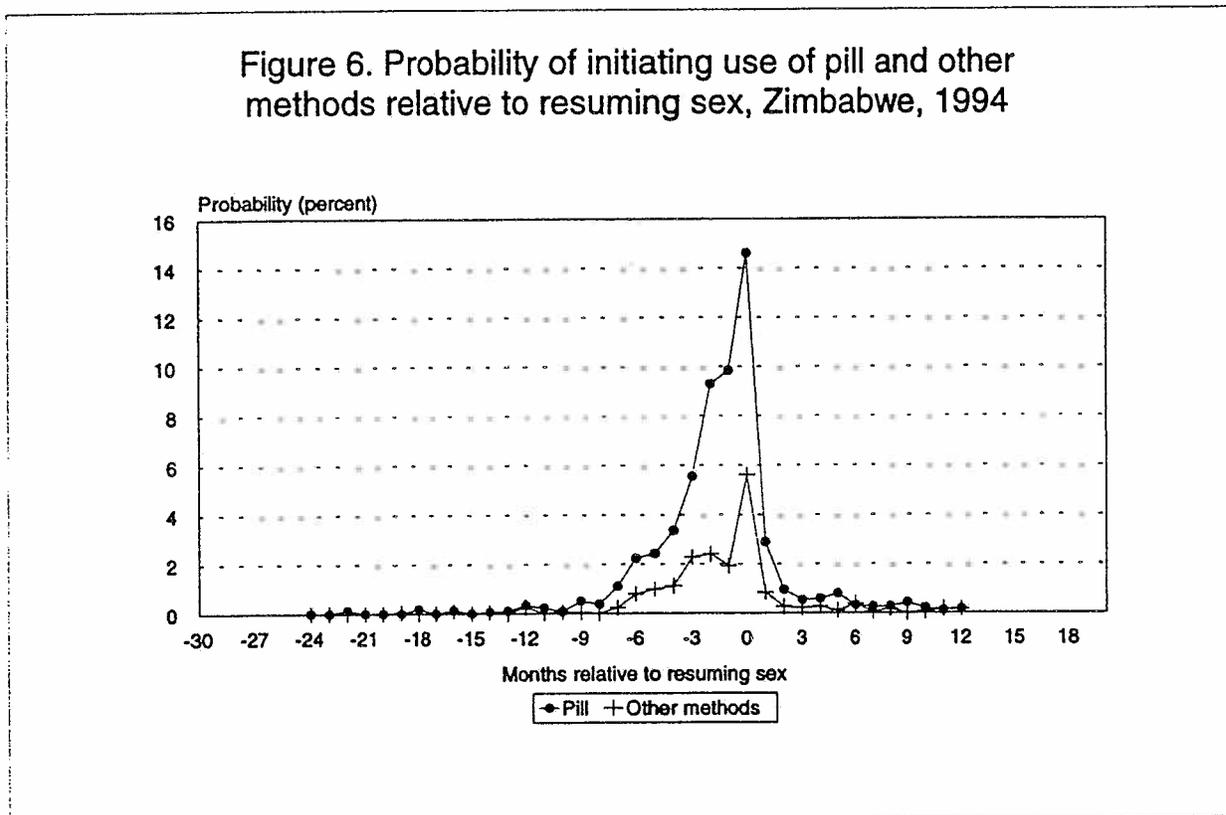


Table 7 essentially summarizes some key features of Figures 4, 5, and 6. More than 70 percent of recent births in Zimbabwe are followed by an overlap between breastfeeding and contraceptive use (i.e. contraceptive use precedes weaning) and the median duration of an overlap is nearly 18 months (assuming that contraceptive use is not discontinued before weaning). More than half of recent births are followed by an overlap between breastfeeding and pill use, but the median duration of an overlap is the same for the pill as for other methods. Nearly 45 percent of births are followed by an overlap between pill use and postpartum amenorrhoea while a further 14 percent are followed by an overlap between other methods and amenorrhoea. The median duration of an overlap with amenorrhoea is about one year (assuming use is not discontinued before resumption of menses) and is just over two months longer for pills than for other methods. As seen in Figure 6, there is less overlap between contraceptive use and postpartum abstinence yet 48 percent of births are followed by an overlap between the two behaviours. The median duration of an overlap when it occurs is three months.

Table 7 Percentage of births followed by overlap between contraceptive use and breastfeeding, postpartum amenorrhoea, and postpartum abstinence, and median duration of overlap, by method, Zimbabwe 1994

Overlap with:	Breastfeeding		Amenorrhoea		Abstinence	
	Percent overlap	Median duration	Percent overlap	Median duration	Percent overlap	Median duration
Pill	54.0	17.7	44.7	12.2	36.9	2.9
Other	16.8	17.6	13.8	9.9	10.6	3.4
Any method	70.8	17.7	58.5	12.0	47.5	3.0
No overlap	29.1	-	41.5	-	52.5	-

Table 8 shows the percentage of births followed by an overlap between contraceptive use and breastfeeding, amenorrhoea, and abstinence by selected background characteristics of mothers⁹. The differentials observed generally follow the same patterns for all three behaviours. Births to urban mothers are more likely than births to rural mothers to be followed by an overlap between contraceptive use and breastfeeding, amenorrhoea, and abstinence. In Harare/Chitungwiza, 87 percent of births are followed by an overlap between breastfeeding and contraceptive use, 77 percent are followed by an overlap between contraceptive use and postpartum amenorrhoea, and 65 percent are followed by an overlap between contraceptive use and postpartum abstinence, reflecting the very early initiation of contraceptive use in the province (Table 2). At the opposite extreme, in Matabeleland South where postpartum contraceptive use is lowest, only 47 percent of births are followed by an overlap between breastfeeding and contraceptive use, 36 percent by an overlap between contraceptive use and postpartum amenorrhoea, and 33 percent by an overlap between contraceptive use and postpartum abstinence.

The percentage of births followed by an overlap with each of the three behaviours increases as education increases and decreases as age increases. There is relatively little difference in the incidence of an overlap with each behaviour by fertility intention or by parity, except that births of parity four or more are less likely to be followed by an overlap with breastfeeding and abstinence than are lower parity births.

Discontinuation of postpartum contraceptive use

The analyses in the previous section clearly demonstrate that an overlap between contraceptive use and breastfeeding, postpartum amenorrhoea, and postpartum abstinence is both widespread and prolonged in Zimbabwe resulting in considerable "double protection." If contraceptive discontinuation rates are high, the majority of contraceptive use could overlap with postpartum amenorrhoea or postpartum abstinence and contraceptive use could have little, if any, effect on fertility (Winikoff and Mensch, 1991). Overall, contraceptive discontinuation rates in Zimbabwe are very low (Sambisa, 1996) but women who initiate contraceptive use early in the postpartum period will typically need to use contraceptives longer than women who initiated use later to achieve the same contraceptive effect on their next birth interval.

⁹ The figures in the table were calculated using a multiple decrement life table with contraceptive use, pregnancy, and weaning/resumption of menses/resumption of sex as competing outcomes.

Table 8 Percentage of births followed by overlap between postpartum contraceptive use and breastfeeding, postpartum amenorrhoea, and postpartum abstinence by background characteristics, Zimbabwe 1994

Background characteristic	Overlap between contraceptive use and:			Number of births
	Breastfeeding	Amenorrhoea	Abstinence	
Area of residence				
Urban	79.8	69.0	58.6	534
Rural	67.6	54.7	43.4	1,468
Province				
Manicaland	66.2	57.6	42.4	246
Mashonaland Central	77.0	59.8	45.9	172
Mashonaland East	78.9	61.3	46.6	203
Mashonaland West	71.1	63.7	54.4	233
Matabeleland North	50.4	45.4	41.3	151
Matabeleland South	46.9	35.6	33.0	118
Midlands	75.9	56.7	41.9	277
Masvingo	63.6	55.0	41.8	216
Harare/Chitungwiza	87.0	76.5	64.7	279
Bulawayo	66.7	50.1	54.5	106
Education				
None	57.4	48.0	39.2	251
Primary	70.1	58.4	46.7	1,020
Secondary or more	76.2	62.3	51.4	737
Fertility intention				
Want more	71.4	58.4	46.4	1,292
Want no more	69.2	58.6	49.5	706
Age				
Under 25	74.2	58.2	49.7	967
25-34	69.5	60.9	47.1	761
35-49	61.9	53.0	40.8	273
Parity				
0-1	72.9	54.4	48.4	528
2	74.2	60.5	49.7	417
3	73.2	67.2	50.8	281
4 or more	66.4	57.1	44.4	775
Total	70.8	58.5	47.5	2,002

The differentials in contraceptive discontinuation by timing of use after a birth are examined in Table 9. Since the median durations of breastfeeding and postpartum amenorrhoea, and therefore the durations of an overlap, frequently exceed 12 months, we present 24-month continuation rates rather than 12-month continuation rates. Two continuation rates are presented. The first-method continuation rate reflects continuation only of the first method used postpartum while the all-method continuation rate reflects continuation of any contraceptive use postpartum and treats method switching as continuation as long as a new method was used in the month immediately after discontinuation of the original method. Both the first-method and all-method 24-month continuation rates are higher among mothers who initiated contraceptive use in the first three months postpartum than among mothers who initiated use later in the postpartum period. For example, 61 percent of mothers who initiated contraceptive use within three months of a birth are still using a method two years later compared with only 46 percent of mothers who initiated use six or more months after a birth. The median duration of all contraceptive use following a birth exceeds 31 months among mothers who initiated use within three months postpartum compared with 27 months among mothers who initiated use three to five months postpartum and 20 months among mothers who initiated use at least six months postpartum.

Table 9 Twenty-four month first-method and all-method continuation rates and median durations of use by postpartum duration at which use was initiated, Zimbabwe 1994

Postpartum duration at initiation	First method		All methods	
	24-month continuation rate	Median duration of use (months)	24-month continuation rate	Median duration of use (months)
0-2 months	54.4	26.3	61.0	> 31
3-5 months	39.2	21.4	48.7	26.6
6 or more months	37.9	20.2	46.2	20.4
Total	51.3	25.0	58.1	29.7

Discussion

The results of the analyses presented in this report concur with the findings of Adamchak and Mbizvo (1990) that contraceptive use in the postpartum period is widespread in Zimbabwe and begins shortly after birth. This practice, combined with prolonged lactational amenorrhoea, results in substantial double protection due to overlap between contraceptive use and postpartum amenorrhoea. These findings are very important in the context of planning reproductive health services in the postpartum period, particularly in light of the current debate over postpartum contraceptive use and the 1988 Bellagio consensus statement on the use of breastfeeding as a family planning method (Kennedy, Rivera, and McNeilly, 1989). Indeed, both Winikoff and Mensch (1991) and Kennedy et al. (1991) cite Zimbabwe as a country which could benefit substantially from later initiation of contraception in the postpartum period through introduction of LAM because so much of the birth spacing effect of contraception is redundant.

It is beyond the scope of this paper to provide a detailed evaluation of alternative postpartum contraceptive strategies in Zimbabwe but many of our results are relevant to any such debate. Our finding that 59 percent of recent births in Zimbabwe were followed by an overlap between contraceptive use and postpartum amenorrhoea and that the median duration of this overlap is 12 months (assuming no contraceptive discontinuation before menses resume) confirms that double protection is both widespread and prolonged. The Bellagio Consensus Statements states:

Where there are problems with family planning availability, acceptability, or continuation (especially during breastfeeding), the use of the natural infertility of breastfeeding followed by the use of another family planning method, rather than the simultaneous employment of both, may serve to maximize the interbirth interval. (Kennedy et al., 1989).

Our analyses show that nearly 80 percent of mothers use a contraceptive method within two years of a birth which suggests that family planning is widely available and acceptable in Zimbabwe. Further, contraceptive discontinuation is very low in Zimbabwe compared to other countries (Sambisa, 1996) and our results indicate that 58 percent of mothers are still using a contraceptive method two years after initiating their first postpartum method. This finding suggests that there are also relatively few problems with contraceptive continuation. Therefore, it is not clear that birth interval length in Zimbabwe would benefit substantially from the use of the natural fertility associated with breastfeeding followed by use of another method rather than the simultaneous use of both that now occurs.

Even if contraceptive continuation is high, double protection implies that, assuming continuation rates do not decrease with later contraceptive initiation, women who start using later in the postpartum period will experience longer birth intervals than women who initiate use earlier (Winikoff and Mensch, 1991). However, our results suggest that contraceptive continuation in Zimbabwe is higher among women who initiated use in the first three months postpartum than among women who initiated use later. Under these circumstances, the implications of double protection for the length of birth intervals becomes less clear. The distribution of birth intervals in Zimbabwe is already favourable with only 12 percent of all recent non-first births born within two years of their preceding sibling (CSO and Macro International Inc., 1995) and it seems unlikely that significant increases in the length of birth intervals would be achieved by initiating contraceptive use later in the postpartum period. However, our analysis has not examined the effect of contraceptive use on birth intervals directly; further analysis of this issue would be useful.

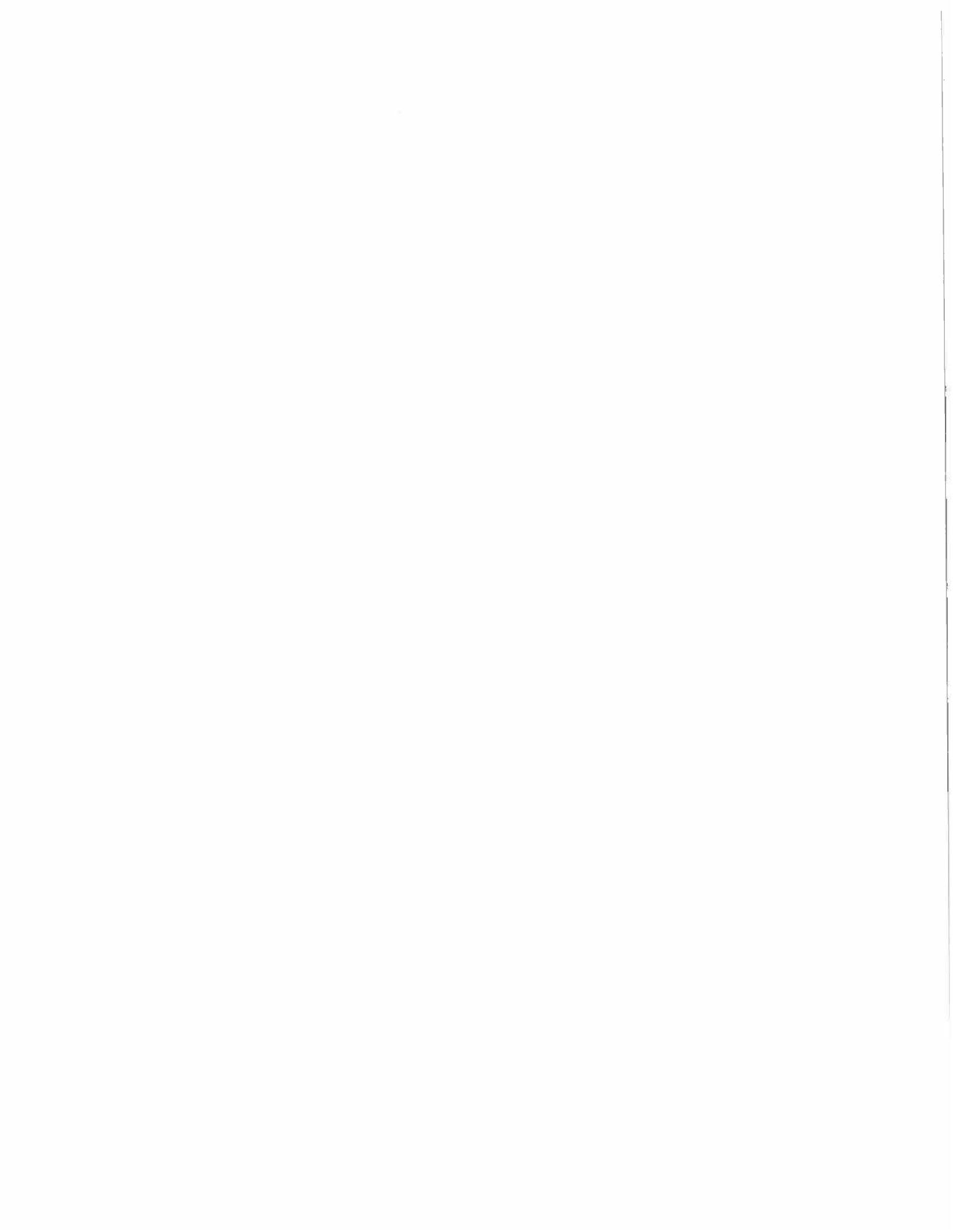
A second disadvantage of early postpartum contraceptive use from a programme perspective is that provision of a method requiring repeated supplies such as pills or injectables may not be cost-effective due to the long period of double protection (Knodel et al, 1985). However, potential cost savings achieved by encouraging later initiation of artificial contraception, for example through the use of LAM, have to be balanced against potential costs associated with reaching women at later postpartum durations, supporting LAM, and the risk of missing clients who would have been reached at the time of delivery. The two main assumptions behind traditional postpartum family planning programmes such as the one implemented in Zimbabwe are: that women are most receptive to contraceptive programmes at the time of childbirth; and they will not return for services and, therefore, must receive services before they leave the hospital (Winikoff and Mensch, 1991). Winikoff and Mensch (1991) question these assumptions on the grounds that there is little evidence to support them and propose alternative approaches to postpartum family planning service delivery. These approaches may or may not be appropriate in the context of Zimbabwe and would need to be evaluated both in terms of their cost-effectiveness and of how well they meet the needs of clients.

A second important finding of our study is that pill use is widespread during breastfeeding; 54 percent of recent births were followed by use of contraceptive pills during breastfeeding and the median duration of an overlap between pill use and breastfeeding is nearly 18 months. Combined oral contraceptives (those containing both estrogen and progestin) are known to affect both the volume and composition of breast milk and are not generally recommended for use during lactation, especially early in the postpartum period. However, the progestin-only pill (or mini pill) does not appear to affect lactation and is currently recommended as the most appropriate contraceptive pill for use by breastfeeding women (WHO task force on oral contraceptives, 1988, Hatcher et al., 1990). Current policy in Zimbabwe follows these guidelines by providing progestin-only pills to postpartum women. The data collected in the ZDHS calendar does not distinguish between combined oral contraceptives and progestin-only oral contraceptives but 90 percent of breastfeeding pill users at the time of the survey were using either Ovette or Micronor both of which are progestin-only pills

(CSO and Macro International Inc., 1995). Combined oral contraceptives typically induce bleeding about three weeks after initiation. Our analysis shows that initiation of pill use is not strongly associated with resumption of menstruation, except in a minority of women. This suggests that the majority of mothers who initiate use early in the postpartum period are using progestin-only pills, consistent with current medical guidelines and ZNFPC/MOHCW policy.

Contrary to previous studies in other countries, we found no evidence of a negative association between contraceptive use and either breastfeeding or postpartum amenorrhoea. However, mothers who used contraceptives after a birth resumed sexual relations earlier than mothers who had not initiated use or become pregnant by the end of the observation period. This finding supports the theory that women substitute contraceptive use for postpartum abstinence but firm conclusions on this theory cannot be drawn from this analysis. Further analysis could be conducted to investigate this issue more thoroughly.

The purpose of this analysis has not been to argue for or against different approaches to postpartum family planning in Zimbabwe. Rather, our aim has been to describe current postpartum contraceptive behaviour and its relationship with breastfeeding, postpartum amenorrhoea, and postpartum abstinence. This analysis will be of interest to those working in family planning in Zimbabwe and will inform any future debate on postpartum family planning policy. Our analysis has been primarily descriptive and is by no means exhaustive. We hope it will serve as a starting point for further analyses of the issues raised.



References

- Adamchak, Donald J. and Michael T. Mbizvo. 1990. The relationship between fertility and contraceptive prevalence in Zimbabwe. *International Family Planning Perspectives*. 16(3): 103-106.
- Becker, Stan and Saifuddin, Ahmed. 1994. The interaction of breastfeeding and contraception in Peru. Paper presented at the annual meeting of Population Association of America, May, Miami.
- Boohene, E. And T.E. Dow Jr. 1987. Contraceptive prevalence and family planning program effort in Zimbabwe. *International Family Planning Perspectives* 13(1): 1-7.
- Caldwell, John C., I.O. Orubuloye, and Pat Caldwell. 1992. Fertility decline in Africa: A new type of transition? *Population and Development Review* 18(2):211-242.
- Central Statistical Office (CSO) [Zimbabwe] and Institute for Resource Development/Macro Systems, Inc. (IRD). 1989. *Zimbabwe Demographic and Health Survey 1988*. Columbia, Maryland: Central Statistical Office and IRD/Macro Systems, Inc.
- Central Statistical Office (CSO) [Zimbabwe] and Macro International Inc. 1995. *Zimbabwe Demographic and Health Survey 1994*. Calverton, Maryland: Central Statistical Office and Macro International Inc.
- Curtis, Siân L. and Charles R. Hammerslough. 1995. *Model further analysis plan: Contraceptive use dynamics*. Calverton, Maryland: Macro International Inc.
- Freedman, Ronald and Ann K. Blanc. 1991. Fertility transition: An update. In *Proceedings of the Demographic and Health Surveys World Conference, Washington D.C., 1991 Vol. I:5-24*. Columbia, Maryland: IRD/Macro International Inc.
- Goldman, Noreen, Lorenzo Moreno, and Charles F. Westoff. 1989. Collection of survey data on contraception: An evaluation of an experiment in Peru. *Studies in Family Planning* 20(3):147-157.
- Hatcher, Robert A., Felicia Guest, Felicia Stewart, James Trussell, Deborah Kowal, Felicia Guest, Gary K. Stewart, and Willard Cates. 1990. *Contraceptive Technology 1990-92. 15th Revised Edition*. New York: Irvington Publishers, Inc.
- Jain, A.K. and John Bongaarts. 1981. Breastfeeding: patterns, correlates, and fertility effects. *Studies in Family Planning* 12(3):79-99.
- Kennedy, Kathy I., Robert Rivera, and Alan S. McNeilly. 1989. Consensus statement on the use of breastfeeding as a family planning method. *Contraception* 39(5):477-496.
- Kennedy, Kathy I., Robert Rivera, Alan S. McNeilly, Nancy E. Williamson, James Shelton, Paul F.A. van Look, Anna Glasier, James B. Brown, Barbara Gross, Anna M. Flynn, D. Malcolm Potts, V. Short, Soledad Diaz. 1991. Rejoinder to Trussell and Santow. *Health Transition Review* 1(1):107-110.
- Knodel, John, Peerasit Kamnuansilpa, and Apichat Chamrathirong. 1985. Infant feeding practices, postpartum amenorrhea, and contraceptive use in Thailand. *Studies in Family Planning* 16(6):302-311.

- Laukaran, Virginia Hight, Shea O. Rutstein, Miriam H. Labbok, and Elisa Ballard. 1994. Contraceptive use during lactational amenorrhea: Estimates of double coverage among postpartum women using DHS I and II data. Paper presented at the annual meeting of the Population Association of America, May, Miami.
- Laukaran, Virginia Hight and Beverly Winikoff. 1985. Contraceptive use, amenorrhea, and breastfeeding in postpartum women. *Studies in Family Planning* 16(6):293-301.
- Millman, Sara. 1985. Breastfeeding and contraception: Why the inverse association? *Studies in Family Planning* 16(2):61-74.
- Mhloyi, M. 1987. The proximate determinants and their socio-cultural determinants: The case of two rural settings in Zimbabwe. In: *The cultural roots of African fertility regimes*, proceedings of the Ife conference, February 25-March 1, 1987, sponsored by the Department of Demography and Social Statistics, Obafemi Wolowo University (formerly University of Ife), and the Population Studies Center, University of Pennsylvania. Philadelphia, Pennsylvania, University of Pennsylvania, Population Studies Center:125-49
- Namboodiri, Krishnan and C.M. Suchindran. 1987. *Life Table Techniques and Their Applications*. Orlando, Florida: Academic Press.
- Pebley, Anne R., Howard I. Goldberg, and Jane Menken. 1985. Contraceptive use during lactation in developing countries. *Studies in Family Planning* 16(1):40-51.
- Sambisa, William. 1996. *Contraceptive Use Dynamics in Zimbabwe: Discontinuation, Switching, and Failure*. Zimbabwe Further Analysis. Calverton, Maryland: Macro International Inc.
- United Nations Children's Fund (UNICEF) and World Health Organization (WHO). 1993. *Breastfeeding Management and Promotion in a Baby Friendly Hospital: An 18 Hour Course for Maternity Staff*. New York: UNICEF, Nutrition Cluster.
- Winikoff, Beverly and Barbara Mensch. 1991. Rethinking postpartum family planning. *Studies in Family Planning* 22(5):294-307.
- World Health Organization (WHO) Task Force on Oral Contraceptives. 1988. Effects of hormonal contraceptives on breast milk composition and infant growth. *Studies in Family Planning* 19(6):361-369.
- Zimbabwe Infant Nutrition Network (ZINN). 1992. *Violations of the International Code of Marketing Breastmilk Substitutes with Emphasis on Breastmilk Practices in Health Services in Zimbabwe*. Zimbabwe: ZINN.
- Zimbabwe National Family Planning Council (ZNFPC). 1995. *Clinical Procedures Manual*. Zimbabwe: ZNFPC.

Appendix A. Monthly Calendar of Events in the 1994 ZDHS

INSTRUCTIONS: ONLY ONE CODE SHOULD APPEAR IN ANY BOX. FOR COLUMNS 1, 3, AND 4 ALL MONTHS SHOULD BE FILLED IN.

INFORMATION TO BE CODED FOR EACH COLUMN

COL.1: Births, Pregnancies, Contraceptive Use

- B BIRTHS
- P PREGNANCIES
- T TERMINATIONS

- 0 NO METHOD
- 1 PILL
- 2 IUD
- 3 INJECTIONS
- 4 IMPLANTS
- 5 DIAPHRAGM/FOAM/JELLY
- 6 CONDOM
- 7 FEMALE STERILIZATION
- 8 MALE STERILIZATION
- 9 SAFE PERIOD
- A WITHDRAWAL
- X OTHER _____

(SPECIFY)

COL.2: Discontinuation of Contraceptive Use

- 0 INFREQUENT SEX/HUSBAND AWAY
- 1 BECAME PREGNANT WHILE USING
- 2 WANTED TO BECOME PREGNANT
- 3 HUSBAND DISAPPROVED
- 4 WANTED MORE EFFECTIVE METHOD
- 5 HEALTH CONCERNS
- 6 SIDE EFFECTS
- 7 LACK OF ACCESS/TOO FAR
- 8 COST TOO MUCH
- 9 INCONVENIENT TO USE
- F FATALISTIC
- A DIFFICULT TO GET PREGNANT/MENOPAUSE
- D MARITAL DISSOLUTION/SEPARATION
- X OTHER _____

(SPECIFY)

Z DON'T KNOW

COL.3: Marriage/Union

- X IN UNION (MARRIED)
- 0 NOT IN UNION

COL.4: Moves and Types of Communities

- X CHANGE OF COMMUNITY
- 1 MAIN TOWN
- 2 OTHER URBAN AREA
- 3 RURAL AREA

		1	2	3	4		
12 DEC	01					01 DEC	
11 NOV	02					02 NOV	
10 OCT	03					03 OCT	
09 SEP	04					04 SEP	
1 08 AUG	05					05 AUG 1	
9 07 JUL	06					06 JUL 9	
9 06 JUN	07					07 JUN 9	
4 05 MAY	08					08 MAY 4	
04 APR	09					09 APR	
03 MAR	10					10 MAR	
02 FEB	11					11 FEB	
01 JAN	12					12 JAN	

		1	2	3	4		
12 DEC	13					13 DEC	
11 NOV	14					14 NOV	
10 OCT	15					15 OCT	
09 SEP	16					16 SEP	
1 08 AUG	17					17 AUG 1	
9 07 JUL	18					18 JUL 9	
9 06 JUN	19					19 JUN 9	
3 05 MAY	20					20 MAY 3	
04 APR	21					21 APR	
03 MAR	22					22 MAR	
02 FEB	23					23 FEB	
01 JAN	24					24 JAN	

		1	2	3	4		
12 DEC	25					25 DEC	
11 NOV	26					26 NOV	
10 OCT	27					27 OCT	
09 SEP	28					28 SEP	
1 08 AUG	29					29 AUG 1	
9 07 JUL	30					30 JUL 9	
9 06 JUN	31					31 JUN 9	
2 05 MAY	32					32 MAY 2	
04 APR	33					33 APR	
03 MAR	34					34 MAR	
02 FEB	35					35 FEB	
01 JAN	36					36 JAN	

		1	2	3	4		
12 DEC	37					37 DEC	
11 NOV	38					38 NOV	
10 OCT	39					39 OCT	
09 SEP	40					40 SEP	
1 08 AUG	41					41 AUG 1	
9 07 JUL	42					42 JUL 9	
9 06 JUN	43					43 JUN 9	
1 05 MAY	44					44 MAY 1	
04 APR	45					45 APR	
03 MAR	46					46 MAR	
02 FEB	47					47 FEB	
01 JAN	48					48 JAN	

		1	2	3	4		
12 DEC	49					49 DEC	
11 NOV	50					50 NOV	
10 OCT	51					51 OCT	
09 SEP	52					52 SEP	
1 08 AUG	53					53 AUG 1	
9 07 JUL	54					54 JUL 9	
9 06 JUN	55					55 JUN 9	
0 05 MAY	56					56 MAY 0	
04 APR	57					57 APR	
03 MAR	58					58 MAR	
02 FEB	59					59 FEB	
01 JAN	60					60 JAN	

		1	2	3	4		
12 DEC	61					61 DEC	
11 NOV	62					62 NOV	
10 OCT	63					63 OCT	
09 SEP	64					64 SEP	
1 08 AUG	65					65 AUG 1	
9 07 JUL	66					66 JUL 9	
8 06 JUN	67					67 JUN 8	
9 05 MAY	68					68 MAY 9	
04 APR	69					69 APR	
03 MAR	70					70 MAR	
02 FEB	71					71 FEB	
01 JAN	72					72 JAN	