OCCASIONAL PAPERS 4

Demographic and Health Surveys

An Assessment of the Quality of Data on Age at First Union, First Birth, and First Sexual Intercourse for Phase II of the Demographic and Health Surveys Program

MACRO INTERNATIONAL INC.

The Demographic and Health Surveys (DHS) is a 13-year project to assist government and private agencies in developing countries to conduct national sample surveys on population and maternal and child health. Funded primarily by the United States Agency for International Development (USAID), DHS is administered by Macro International Inc. in Calverton, Maryland.

The main objectives of the DHS program are to: (1) promote widespread dissemination and utilization of DHS data among policymakers, (2) expand the international population and health database, (3) advance survey methodology, and (4) develop in participating countries the skills and resources necessary to conduct high-quality demographic and health surveys.

For information about the Demographic and Health Surveys program, write to DHS, Macro International Inc., 11785 Beltsville Drive, Calverton, MD 20705-3119, U.S.A. (Telephone 301-572-0200; Fax 301-572-0999).

AN ASSESSMENT OF THE QUALITY OF DATA ON AGE AT FIRST UNION, FIRST BIRTH, AND FIRST SEXUAL INTERCOURSE FOR PHASE II OF THE DEMOGRAPHIC AND HEALTH SURVEYS PROGRAM

Anastasia J. Gage

Macro International Inc.
Calverton, Maryland

June 1995

The recommended citation for this publication is:

Gage, Anastasia J. 1995. *An Assessment of the Quality of Data on Age at First Union, First Birth, and First Sexual Intercourse for Phase II of the Demographic and Health Surveys Program.* Occasional Papers No. 4. Calverton, Maryland: Macro International Inc.

Contents

Tables

Figures

Acknowledgments

I am grateful for the many helpful comments and suggestions provided by Fred Arnold, Ann Blanc, Trevor Croft, Gora Mboup, Shea Rutstein, Tulshi Saha, and Jerry Sullivan at Macro International Inc., and Etienne van de Walle at the University of Pennsylvania. Andrea Piani, also at Macro, provided programming assistance.

Chapter 1

Introduction

The purpose of this report is to evaluate the date of first union and first birth, and age at first sexual intercourse for data that were collected during the second phase of the Demographic and Health Surveys (DHS) program and for which individual recode files were available as of April 1994. A similar analysis was undertaken earlier by Blanc and Rutenberg (1990), using data collected in the first phase of the DHS program. Data for 21 DHS-II surveys are evaluated in this report—11 from sub-Saharan Africa, 5 from North Africa/ Asia, and 5 from Latin America. In addition, four DHS-I surveys (Bolivia, Egypt, Kenya, and Sudan), for which standard recode files were not available as of mid-1989, and the Kenya DHS-III survey were included for comparative purposes. In most DHS surveys, the individual questionnaire is administered to all women age 15-49 regardless of marital status, but in six of the surveys evaluated in this report (Egypt DHS-I, Egypt DHS-II, Indonesia, Jordan, Pakistan, and Sudan) the sample is restricted to ever-married women. Furthermore, for all the surveys evaluated in this report except Morocco and Senegal the analysis is based on weighted data. The analysis is also based on individual country data files, with the exception of the DHS-I surveys and Kenya DHS-III which are standard recode files.

Information on the timing of first marriage, first intercourse, and first birth is crucial for determining women's exposure to the risk of conception and the onset of the childbearing years. The conventional marker of the beginning of exposure to the risk of pregnancy is the date of first union. However, in some societies, sexual activity is not confined to marriage and women may bear children before the recognized date of first union (see for example, Katjiuanjo et al., 1993). In such settings, the age at first sexual intercourse and date of first birth may be more appropriate indicators of the beginning of sexual exposure than the date of first union. The same is true in settings where marriages are arranged in early childhood and a certain period including months or even years may elapse before the marriage is consummated (see for example, Konaté et al., 1994).

Various sources of error can affect the data on the timing of first union, first birth, and first intercourse. In societies where vital registration is uncommon, individuals may not have precise knowledge of dates. This situation, compounded by low levels of education, may lead to erroneous reports of the dates of first marriage and first birth. Biases in the timing of first marriage, first birth, and first sexual intercourse may also result from omissions—of early unions of short duration (in the case of first marriage and first sexual intercourse) or of children who died in early infancy (in the case of first birth). In addition, individuals may have problems recalling events that occurred in the distant past. The misreporting of the dates of first marriage and first birth and the age at first sexual intercourse may also reflect errors in the reporting of the respondent's age; the magnitude of the bias will depend on the extent to which the timing of these events are estimated independently of the age of the respondent (Rutstein and Bicego, 1990).

Errors in the timing of first union, first birth and first intercourse can affect estimates of fertility based on total exposure time and the age at which women are first exposed to pregnancy—all basic demographic measures. The misreporting of the date of first (or later) births may also lead to spurious trends in fertility. For example, a common type of error in demographic data from developing countries is a tendency for older respondents to report early events as occurring closer to the survey date than they actually occurred (Blanc and Rutenberg, 1990). Forward displacement of early births in combination with accurate reports of recent births may give rise to incorrect fertility estimates which show increasing fertility in earlier periods and declining fertility in recent periods (Goldman, 1985).

Two of the major problems in DHS surveys and other large-scale retrospective surveys—incomplete reporting of information and inconsistent responses—are addressed during the editing process. In general, DHS data files are machine edited in three distinct phases: data entry, secondary editing, and imputation. During data entry, the consistency of the data is checked by examining the skip patterns through the questionnaire and the valid range of values for each variable. At the secondary editing stage, the internal consistency of the data is examined and special codes (for example, 97 or 997) may be assigned to indicate inconsistent data. In addition, other information found in the questionnaire may be used to deduce correct responses. At the imputation stage, partial or incomplete dates of events may be imputed from known or related information (Croft, 1991). Imputation of dates pertains to the following events: date of birth of the respondent, date of first union, date of birth of the child, date of conception of current pregnancy, and date of sterilization of the respondent or her partner.

At the first stage of imputation, a logical range of possible values is constructed for the date of each event. Then, partial information is used to set up constraints on the logical range of the event. For example, the age at first union may be treated as a constraint on the date of first union. Additional constraints may also be specified. For example, if the date of birth of the first child is completely unspecified, the age at first intercourse may be used to constrain the date of birth of the first child. After all constraints have been applied, a date is randomly imputed from within the final logical range. These procedures have been described in detail by Croft (1991).

There were some changes in the editing and imputation procedures in the DHS-II surveys compared to the DHS-I surveys. First, in DHS-II, a secondary data file was created from the original data when the information was found to be inconsistent. For each date variable, a flag indicates whether or not the information was imputed and the type of imputation that was made. Second, the date of first union was included in the event table as a constraint on the date of first birth. Although this procedure may eliminate premarital births that are imputed in the data, it does not affect the number of births that were originally reported as having occurred before the first union. In countries where the levels of completeness of date reporting were low, and the actual year of birth was unknown, the imputation process was changed in order to control for the interviewer miscalculating the child's year of birth from the child's age. In DHS-II, if the month of birth of the child is unknown and the age of the child plus the reported year of birth add up to the year of interview, the reported year of birth is ignored and a new year of birth is imputed. This procedure is usually used only in countries that implement the DHS Model "B" Questionnaire.[1]

In the following sections, the quality of the data on timing of first union and first birth is evaluated by examining (1) the completeness of information on the date of the event, (2) several types of date misreporting, including age heaping and (3) internal checks of consistency. Where possible, DHS-II data are compared with data from the WFS and DHS-I surveys. The evaluation of the age at first sexual intercourse is largely based on checks of internal consistency because this information has rarely been collected in other surveys. Table 1.1 shows the surveys included in the data quality assessment and their respective dates of fieldwork and sample size.

[1] Note that the procedures discussed are the general principles of imputation and that there may be slight differences across countries.

Table 1.1 Surveys included in the assessment of data quality

Country	Date of fieldwork	Sample size
SUB-SAHARAN AFRICA		
Burkina Faso	Dec-Mar 1992/93	6354
Cameroon	Apr-Sep 1991	3871
Kenya[1]	Dec-May 1988/89	7150
Kenya[2]	Feb-Aug 1993	7540
Madagascar	May-Nov 1992	6260
Malawi	Sep-Nov 1992	4849
Namibia	Jul-Nov 1992	5421
Niger	Mar-Jun 1992	6503
Nigeria	Apr-Oct 1990	8781
Rwanda	Jun-Oct 1992	6551
Senegal	Nov-Aug 1992/93	6310
Sudan[1]	Nov-May 1989/90	5860
Tanzania	Oct-Mar 1991/92	9238
Zambia	Jan-May 1992	7060
NORTH AFRICA/ ASIA		
Egypt[1]	Oct-Jan 1988/89	8911
Egypt	Nov-Dec 1992	9864
Morocco	Jan-Apr 1992	9256
Indonesia	May-Jul 1991	22909
Jordan	Oct-Dec 1990	6461
Pakistan	Dec-May 1990/91	6611
LATIN AMERICA/ CARIBBEAN		
Bolivia[1]	Feb-Jul 1989	7923
Brazil (NE)	Sep-Dec 1991	6222
Colombia	May-Aug 1990	8644
Dominican Rep	Jul-Nov 1991	7320
Paraguay	May-Aug 1990	5827
Peru	Oct-Mar 1991/92	15882

[1]DHS-I survey
[2]DHS-III survey

Chapter 2

Date of First Union

In the DHS program, unions are generally defined to include both formal marriages and consensual (living together) arrangements. In the DHS-II model questionnaire, women were first asked whether they had ever been married or lived with a man. Those who reported that they had ever been in union were then asked about their current marital status. In most surveys, the date of first marriage was defined as the month and year the respondent started living with her first husband/partner. In Egypt, Senegal, and Burkina Faso, however, the date of first marriage was defined as the date the marriage was consummated. Women also were asked to provide their age at the time of the marital event. Thus, respondents in the DHS-II surveys were required to provide both the year and age at the time of the first union in contrast to the DHS-I surveys where age was asked only if the respondent could not report the year of first union. The data collection procedure for the date of first union in the DHS-II surveys therefore permit a check on the consistency of the date and age at first marriage. After collecting information on the timing of first marriage, interviewers were required to sum the respondent's year of birth (q103) and the age at first marriage to give the year of first marriage. If the calculated year of marriage was not within one year of the reported year of marriage, the interviewer was required to probe and correct the month and year of first marriage or the age at first marriage.

Several countries included modifications in the formulation or sequence of questions on marriage or in the categorizations used. In Niger, for instance, women were first asked if they were currently married, and if not, an attempt was made to ascertain whether or not they had ever been married. This was followed by a question on current marital status but women who were in consensual unions were not categorized separately from those who were married. In Cameroon and Indonesia the question on the age at first union preceded that on the date of first union. In Colombia, currently married women were classified according to the type of union contracted, that is, whether church, civil, both church and civil or consensual. In Northeast Brazil, the question "Have you ever been married or lived with a man?" was omitted entirely. Rather, women were first asked whether they were currently married, living together, single, widowed or separated. As in the DHS-II model questionnaire, no distinction was made between formerly married women who were divorced and those who were separated. Six of the countries included in this report—Egypt, Indonesia, Jordan, Morocco, Pakistan, and Sudan—included only ever-married women. In these countries, ever-married women were identified in the household schedule and detailed information on current marital status was collected in the individual questionnaire.

Although a flexible definition of marriage to include more or less stable unions and consensual arrangements was adopted in the DHS program, variations in the local definitions of marriage could lead to some degree of underreporting of unions in some social contexts. One possible source of error may be the failure to report certain unions either because they were of short duration, not socially recognized or were followed by more stable unions. Such omissions could give a distorted picture of time trends if they are age-related. In sub-Saharan Africa, additional problems in defining the date of first union might arise because of the progressive nature of the marriage process. It is possible that unions that were dissolved after the marriage process(es) was/were finalized are more likely to be reported retrospectively than those that broke up before the final stages of the marriage process. In cases where the couple lived together before establishing a formal union, the respondent possibly would report the date at which the formal ceremony took place rather than the date at which the couple started living together. Such differential reporting of unions across birth cohorts can create spurious trends in the age at first union.

Nuptiality data also might be affected by age and date misreporting and problems of recall. In some situations, women might not be able to report precisely their exact age or age at first marriage. At the lower

end of the age distribution, the nuptiality data could be affected by age transference that is selective of marital status. For example, a married woman age 14 at the time of the survey could be recorded as being age 15-19, whereas a single woman age 15-19 could be actually recorded as age less than 15, especially if she could not report her date of birth completely. The full extent of problems of union omission, date misreporting and recall is unknown but it is important to bear these factors in mind in the analysis of nuptiality data.

2.1 Completeness of Information

Table 2.1 presents the percent distribution of ever-married women by completeness of information on the date of first union by ten-year age group. The age group 15-19 is not shown separately because in a number of countries, less than half of the women in this age group have ever been married. The first column of Table 2.1 shows the proportion of women who reported the date of first union completely. Column two shows the percentage of cases for which a year was reported but a month imputed. The third column presents the percentage of women who reported only the age at first union and for whom both the year and month of first union were imputed based on that age. Column four indicates the percentage of cases that lacked all three pieces of information, that is month, year and age, and for which both the year and month were imputed based on the dates of surrounding events. If the year and/or month could not be provided, the information had to be imputed. Less than 2 percent of ever-married women provided no information on the timing of first union except in the Kenya DHS-I survey, Malawi, Namibia, and Tanzania. In Malawi, over a quarter of the respondents could not report the age at first union or the year in which the event occurred; in the three other countries, between 2 and 10 percent provided no information.

The proportion of women who provided both the month and year of first union ranges from less than 20 percent in Niger and Senegal to 93 percent in Morocco and Peru. In general, there is less complete reporting of the date of first union in sub-Saharan Africa than in Latin America, with countries in North Africa and Asia occupying an intermediate position. Within sub-Saharan Africa, there is great variation in the completeness of date reporting. The proportion of ever-married women who reported both the month and year of first union is less than 40 percent in Burkina Faso, Cameroon, Niger, Senegal, and Sudan but greater than 80 percent in Kenya, Namibia, and Zambia.

In a large number of countries, women who could not report the date of first union completely were more likely to report the year in which the event occurred than otherwise. Notable exceptions are Colombia, Kenya DHS-III, Senegal, and Sudan where women were more likely to report their age at first union than the year in which the event occurred if they could not provide both the month and year of the event. However, these countries differ considerably in their level of completeness of date reporting. Whereas only 14 percent of Senegalese women could report both the month and year of first marriage, in Colombia the degree of completeness of date reporting exceeds 90 percent. The pattern of date reporting in Cameroon and Niger is also worthy of note. In these two countries, women were more likely to report only the year of first union than to provide both the month and year of the event.

In every survey, younger women were more likely than older women to provide a complete report of their age at first union. In Indonesia, for example, the proportion of women who reported a complete date of first union declines from 76 percent among women age 20-29 to 42 percent among those age 40-49. In countries with relatively low degrees of completeness of reporting of the date of first union, such as Cameroon, Niger, Senegal, and Sudan, more than 75 percent of the dates of first union reported by women age 40-49 required some imputation. In contrast, in countries where more than 85 percent of women could report their date of first union completely at least 2 of 3 women age 40-49 could specify both the month and year of first union.

Table 2.1 Percent distribution of ever-married women by completeness of information on date of first union, by age group, Demographic and Health Surveys II

Country	Year and month reported, no imputation	Year reported, month imputed	Age reported, year and month imputed	No information, year and month imputed	Total	Number of women
SUB-SAHARAN AFRICA						
Burkina Faso						
20-29	30.1	54.9	13.9	1.1	100.0	2266
30-39	27.8	56.7	14.3	1.2	100.0	1689
40-49	23.4	55.8	18.8	2.0	100.0	932
Total	29.8	54.6	14.3	1.3	100.0	5499
Cameroon						
20-29	40.3	39.9	19.7	0.1	100.0	1217
30-39	29.3	47.6	22.8	0.3	100.0	956
40-49	16.0	56.4	27.2	0.3	100.0	572
Total	33.2	44.7	22.0	0.2	100.0	3151
Kenya[1]						
20-29	90.1	8.0	0.9	1.1	100.0	2092
30-39	79.8	15.0	2.7	2.5	100.0	1797
40-49	64.3	28.4	3.9	3.4	100.0	1098
Total	81.4	14.5	2.1	2.0	100.0	5289
Kenya[2]						
20-29	92.2	0.5	6.7	0.6	100.0	2150
30-39	86.5	0.7	11.4	1.4	100.0	1777
40-49	72.3	1.1	24.0	2.5	100.0	1049
Total	86.4	0.7	11.7	1.2	100.0	5260
Madagascar						
20-29	58.1	38.5	3.1	0.3	100.0	1758
30-39	48.7	47.6	3.3	0.5	100.0	1582
40-49	36.7	54.6	7.9	0.8	100.0	861
Total	50.8	44.7	4.0	0.4	100.0	4580
Malawi						
20-29	57.7	13.6	1.7	26.9	100.0	1610
30-39	52.0	15.5	2.4	30.1	100.0	1183
40-49	44.5	25.5	4.0	25.9	100.0	850
Total	53.8	16.2	2.3	27.7	100.0	4088
Namibia						
20-29	91.0	6.3	0.7	2.1	100.0	821
30-39	84.1	9.9	1.6	4.4	100.0	994
40-49	77.4	11.3	3.0	8.3	100.0	725
Total	84.8	8.9	1.6	4.6	100.0	2638
Niger						
20-29	17.4	60.8	21.4	0.4	100.0	2364
30-39	14.0	62.2	23.5	0.2	100.0	1718
40-49	11.6	62.1	25.8	0.5	100.0	932
Total	17.3	60.7	21.7	0.3	100.0	5822
Nigeria						
20-29	59.9	39.8	0.2	0.1	100.0	2849
30-39	53.6	45.8	0.5	0.2	100.0	2339
40-49	47.0	52.8	0.5	0.0	100.0	1457
Total	56.0	43.6	0.3	0.1	100.0	7268

Table 2.1—*cont*

Country	Year and month reported, no imputation	Year reported, month imputed	Age reported, year and month imputed	No information, year and month imputed	Total	Number of women
Rwanda						
20-29	84.5	14.7	0.6	0.1	100.0	1581
30-39	77.6	21.2	0.6	0.6	100.0	1719
40-49	65.6	32.6	1.4	0.6	100.0	1008
Total	77.6	21.2	0.8	0.4	100.0	4451
Senegal						
20-29	16.2	24.6	57.7	1.5	100.0	1748
30-39	12.7	25.2	61.3	0.9	100.0	1626
40-49	6.8	21.8	71.0	0.4	100.0	955
Total	13.8	24.4	60.2	1.7	100.0	4782
Sudan[1]						
20-29	49.2	25.5	24.4	0.9	100.0	2293
30-39	27.8	25.3	45.7	1.2	100.0	2017
40-49	13.8	24.8	60.2	1.2	100.0	1170
Total	36.1	24.9	37.9	1.0	100.0	5860
Tanzania						
20-29	68.2	25.4	1.1	5.4	100.0	2866
30-39	47.5	38.1	2.9	11.6	100.0	2093
40-49	32.5	44.5	2.9	20.0	100.0	1401
Total	55.7	32.4	2.1	9.8	100.0	6977
Zambia						
20-29	93.7	5.7	0.0	0.6	100.0	2247
30-39	88.8	10.1	0.0	1.1	100.0	1549
40-49	80.3	15.5	0.2	4.0	100.0	884
Total	89.9	8.8	0.0	1.3	100.0	5269
NORTH AFRICA/ ASIA						
Egypt[1]						
20-29	59.9	28.6	11.5	0.0	100.0	3086
30-39	47.4	35.5	17.1	0.0	100.0	3162
40-49	32.9	44.6	22.2	0.3	100.0	2242
Total	49.0	34.9	15.9	0.1	100.0	8911
Egypt						
20-29	85.6	14.3	0.1	0.1	100.0	3374
30-39	73.2	26.7	0.1	0.1	100.0	3547
40-49	62.7	37.0	0.2	0.1	100.0	2520
Total	75.8	24.0	0.1	0.1	100.0	9864
Morocco						
20-29	96.6	3.1	0.3	0.0	100.0	1725
30-39	92.3	7.3	0.4	0.0	100.0	2304
40-49	87.9	12.0	0.1	0.0	100.0	1410
Total	92.9	6.9	0.3	0.0	100.0	5710
Indonesia						
20-29	76.2	22.9	0.9	0.0	100.0	8345
30-39	58.9	39.5	1.7	0.0	100.0	7931
40-49	42.0	55.2	2.7	0.0	100.0	5390
Total	63.1	35.3	1.6	0.0	100.0	22909

Table 2.1—*cont*

Country	Year and month reported, no imputation	Year reported, month imputed	Age reported, year and month imputed	No information, year and month imputed	Total	Number of women
Pakistan						
20-29	66.4	29.5	3.8	0.6	100.0	2553
30-39	55.9	37.7	5.5	0.9	100.0	2168
40-49	47.5	47.3	5.0	0.1	100.0	1461
Total	59.3	35.6	4.5	0.6	100.0	6611
Jordan						
20-29	97.3	2.6	0.0	0.0	100.0	2386
30-39	89.6	10.0	0.4	0.0	100.0	2097
40-49	78.7	20.9	0.2	0.2	100.0	1621
Total	90.3	9.5	0.2	0.2	100.0	6461
LATIN AMERICA						
Bolivia[1]						
20-29	88.8	9.7	1.3	0.2	100.0	1860
30-39	79.6	16.1	3.4	0.8	100.0	2047
40-49	70.8	19.8	6.9	2.5	100.0	1340
Total	81.2	14.3	3.4	1.0	100.0	5488
Brazil (NE)						
20-29	95.6	4.1	0.1	0.2	100.0	1320
30-39	90.0	8.1	1.0	0.9	100.0	1399
40-49	89.0	10.0	0.1	0.9	100.0	1125
Total	92.0	7.0	0.4	0.3	100.0	4073
Colombia						
20-29	94.2	1.4	4.4	0.1	100.0	1962
30-39	90.9	1.7	7.4	0.2	100.0	1886
40-49	86.0	2.6	11.4	0.0	100.0	1309
Total	91.1	1.8	7.2	0.1	100.0	5391
Dominican Republic						
20-29	85.4	9.6	4.7	0.3	100.0	1943
30-39	76.6	16.6	6.2	0.6	100.0	1803
40-49	69.5	20.8	8.9	0.9	100.0	1029
Total	79.8	13.9	5.8	0.5	100.0	5168
Paraguay						
20-29	92.3	5.8	1.7	0.1	100.0	1346
30-39	88.3	9.7	1.9	0.2	100.0	1387
40-49	82.4	15.1	2.5	0.0	100.0	939
Total	88.7	9.3	1.9	0.1	100.0	3911
Peru						
20-29	96.4	3.5	0.1	0.0	100.0	3252
30-39	92.7	6.8	0.5	0.0	100.0	3605
40-49	88.1	11.0	0.9	0.0	100.0	2594
Total	93.0	8.8	0.4	0.0	100.0	9825

Note: The total refers to all women 15-49. Row totals may not add up to 100 due to rounding.
[1]DHS-I survey
[2]DHS-III survey

2.2 Heaping on First Union

Previous analysis of World Fertility Survey (WFS) and DHS data has shown that the distribution of respondents by the year and duration of first union may be affected by heaping (Blanc and Rutenberg, 1990; Saha and Mboup, 1992; Singh, 1985). Heaping may result from a preference for certain digits, notably 0 and 5, or from rounding errors, in the case where women may not know precisely their date of birth or first union. In Table 2.2, indices of heaping have been calculated for the year of first union and duration since first union in order to assess the magnitude of this type of error. The index of heaping for the year of first union is defined as:

$$\text{Index} = \sum_{i=1}^{5} \frac{x_i}{(x_{i-2}) + (x_{i-1}) + (x_i) + (x_{i+1}) + (x_{i+2})}$$

where $i_1 = 1965$, $i_2 = 1970$, $i_3 = 1975$, $i_4 = 1980$, $i_5 = 1985$ and x = the number of women married in year i. The index of heaping for duration since first union is identical to the above, except that $i_1 = 5$, $i_2 = 10$, $i_3 = 15$, $i_4 = 20$, $i_5 = 25$ and x_i = the number of women at duration i since first union. Indices of heaping of more than 1.05 indicate a significant degree of heaping.

All six Latin American countries have indices over 1.05 for heaping on year of first union ending in digits zero or five. In their evalulation of DHS data quality Blanc and Rutenberg (1990) observed that many of the countries in Latin America also exhibited a substantial degree of heaping on the year of first union, possibly because of the common occurrence of informal unions in that region. The authors suggest that respondents may not be able to report the precise starting date of such unions because of their relatively short-term nature and the lack of ceremony marking their beginnings. For the Latin America countries studied, there is less heaping on the duration since first union than on the year of the event.

Table 2.2 Indices of heaping on year of first union and on duration since first union ending in digits 0 or 5, Demographic and Health Surveys II

Country	Year of first union	Duration since first union
SUB-SAHARAN AFRICA		
Burkina Faso	1.00	1.00
Cameroon	1.15	1.12
Kenya[1]	1.02	1.07
Kenya[2]	1.04	0.92
Madagascar	1.04	1.02
Malawi	1.01	0.98
Namibia	1.10	1.07
Niger	1.03	1.08
Nigeria	1.39	1.31
Rwanda	0.97	1.00
Senegal	0.99	1.07
Sudan[1]	1.08	1.06
Zambia	1.00	0.97
Tanzania	1.02	0.97
NORTH AFRICA/ASIA		
Egypt[1]	1.05	1.06
Egypt	1.04	1.03
Morocco	1.13	0.98
Indonesia	1.08	1.06
Pakistan	1.21	1.23
Jordan	1.01	0.99
LATIN AMERICA		
Bolivia[1]	1.11	0.98
Brazil (NE)	1.12	1.07
Colombia	1.17	0.99
Dominican Republic	1.12	1.04
Paraguay	1.06	1.05
Peru	1.07	1.00

[1]DHS-I survey
[2]DHS-III survey

Surprisingly, there is less heaping on the year of first union than on the duration since first union for surveys conducted in sub-Saharan Africa, probably because of the relatively greater degree of imputation of the dates of first union in this region. The exception is Nigeria, which has indices of heaping of more than 1.30 for both the year of first union and duration since first union. It is to be expected that the two measures would be of similar magnitude since the Nigeria DHS was conducted in 1990. There is a substantial though

lesser degree of heaping on the year of first union in Cameroon, Namibia, and Sudan. In these countries and in the Kenya DHS-I survey and Senegal, there is also considerable heaping on the duration since first union.

Except for the Egypt DHS-II survey and Jordan, the four other surveys in North Africa and Asia show a substantial degree of heaping on calendar years of first marriage ending in digits 0 and 5. Heaping is most pronounced in Pakistan where the index of heaping is 1.21 for the year of first union and 1.23 for the duration since first union. Two other surveys—Indonesia and Egypt DHS-I—show a substantial degree of heaping on the duration since first union.

2.3 Trends in the Median Age at First Union

Age at first union is calculated as the difference between the respondent's date of birth and the date of her first union. Therefore, the variable reflects inaccuracies in both the date of birth of the respondent and the date of first union. In Table 2.3, the median age at first union is presented for the age groups 20-24 to 45-49. The median age at first union is expected to either remain constant across age groups or increase from

Table 2.3 Median age at first union, by age of the woman at the time of the survey, Demographic and Health Surveys II

	Age of woman at the time of the survey					
Country	20-24	25-29	30-34	35-39	40-44	45-49
SUB-SAHARAN AFRICA						
Burkina Faso	17.3	17.5	17.4	17.5	17.5	17.7
Cameroon	17.3	16.9	16.6	16.6	16.3	16.0
Kenya[1]	19.8	18.6	17.9	17.9	17.3	18.5
Kenya[2]	a	19.5	18.9	18.2	18.3	18.1
Madagascar	19.5	18.9	18.1	18.0	18.0	17.1
Malawi	17.7	17.7	17.2	17.9	18.1	18.4
Namibia	a	a	24.9	24.0	24.3	23.3
Niger	15.1	15.1	15.1	15.2	15.1	15.1
Nigeria	17.8	17.2	16.3	17.3	16.8	17.3
Rwanda	a	20.9	20.2	20.0	19.4	18.7
Senegal	18.2	16.8	16.2	16.1	15.8	15.8
Sudan[1]	a	20.5	18.1	16.4	15.8	16.3
Zambia	18.6	18.0	17.2	17.2	17.0	16.6
Tanzania	19.0	19.0	17.7	17.5	17.2	17.2
NORTH AFRICA/ASIA						
Egypt[1]	a	19.5	19.0	18.2	17.8	17.4
Egypt	a	19.9	19.3	19.3	18.9	18.3
Morocco	a	22.3	20.0	19.4	18.6	17.6
Indonesia	19.8	18.6	17.8	17.4	16.8	16.9
Pakistan	a	18.9	18.2	18.6	18.5	18.8
Jordan	a	21.2	19.7	18.8	18.9	18.9
LATIN AMERICA						
Bolivia[1]	a	20.0	20.1	20.6	20.7	20.3
Brazil (NE)	a	20.6	20.2	20.3	20.9	20.2
Colombia	a	21.5	20.8	21.5	20.9	20.1
Dominican Republic	a	19.8	19.4	18.8	18.4	17.7
Paraguay	a	20.8	20.8	21.7	20.6	21.0
Peru	a	21.8	21.2	21.0	20.6	20.7

[a]Fewer than half of the women in the age group have ever been married by age 20.
[1]DHS-I survey
[2]DHS-III survey

the older to the younger age groups. An increase in the median age at first union with increasing age could suggest either the omission of early unions by older women due to problems of recall or errors in dating the first union or the respondent's birth.

In most countries, trends in the median age at first union are according to expectations. However, certain irregularities are noted. In Nigeria, the median age at first union is almost one year lower for the age group 30-34 than for the adjacent age groups. Similarly, in Paraguay, the 35-39 age group shows a median age at first union that is almost one year higher than the medians for the adjacent age groups. These patterns are unexpected and possibly reflect reporting errors.

Errors in the dating of first union can also be discerned by comparing the median age at first union for the two oldest cohorts (40-44 and 45-49). In three surveys (Kenya DHS-I, Nigeria, and Sudan), the median age at first union is at least half a year higher for women age 45-49 than for those age 40-44. This pattern probably reflects some omission of early unions or a tendency toward forward displacement of the date of the first union by the oldest cohort.

For countries that also had either a WFS or a DHS-I survey, trends in the age at first union have been further examined by comparing the proportion of women first marrying before age 20 for the same five-year birth cohorts. The results of this exercise are presented in Figure 2.1.

In Indonesia, the DHS-II data were restricted to the 20 provinces that were canvassed under DHS-I. Although the result is the exclusion of seven provinces from DHS-II, it gives a more exact comparison. For each birth cohort, differences in the propensity of teenage marriage between the surveys may arise from the relative quality of reporting of the respondent's date of birth and first union or the relative degree of omission of early unions.

In many of the countries, trends across cohorts generally are similar. Some countries such as Egypt, Peru, Indonesia, and Rwanda show remarkable agreement between DHS-II and previous surveys in the percentage of women first marrying before age 20. In general, discrepancies are observed for the oldest or youngest cohort. In Morocco, for example, each of the three surveys shows a declining trend in the likelihood of teenage marriage. However, for the three five-year cohorts born in the period 1940-50, the DHS-II survey records a substantially lower proportion marrying before age 20 than the WFS. In Nigeria, there is a substantial disparity in the propensity of teenage marriage between DHS-II and the WFS. There appears to have been some omission of early unions or forward displacement of the date of first union among older cohorts in both surveys. This may partly account for the lower propensity of teenage marriage among older Nigerian women in the DHS than in the WFS.

The trend in the propensity of teenage marriage in Cameroon is also of interest. Although the fit between the WFS and DHS is acceptable, the two surveys show contrasting trends in the propensity of teenage marriage. The DHS also shows a larger decline in the proportion marrying as teenagers in the three oldest cohorts than in the youngest cohorts. These patterns probably reflect the greater likelihood of date misreporting among older than younger cohorts in retrospective surveys.

Figure 2.1
Percentage of women first marrying before age 20 by five-year birth cohort

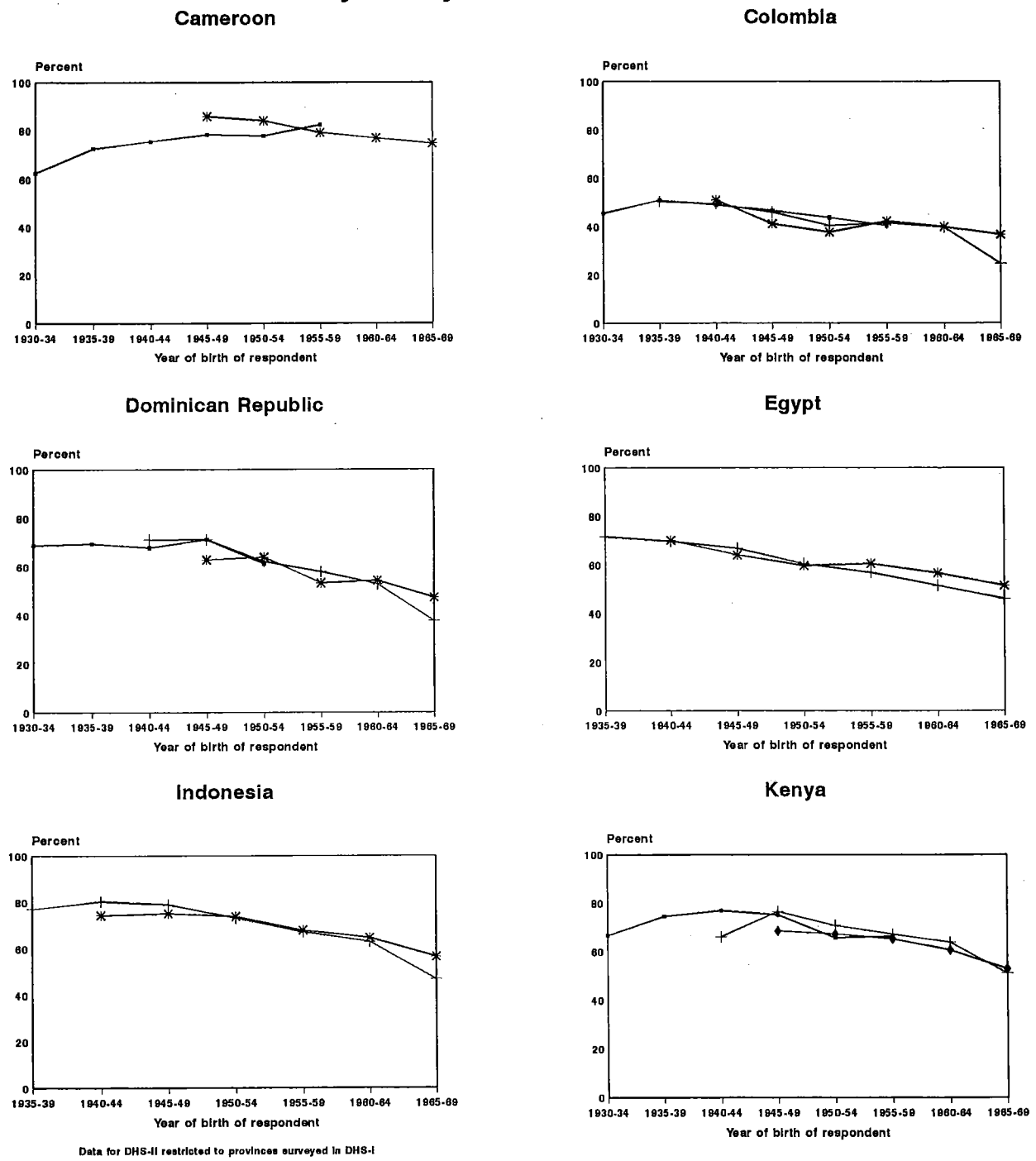
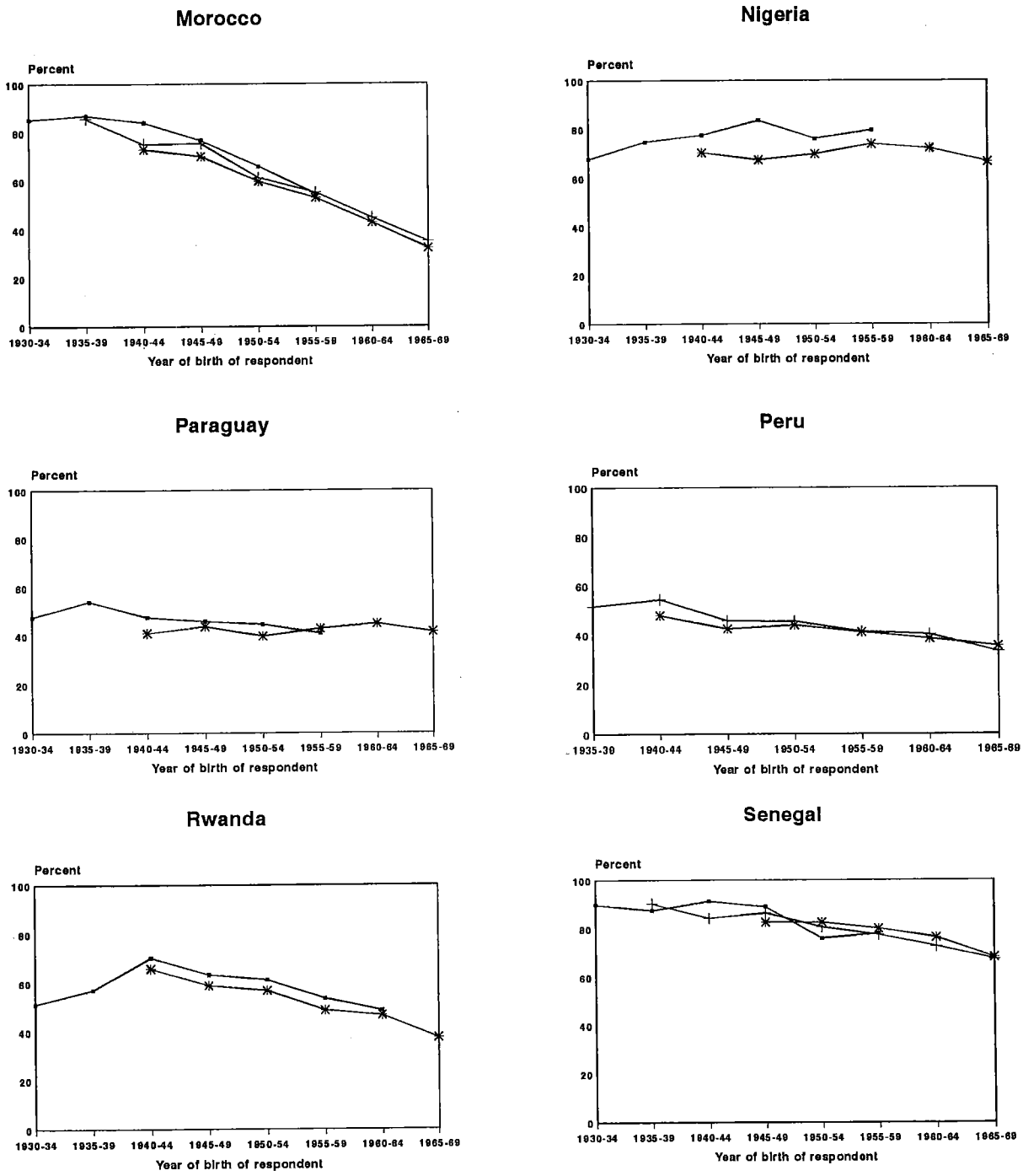


Figure 2.1- cont.
Percentage of women first marrying before age 20 by five-year birth cohort



2.4 Proportion of Women Ever-married at Ages 15-19 and 20-24

The proportion of women ever-married at ages 15-19 and 20-24 at exactly 0, 5, 10 and 15 years prior to the survey can be compared in Table 2.4. These age groups were chosen because they are most likely to be affected by omission of early unions or misreporting of age at first union (Singh, 1985). The proportion of women ever-married at the time of the survey is derived directly from the current marital status of women age 15-19 and 20-24. For other intervals, the proportion has been calculated by comparing the date of first union with the date that represents the exact interval prior to the survey. For example, if x represents the exact number of years prior to the survey, a woman was classified as not being ever-married at x if her marriage started after x. It is expected that if the age at first marriage has been stable and there has been no differential omission of unions by birth cohort, a tendency to push the dates of marriage further back in time than they really occurred would be reflected in higher proportions of women ever-married at intervals furthest

Table 2.4 Percentage of women ever-married at ages 15-19 and 20-24 for selected years prior to the survey, Demographic and Health Surveys II

Country	Percentage ever married among women 15-49 for selected years before the survey				Percentage ever married among women 20-24 for selected years before the survey			
	0	5	10	15	0	5	10	15
SUB-SAHARAN AFRICA								
Burkina Faso	44.6	47.7	52.3	50.7	93.6	94.0	94.1	94.5
Cameroon	44.2	51.5	54.3	57.5	81.4	84.8	88.3	91.8
Kenya[1]	20.2	24.7	37.7	45.4	68.2	76.7	79.0	84.5
Kenya[2]	16.2	22.9	31.0	33.6	64.5	72.0	77.4	81.9
Madagascar	26.7	31.7	36.3	41.8	68.3	71.9	77.1	76.9
Malawi	41.1	48.0	47.4	50.7	90.0	89.4	88.9	87.2
Namibia	7.7	11.0	10.6	12.6	31.1	33.2	40.0	42.3
Niger	58.6	73.5	78.5	77.9	92.9	95.3	96.9	97.9
Nigeria	38.6	43.5	48.5	52.9	78.3	78.7	84.5	82.1
Rwanda	9.8	15.8	17.4	19.4	55.1	62.1	71.5	72.5
Senegal	29.5	42.0	52.3	57.5	67.9	79.4	86.1	89.4
Sudan[1]	15.9	22.2	29.3	39.5	45.8	55.6	68.3	79.3
Zambia	29.6	37.2	43.4	54.5	78.8	82.8	87.9	91.3
Tanzania	28.3	31.6	33.9	45.8	74.9	74.3	78.8	85.4
NORTH AFRICA/ASIA								
Egypt[1]	15.5	25.3	31.4	32.2	59.7	65.9	68.3	74.3
Egypt	13.9	26.0	34.0	36.2	56.6	70.8	73.5	74.2
Indonesia	19.8	28.8	37.7	43.3	64.4	75.2	79.7	81.9
Jordan	10.6	14.9	22.8	30.1	45.2	55.9	89.6	92.8
Morocco	12.5	17.2	21.5	29.0	43.9	49.9	65.7	70.7
Pakistan	24.9	28.8	36.1	39.9	60.6	70.0	75.7	74.6
LATIN AMERICA								
Bolivia[1]	14.3	21.1	26.6	23.6	57.3	66.8	64.8	61.8
Brazil (NE)	15.9	24.2	27.1	27.3	50.0	62.6	65.3	64.9
Colombia	13.1	19.6	20.9	20.3	51.5	54.4	60.6	52.6
Dominican Republic	23.1	27.2	32.3	33.4	60.6	65.0	69.3	72.7
Paraguay	15.4	21.2	22.6	18.9	56.8	59.9	60.4	55.1
Peru	10.7	16.3	19.2	20.2	44.5	54.1	57.9	59.2

[1]DHS-I survey
[2]DHS-III survey

removed from the survey date. Alternatively, a tendency toward forward displacement of the date of first union would be manifested in a lower proportion of women ever-married at intervals further removed from the date of the survey. In general, the proportion ever-married is expected to decline or remain stable over time and the proportion ever-married at the time of the survey is expected to be consistent with trends observed for the previous intervals.

As expected, the proportion ever-married at age 15-19 shows a general decreasing trend from higher intervals toward the date of the survey. However, some discrepancies are observed. For example, the proportion of women ever-married at age 15-19 is slightly lower 15 years before the survey than at 10 years in Bolivia, Burkina Faso, Colombia, Niger, and Paraguay. There is a large absolute decline (of more than 7 percentage points) in the proportion ever-married at age 15-19 from the fifth year preceding the survey to the date of the survey in Brazil, Cameroon, Egypt, Indonesia, Niger, Senegal, and Zambia. In Egypt, Kenya, Indonesia, Pakistan, Senegal, and Sudan, large declines in the proportion ever-married at age 15-19 occur from the 10th year preceding the survey to the fifth. This pattern may be partly attributed to changes in marriage timing, but it may also arise from errors in the reporting of marital status or age. If married women overstate their ages and unmarried women understate their ages then the proportion ever-married would tend to be underestimated among younger women.

The proportion ever-married at age 20-24 also shows a generally declining trend from the distant to the recent past, according to expectations. Four of the six countries in North Africa and Asia, and three of the six Latin American countries show a difference of more than 7 percentage points in proportion of women ever-married at age 20-24 between the fifth year preceding the survey and the survey date. Within sub-Saharan Africa, this pattern is observed in Kenya and Senegal. There also are large declines in the proportion ever-married at age 20-24 from the tenth to the fifth year preceding the survey in Jordan, Morocco, Rwanda, and Sudan. In Jordan, for example, the percentage of women ever-married at age 20-24 is 90 percent for the tenth year preceding the survey compared to 56 percent for the fifth year preceding the survey. Although the percentage ever-married among women 20-24 has declined consistently over time in Jordan, some of the decline from the tenth to the fifth year preceding the survey may be partly due to reporting errors.

For many surveys in sub-Saharan Africa, the decline in the proportion married from intervals farthest removed from the survey to the time of the survey may not only reflect problems of recall and age misreporting (and, in a few cases, such as Sudan and to some extent Kenya, genuine trends in the age at first marriage), but also changes in the definition of marriage over time. In the African context, a union may be formalized over an extended period of several months or years, and the reported dates of first union may correspond to different stages of the formalization process for older and younger cohorts (Bledsoe, 1990; van de Walle, 1993). Younger women may be more likely to register their marriages than older women, and civil or Christian marriages may start out as customary marriages. Consequently, the reported dates of first marriage of younger women may reflect later stages of union formalization, whereas for older women, the reported dates of first union may refer to the earlier stages of the marriage process. In addition, the quality of reporting is related to educational attainment, which has increased over time in most countries. Although increases in education are associated with a decline in early marriage, a decline in the proportions married over time may be partly attributed to better reporting of dates by younger women. Hence, caution should be exercised in inferring trends from retrospective reports of the date of first union (see also van de Walle, 1993).

2.5 Summary

The evaluation of the completeness of reporting of the date of first union shows wide regional variations, with the most complete date reporting in Latin America and the least in countries of sub-Saharan Africa. In Burkina Faso, Cameroon, and Niger, in particular, much reliance should not be placed on the precision of the timing of first union because less than a third of ever-married women in these countries could

report both the month and year of first union. The indices of heaping reveal that more countries show heaping on the calendar year of first union than on the durations since first union ending in zero or five. This problem is most apparent in Latin America. Nigeria and Pakistan show the largest degree of heaping on both the year of first union and the duration since first union. A comparison of the proportion of women first marrying before age 20 in the DHS-II surveys with data from other sources generally shows close agreement, except in Nigeria, where the DHS-II survey is associated with a substantially lower propensity of teenage marriage than the WFS. In countries where the registration of marriages is fairly reliable and complete, the data are adequate for inferring trends. However, in many surveys conducted in sub-Saharan Africa, the pattern of bias in the reporting of the date at first union may exaggerate the increase in the age at first union over time.

Chapter 3

Date of First Birth

In the DHS surveys, information on the births that a woman had during her lifetime is collected through two procedures. First, the respondent is asked to report the number of boys and girls living with her, the number of boys and girls living elsewhere, and the number of boys and girls who have died. Second, a detailed birth history is collected listing the sex of each child, month and year of birth, survival status, age at last birthday or age at death, and whether the child is living with the mother or someone else. Questions are asked in such detail in order to minimize the possibility of omission, especially of births that occurred in the distant past or children who died at a very young age. The age of first birth is calculated by subtracting the respondent's date of birth from the date of birth of her first child. Thus, the accuracy of information on the age at first birth depends on the accuracy of the information of the respondent's birth date and the date of birth of her first child.

3.1 Completeness of Information

Table 3.1 shows the completeness of reporting of the date of first birth. The date of first birth was recorded most completely in Latin America where in all six surveys over 97 percent of births required no imputation. In North Africa/Asia, the completeness of information on the date of first birth ranges from 79 percent in Indonesia to 98 percent in Jordan. Similarly, the completeness of reporting of the date of first birth varies considerably in sub-Saharan Africa. Kenya, Namibia, and Zambia have levels of completeness comparable to those of countries in Latin America. In contrast, Burkina Faso, Cameroon, Niger, Senegal, and Sudan had substantial deficiencies in the reporting of the date of first birth. The lowest levels of completeness are found in Niger and Senegal where about 50 percent of first births required some imputation. When the date of first birth is incomplete, usually only the month of birth is missing, i.e., most of the cases include either the year of birth or the current age of the child or both pieces of information. Hence, in Niger for example, virtually all the cases included at least the year of first birth. The percentage of births with no information at all, either for the date of birth or the age of the oldest child, is highest in Sudan (about 2 percent).

The reporting of the date of first birth is less complete among older women than among younger women. This pattern probably reflects the difficulty of recalling births that occurred many years ago and the relatively low levels of education of the older respondents. The decrease in the completeness of reporting with age is large in Cameroon, Egypt, Senegal, Sudan, and Indonesia. In Senegal, for example, 33 percent of women 40-49 reported a complete date of first birth compared to 62 percent of those age 20-29. The date of first birth for older women, therefore, required more imputation than that for younger women. In the surveys conducted in sub-Saharan Africa, with the exception of Kenya DHS-I and DHS-II, Malawi, Namibia, Rwanda, and Zambia, more than 25 percent of first births to women age 40-49 required some imputation.

Table 3.1 Percent distribution of mothers by completeness of information on date of first birth, by age group, Demographic and Health Surveys II

Country	Year and month reported, no imputation	Year reported, month imputed	Age reported, year and month imputed	No information, year and month imputed	Total	Number of women
SUB-SAHARAN AFRICA						
Burkina Faso						
20-29	73.3	26.3	0.3	0.2	100.0	2101
30-39	60.8	38.7	0.3	0.2	100.0	1644
40-49	55.3	43.6	0.2	1.0	100.0	911
Total	67.0	32.4	0.3	0.3	100.0	4989
Cameroon						
20-29	77.3	22.4	0.0	0.2	100.0	1188
30-39	62.6	37.0	0.2	0.2	100.0	924
40-49	46.1	52.9	0.7	0.7	100.0	532
Total	68.1	31.5	0.1	0.3	100.0	2916
Kenya[1]						
20-29	99.1	0.5	0.3	0.2	100.0	2300
30-39	98.0	1.5	0.4	0.1	100.0	1831
40-49	95.6	3.7	0.3	0.0	100.0	1090
Total	98.1	1.4	0.3	0.2	100.0	5541
Kenya[2]						
20-29	98.6	1.4	0.0	0.0	100.0	2305
30-39	96.2	3.6	0.1	0.1	100.0	1788
40-49	87.9	11.2	0.3	0.6	100.0	1049
Total	95.8	1.4	0.3	0.2	100.0	5541
Madagascar						
20-29	86.5	12.7	0.5	0.3	100.0	1786
30-39	76.3	20.9	1.2	1.6	100.0	1551
40-49	67.7	25.7	2.3	4.3	100.0	823
Total	79.7	17.7	1.0	1.5	100.0	4510
Malawi						
20-29	97.1	2.9	0.0	0.0	100.0	1491
30-39	94.2	5.8	0.0	0.0	100.0	1161
40-49	90.7	9.1	0.0	0.2	100.0	840
Total	95.0	5.0	0.0	0.0	100.0	3787
Namibia						
20-29	99.0	0.8	0.0	0.2	100.0	1433
30-39	97.6	2.1	0.0	0.3	100.0	1212
40-49	95.8	3.4	0.1	0.7	100.0	834
Total	97.8	1.8	0.0	0.3	100.0	3702
Niger						
20-29	57.1	42.7	0.1	0.1	100.0	2240
30-39	35.6	64.3	0.1	0.0	100.0	1649
40-49	37.2	62.4	0.2	0.2	100.0	902
Total	49.6	50.2	0.1	0.1	100.0	5219
Nigeria						
20-29	84.9	15.1	0.0	0.1	100.0	2616
30-39	79.5	20.4	0.0	0.0	100.0	2263
40-49	73.1	26.9	0.0	0.0	100.0	1397
Total	80.9	19.1	0.0	0.0	100.0	6654

Table 3.1—*cont*

Country	Year and month reported, no imputation	Year reported, month imputed	Age reported, year and month imputed	No information, year and month imputed	Total	Number of women
Rwanda						
20-29	96.5	3.4	0.1	0.0	100.0	1506
30-39	92.5	7.2	0.0	0.3	100.0	1715
40-49	84.1	15.5	0.1	0.3	100.0	1006
Total	92.1	7.6	0.1	0.2	100.0	4347
Senegal						
20-29	62.0	37.0	0.8	0.2	100.0	1707
30-39	45.0	53.2	1.1	0.7	100.0	1606
40-49	32.9	64.0	1.6	1.5	100.0	934
Total	51.2	47.1	1.1	0.7	100.0	4534
Sudan[1]						
20-29	83.3	15.3	1.3	0.1	100.0	1997
30-39	72.1	25.8	2.0	0.1	100.0	1945
40-49	52.4	42.4	5.0	0.2	100.0	1127
Total	73.0	24.6	2.3	2.3	100.0	5277
Tanzania						
20-29	90.8	8.8	0.1	0.3	100.0	2921
30-39	75.2	23.9	0.3	0.6	100.0	2096
40-49	58.2	39.8	0.2	1.8	100.0	1363
Total	80.2	19.0	0.2	0.7	100.0	6887
Zambia						
20-29	99.2	0.7	0.0	0.0	100.0	2230
30-39	98.1	1.7	0.0	0.1	100.0	1522
40-49	93.8	5.6	0.0	0.6	100.0	873
Total	98.0	1.8	0.0	0.2	100.0	5163
NORTH AFRICA/ASIA						
Egypt[1]						
20-29	89.9	10.1	0.0	0.0	100.0	2676
30-39	82.0	17.8	0.1	0.0	100.0	3033
40-49	68.2	31.4	0.1	0.2	100.0	2179
Total	81.2	18.6	0.1	0.1	100.0	8098
Egypt						
20-29	91.7	8.3	0.0	0.0	100.0	2942
30-39	84.1	15.8	0.0	0.0	100.0	3400
40-49	78.7	21.1	0.0	0.1	100.0	2432
Total	85.5	14.4	0.0	0.1	100.0	9001
Morocco						
20-29	98.5	1.5	0.0	0.0	100.0	1423
30-39	95.8	4.2	0.0	0.0	100.0	2154
40-49	92.0	7.8	0.1	0.0	100.0	1367
Total	95.6	4.3	0.0	0.0	100.0	5050
Indonesia						
20-29	91.2	8.7	0.0	0.0	100.0	7487
30-39	77.2	22.6	0.0	0.2	100.0	7633
40-49	59.6	40.3	0.0	0.1	100.0	5181
Total	78.5	21.4	0.0	0.1	100.0	20872

Table 3.1—*cont*

Country	Year and month reported, no imputation	Year reported, month imputed	Age reported, year and month imputed	No information, year and month imputed	Total	Number of women
Pakistan						
20-29	94.1	5.7	0.1	0.1	100.0	2143
30-39	90.5	8.9	0.4	0.1	100.0	2078
40-49	86.5	12.9	0.5	0.1	100.0	1413
Total	91.2	8.4	0.3	0.1	100.0	5843
Jordan						
20-29	99.7	0.3	0.0	0.0	100.0	2043
30-39	98.7	1.3	0.0	0.0	100.0	2033
40-49	95.0	5.0	0.0	0.0	100.0	1594
Total	98.1	1.9	0.0	0.0	100.0	5851
LATIN AMERICA						
Bolivia[1]						
20-29	100.0	0.0	0.0	0.0	100.0	1898
30-39	98.8	1.1	0.1	0.0	100.0	2066
40-49	96.6	2.4	0.0	1.0	100.0	1334
Total	98.7	1.0	0.0	0.3	100.0	5543
Brazil (NE)						
20-29	99.6	0.2	0.0	0.1	100.0	1321
30-39	97.9	1.8	0.1	0.2	100.0	1394
40-49	96.5	2.9	0.2	0.4	100.0	1115
Total	98.2	1.5	0.1	0.2	100.0	3987
Colombia						
20-29	99.7	0.1	0.1	0.0	100.0	1889
30-39	99.2	0.6	0.2	0.0	100.0	1914
40-49	98.0	1.1	0.9	0.0	100.0	1319
Total	99.1	0.5	0.4	0.0	100.0	5293
Dominican Republic						
20-29	99.4	0.6	0.0	0.0	100.0	1737
30-39	97.4	2.5	0.0	0.1	100.0	1731
40-49	95.8	3.9	0.3	0.0	100.0	988
Total	97.9	2.0	0.1	0.0	100.0	4685
Paraguay						
20-29	100.0	0.0	0.0	0.0	100.0	1359
30-39	100.0	0.0	0.0	0.0	100.0	1406
40-49	99.7	0.0	0.0	0.3	100.0	989
Total	99.9	0.0	0.0	0.1	100.0	3931
Peru						
20-29	99.7	0.2	0.0	0.1	100.0	3261
30-39	99.4	0.5	0.1	0.1	100.0	3641
40-49	98.1	1.4	0.1	0.4	100.0	2614
Total	99.2	0.6	0.1	0.2	100.0	9830

Note: The total refers to all women 15-49. Row totals may not add up to 100 due to rounding.
[1]DHS-I survey
[2]DHS-III survey

Overall, the completeness of reporting of the date of first birth was much better than for the date of first union (see Table 3.2). In only 11 of 26 surveys did more than 80 percent of respondents report both a month and year of first union. However, 19 surveys had levels of completeness of more than 80 percent for the date of first birth. The date of first birth could be reported more completely than the date of first union for a number of possible reasons. First birth is a single definitive event that is associated with a particular day, whereas in some settings, notably in sub-Saharan Africa, marriage is more of a series of events—a process that may take place over an extended period involving several months or years. Births are better documented than marriages (by birth/baptismal certificates, school records or immunization certificates). Furthermore, interviewers are required to get at least the year of birth of children, but not necessarily the year of first marriage. Therefore, children's birth dates are subject to a greater degree of probing than the date of first union.

Table 3.2 Percentage with complete reporting of the date of first birth and the date of first union

Country	Date of first union	Date of first birth
SUB-SAHARAN AFRICA		
Burkina Faso	29.8	67.0
Cameroon	33.2	68.1
Kenya[1]	81.4	98.1
Kenya[2]	86.4	95.8
Madagascar	50.8	79.7
Malawi	53.8	95.0
Namibia	84.8	97.8
Niger	17.3	49.6
Nigeria	56.0	80.9
Rwanda	77.6	92.1
Senegal	13.8	51.2
Sudan[1]	36.1	73.0
Tanzania	55.7	80.2
Zambia	89.9	98.0
NORTH AFRICA/ASIA		
Egypt[1]	49.0	81.2
Egypt	75.8	85.5
Indonesia	63.1	78.5
Jordan	90.3	98.1
Morocco	92.9	95.6
Pakistan	59.3	91.2
LATIN AMERICA		
Bolivia[1]	81.2	98.7
Brazil (NE)	92.0	98.2
Colombia	91.1	99.1
Dominican Republic	79.8	97.9
Paraguay	88.7	99.9
Peru	93.0	99.2

[1]DHS-I survey
[2]DHS-III survey

3.2 Heaping on First Birth

Table 3.3 shows indices measuring the extent of heaping of the date of first birth on the years 1965, 1970, 1975, 1980, and 1985 and heaping on durations since first birth of 5, 10, 15, 20, and 25 years. These are calculated in the same manner as the indices for date of first union. There is little evidence of heaping on calendar years of first birth in Latin America. In contrast, there is a substantial degree of heaping on the year of first birth in sub-Saharan Africa, especially in Burkina Faso, Cameroon, Nigeria, and Rwanda where the indices of heaping are 1.14, 1.23, 1.33 and 1.12, respectively. As mentioned earlier, the Nigeria DHS was conducted in 1990, which in conjunction with poor knowledge of dates, may have contributed to the high level of heaping on the year of first birth. In North Africa/Asia, heaping on the year of first birth is most severe in Pakistan, which has an index of 1.26.

Heaping is more common for duration since first birth than for year of first birth. This can be partly attributed to ignoring the year when imputing the date if age and year are reported and month is not, particularly in countries implementing the Model "B" Core Questionnaire. Heaping on the duration since first birth is most noticeable in sub-Saharan Africa where all surveys except Kenya DHS-III, Rwanda, and Zambia have indices greater than 1.05. Conversely, in Malawi, there is an apparent deficit of durations that end in digits 0 and 5. In North Africa/Asia, heaping is most severe in Pakistan and Indonesia. Although none of the countries in Latin America showed severe heaping on the year of first birth, two surveys in that region (Bolivia and Northeast Brazil) show substantial heaping on the duration since first birth.

Table 3.3 Indices of heaping on year of first birth and duration since first birth ending in digits 0 or 5, Demographic and Health Surveys II

Country	Year of first birth	Duration since first birth
SUB-SAHARAN AFRICA		
Burkina Faso	1.14	1.05
Cameroon	1.23	1.19
Kenya[1]	1.08	1.08
Kenya[2]	0.88	1.02
Madagascar	0.97	1.08
Malawi	1.04	0.89
Namibia	1.00	1.06
Niger	1.04	1.20
Nigeria	1.33	1.26
Rwanda	1.12	1.02
Senegal	1.06	1.12
Sudan[1]	1.02	1.18
Tanzania	0.94	1.09
Zambia	1.01	0.98
NORTH AFRICA/ASIA		
Egypt[1]	1.00	1.04
Egypt	1.06	1.00
Indonesia	1.09	1.13
Jordan	1.00	0.99
Morocco	1.02	1.05
Pakistan	1.26	1.19
LATIN AMERICA		
Bolivia[1]	1.00	1.07
Brazil (NE)	1.01	1.11
Colombia	0.93	1.05
Dominican Republic	1.03	1.01
Paraguay	1.03	1.01
Peru	0.99	1.03

[1]DHS-I survey
[2]DHS-III survey

3.3 Trends in the Median Age at First Birth

Table 3.4 shows the median age at first birth by age at the time of the survey. It is expected that the median age at first birth would either remain stable or increase from the older to the younger age groups, with the expansion in female education over time. However, trends in the timing of first birth may be affected by errors in the reporting of date of birth of respondent or oldest child, and by the omission of first births, especially those who died at an early age. These reporting errors might be more prevalent among older women and might lead, in some cases, to an apparent decline in the age at first birth.

Table 3.4 Median age at first birth, by age of the woman at the time of the survey, Demographic and Health Surveys II

Country	Age of woman at the time of the survey					
	20-24	25-29	30-34	35-39	40-44	45-49
SUB-SAHARAN AFRICA						
Burkina Faso	19.1	19.0	18.8	19.2	19.4	19.7
Cameroon	18.8	19.3	19.0	20.1	20.3	21.4
Kenya[1]	19.3	18.7	18.2	18.6	18.6	19.7
Kenya[2]	19.8	19.3	19.0	19.0	19.0	19.3
Madagascar	a	19.5	18.8	18.9	19.1	18.7
Malawi	18.9	18.7	18.3	19.3	19.4	20.5
Namibia	a	21.2	20.5	20.7	21.1	22.0
Niger	17.7	17.8	17.9	18.4	18.5	18.5
Nigeria	19.7	19.6	19.1	20.1	20.1	20.1
Rwanda	a	21.9	21.6	21.5	21.1	20.5
Senegal	19.8	19.3	18.8	19.3	19.5	19.6
Sudan[1]	a	22.8	20.8	19.5	18.9	19.8
Zambia	19.1	18.8	18.2	18.2	18.6	18.3
Tanzania	19.5	19.5	18.5	18.4	18.5	18.8
NORTH AFRICA/ASIA						
Egypt[1]	a	21.7	21.6	20.5	20.0	20.0
Egypt	a	21.7	21.0	21.2	21.0	20.5
Morocco	a	24.9	22.2	21.7	21.0	20.4
Indonesia	a	20.4	19.9	19.9	19.8	20.0
Pakistan	a	21.0	20.9	21.4	21.7	22.6
Jordan	a	23.0	21.2	20.4	20.5	20.6
LATIN AMERICA						
Bolivia[1]	a	20.6	20.8	21.4	21.5	21.6
Brazil (NE)	a	21.4	21.5	21.7	22.2	22.1
Colombia	a	22.6	22.0	22.6	22.0	21.2
Dominican Republic	a	21.7	21.3	20.4	19.9	19.7
Paraguay	a	21.6	21.7	22.3	21.7	21.5
Peru	a	22.1	21.7	21.6	21.5	21.7

[a]Fewer than half of the women in the age group have ever been married by age 20.
[1]DHS-I survey
[2]DHS-III survey

For surveys conducted in sub-Saharan Africa, there is an appreciable amount of forward displacement of the date of first birth in the two oldest cohorts, and some evidence of misreporting of age. Burkina Faso, Cameroon, Kenya, and Namibia show a more or less steady decline in the age at first birth from the age group 45-49 to 30-34. In these three countries and in Malawi and Sudan, the median age at first birth for the age group 45-49 is 0.5 or more years higher than the median for women age 40-44, an indication that there was some degree of forward displacement of the date of first birth or the omission of first births who died in early infancy among the oldest cohort.

Displacement of the date of first birth is less evident in North Africa/Asia and in Latin America. Pakistan is the only country that shows a substantially higher (more than 0.5 years) age at first birth for the age group 45-49 years than for the adjacent age cohort(s). Two surveys in Latin America (Bolivia and Northeast Brazil) show a slight declining trend in the age at first birth from the oldest to the youngest age group but it is unclear whether this is a real trend or whether younger women have displaced their date of first birth backward or older women have displaced it forward.

DHS-II data on the proportion of women who had their first birth before age 20 can be compared with similar data from the WFS or DHS-I surveys in Figure 3.1. The data match reasonably well in Cameroon, Dominican Republic, Indonesia, Paraguay, Peru, and Rwanda. In the case of Cameroon, which has experienced a steady decline in the age at first birth over time, the consistency between data from the DHS and WFS may not necessarily mean that the trends depicted are genuine, but that both data sets exhibit the same pattern of error. In Morocco, the DHS-II survey records a lower proportion of teenage first births than the WFS but, unlike the DHS-I survey, it follows a consistent trend for both the oldest and youngest cohorts. In Nigeria and Senegal there are substantial discrepancies between the DHS and the WFS in the proportion of teenage births occurring to women born in the periods 1945-1960 and 1940-1955, respectively. In both countries, lower proportions of teenage first births are recorded in the DHS than in the WFS for the specified periods. It is further observed that in Kenya, the DHS-III survey shows a lower proportion of teenage first births than the DHS-I survey, especially for the oldest and youngest cohorts. These discrepancies may be explained by differential error in date reporting and differential omission of first births in the two groups of surveys. Overall, when the DHS-II data and previous surveys are compared there is little evidence of substantial misreporting of the date of first birth.

3.4 Proportion of Women Who Had a First Birth at Ages 15-19 and 20-24

The quality of data on date of first birth is further examined by comparing the proportion of women who have ever had a birth at the time of the survey to the proportions at 5, 10, and 15 years prior to the survey. It is expected that the proportions would decrease or remain stable over time. A trend toward increasing proportions in intervals closest to the survey date would indicate a tendency for older women to shift the date of first birth further back in time than it really occurred, assuming that there has been no differential omission of first births by age group.

As expected, in most countries, the proportion of women having a first birth in the age group 15-19 decreases steadily from longer durations toward the date of the interview (see Table 3.5). However, there are a few exceptions. Cameroon (and to a lesser extent, Niger) shows a slight increase in the percentage of women who had a first birth in the age group 15-19 from the fifteenth to the fifth year before the survey, after which there is a sharp decline. In addition, Bolivia, Dominican Republic, and Rwanda show a lower percentage of women who had a first birth at age 15-19 fifteen years ago than ten years ago. These trends are questionable and probably result from some omission of first births by older women or from the displacement of the date of the first birth closer to the date of the interview.

It is further observed in Table 3.5 that in Cameroon and Niger, there is a substantial decline in the proportion of women who ever gave birth at age 15-19 from the fifth year preceding the survey to the current period. This would probably occur if women who gave birth early are assigned older ages, especially where knowledge of exact dates of events is poor and interviewers are forced to use social markers, such as first marriage and first birth to estimate the respondent's age. As was previously noted, Cameroon and Niger had some of the lowest levels of completeness of reporting of the dates of first union and first birth. It is also possible that this pattern could have resulted from the backward displacement of the date of first birth by younger women.

Figure 3.1
Percentage of women who had their first birth before age 20 by five-year birth cohort

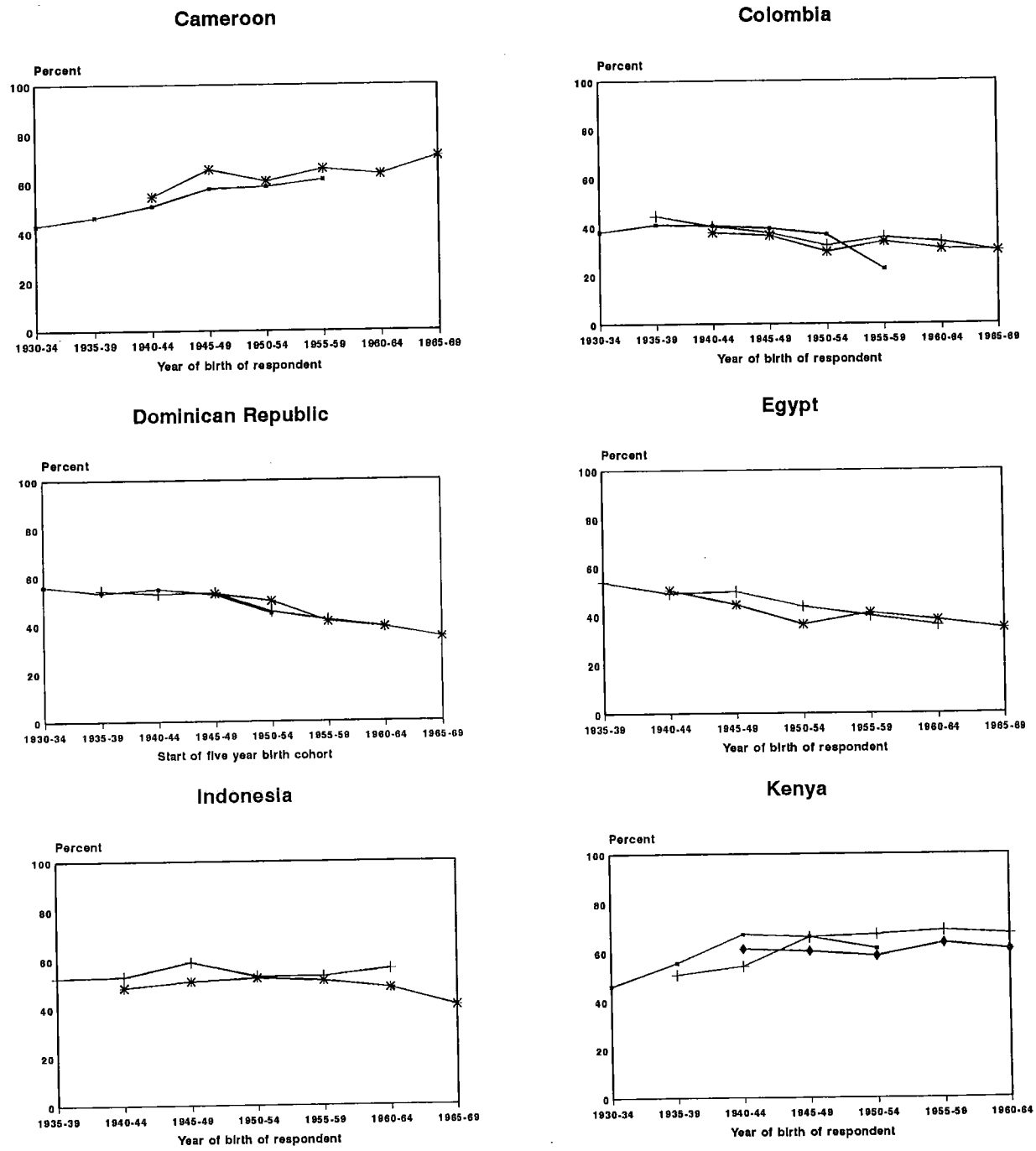


Figure 3.1- cont.
Percentage of women who had their first birth before age 20 by five-year birth cohort

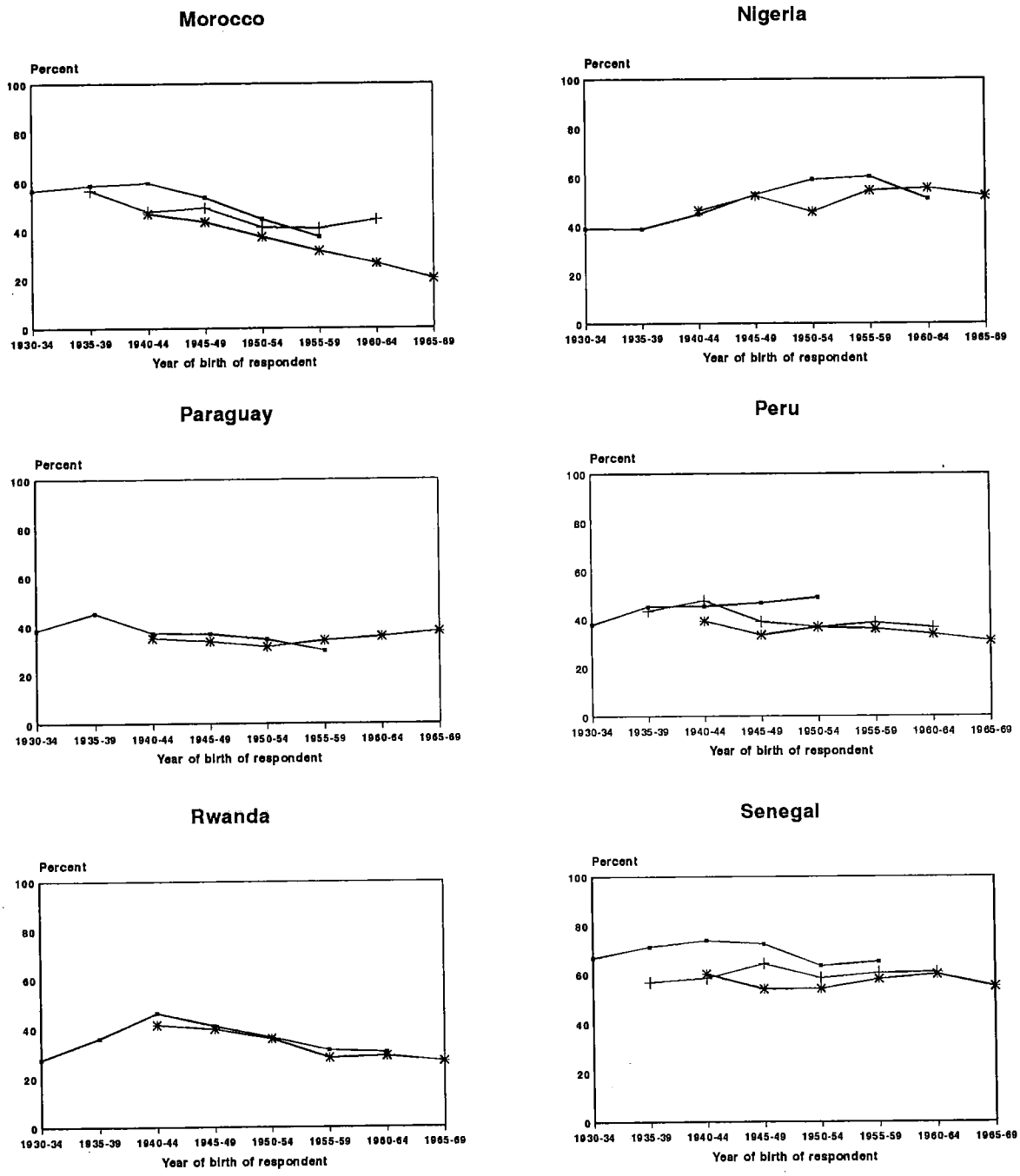


Table 3.5 Percentage of women who had a first birth at ages 15-19 and 20-24 for selected years prior to the survey, Demographic and Health Surveys II

Country	Percentage who ever had a first birth among women 15-19 for selected years before the survey				Percentage who ever had a first birth among women 20-24 for selected years before the survey			
	0	5	10	15	0	5	10	15
SUB-SAHARAN AFRICA								
Burkina Faso	24.2	27.0	28.0	30.5	83.5	82.7	82.9	81.4
Cameroon	29.7	38.9	36.8	36.2	80.1	80.9	79.4	81.2
Kenya[1]	21.4	24.3	33.6	37.3	78.5	82.6	81.8	83.9
Kenya[2]	16.8	24.7	30.5	27.7	70.5	79.6	77.4	79.2
Madagascar	24.6	25.8	31.4	34.8	71.8	70.2	74.7	70.7
Malawi	27.3	34.1	36.2	35.4	80.6	83.1	83.5	77.4
Namibia	17.7	16.5	15.0	20.3	63.3	59.2	65.2	65.0
Niger	31.1	43.7	40.6	38.7	85.0	84.9	83.9	81.6
Nigeria	23.5	27.8	26.5	28.0	67.7	68.5	69.2	62.7
Rwanda	8.2	8.1	9.2	8.7	49.2	54.6	59.3	57.7
Senegal	20.1	26.4	30.3	32.6	67.1	72.8	76.0	74.5
Sudan[1]	8.7	12.7	16.7	24.7	37.1	45.1	54.1	64.9
Tanzania	23.2	23.8	27.5	34.4	75.7	75.5	79.5	81.6
Zambia	27.2	29.8	33.1	40.9	79.6	80.4	85.9	87.8
NORTH AFRICA/ASIA								
Egypt[1]	7.7	11.5	17.0	17.7	48.6	51.8	54.0	61.3
Egypt	7.5	13.0	16.1	17.8	45.8	54.1	58.0	57.8
Indonesia	8.9	15.3	20.7	24.6	54.0	62.8	66.3	66.9
Jordan	5.1	8.2	13.4	15.9	35.0	45.6	60.0	63.9
Morocco	4.9	7.0	10.6	13.4	33.8	38.3	50.9	55.3
Pakistan	12.2	14.9	14.7	16.1	45.7	57.9	57.5	53.7
LATIN AMERICA								
Bolivia[1]	14.6	17.4	20.7	16.5	57.5	65.4	61.4	56.4
Brazil (NE)	210.9	14.1	15.8	18.5	49.4	57.8	58.2	54.5
Colombia	9.6	12.8	12.4	13.4	49.5	49.7	53.9	47.0
Dominican Republic	13.4	14.3	19.1	17.1	52.1	54.2	56.5	63.6
Paraguay	14.1	14.3	14.6	14.5	56.4	55.8	55.5	51.4
Peru	9.0	11.1	13.6	15.0	44.7	51.0	54.8	55.0

[1]DHS-I survey
[2]DHS-III survey

The proportion of women who had their first birth in the age group 20-24 at the time of the survey to the proportions at 5, 10, and 15 years prior to the survey can also be compared in Table 3.5. These proportions conform less to expectations than those at age 15-19. A number of surveys, including Bolivia, Colombia, Madagascar, Malawi, Nigeria, and Paraguay, show higher proportions of women ever giving birth at age 20-24 at 10 years than at 15 years before the survey. This pattern is observed to a lesser extent in Pakistan and Northeast Brazil and is suggestive of the omission or displacement of first births among women age 20-24 fifteen years ago (that is, those age 35-39 at the time of the survey). In Namibia, a slightly higher proportion of women have ever given birth in the age group 20-24 at the time of the survey than at the fifth year preceding the survey, which is also an indication of displacement or omission error.

3.5 Summary

The evaluation of the quality of data on the age at first birth shows wide regional variations in the completeness of date reporting. However, a greater proportion of women reported a complete date of first birth than a complete date of first union. Heaping is more common for duration since first birth than for year of first birth. Heaping on years or durations ending in 0 or 5 is less problematic for the date of first birth than for the date of first union. There is a noticeable degree of displacement in the age at first birth in sub-Saharan Africa compared to North Africa/Asia or Latin America. This can be due to ignoring the year when imputing the date (if age and year are given but month is not) in B-Core Surveys, most of which are in sub-Saharan Africa. A number of countries, notably Bolivia, Cameroon, Dominican Republic and Niger, show some evidence of either omission of early births or forward displacement of the date of first birth among women who had a first birth in the age group 15-19. Some omission or displacement of early births can also be seen in a comparison of the proportion of women who had a birth at age 20-24 at the time of the survey and 5, 10, and 15 years prior to the survey, especially in sub-Saharan Africa and Latin America. Overall, the percentage of women having a first birth before age 20 is reasonably consistent with the percentage reported in previous DHS or WFS surveys.

Chapter 4

Age at First Sexual Intercourse

The method of evaluating the data on age at first sexual intercourse differs from that of age at first union and age at first birth in a number of ways. First, because only age and not date of first intercourse was collected, there is no comparable analysis on the completeness of date reporting as has been presented for first union and first birth. Additionally, the question on age at first intercourse was eliminated from the questionnaire in six countries: Egypt, Jordan, Malawi, Morocco, Pakistan, and Sudan. Although the question on age at first sexual intercourse was included in the questionnaire used in Indonesia, it was restricted to women who were currently married. Therefore, these seven countries have been excluded from the assessment of the quality of data on age at first sexual intercourse. In the following sections, the quality of the data on age at first sexual intercourse is assessed by first examining response rates to the question on the age at first sexual intercourse and trends in the median age at first sexual intercourse and then comparing (1) age at first sexual intercourse and first union and (2) age at first sexual intercourse and first birth.

4.1 Response Rate

At the initial stages of the DHS-I surveys, there was a concern that questions on sexual intercourse would make respondents uncomfortable and would be difficult for them to answer. However, the evaluation of the information on age at first sexual intercourse for the DHS-I surveys revealed that non-response levels were quite low and that where responses were inconsistent, they seemed to have resulted from interviewer miscalculation rather than respondent misreporting (Blanc and Rutenberg, 1990). In order to reduce the extent to which interviewers calculate the age at first intercourse based on the age at first marriage, a code indicating that the respondent had sexual intercourse for the first time when she got married was added to the question on age at first sexual intercourse in the DHS-II questionnaire.

An examination of response rates to the question on age at first sexual intercourse in the DHS-II surveys reveals that the percentage of cases for which the age at first sexual intercourse was missing, or for which a respondent refused to answer the question or reported "Don't Know" was quite low in most countries. The level of non-response is less than one percent in 12 of the 18 surveys evaluated in this section. The highest levels of non-response were found in Bolivia and Namibia. However, the percentage of cases without data in these two countries is only 4 and 2 percent, respectively. In two other surveys (Kenya DHS-III and Northeast Brazil), between 1 and 2 percent of the women did not answer the question.

Similarly, the proportion of cases for which the age at first sexual intercourse is inconsistent with either the respondent's current age or age at first birth is low in most countries. Eight out of 18 surveys evaluated in this section had no cases with a 97 code (inconsistent) while in six others, the percentage of inconsistent responses was less than one half of a percent. The problem was most severe in the Dominican Republic and Kenya DHS-I, where 5 and 8 percent of women, respectively, gave inconsistent responses to the question on age at first sexual intercourse.

It is worth noting that different editing procedures were used to deal with inconsistent responses to the question on first sexual intercourse in the DHS-I and DHS-II surveys. In many DHS-I surveys, the reported age at first intercourse was changed to code 97 (inconsistent) if it was found to be greater than the age at first birth by more than one year. In some surveys, e.g., the Dominican Republic and Peru, the age at first intercourse was decreased by one year if it exceeded the age at first birth by exactly one year. However, in the DHS-II surveys, the information on age at first sexual intercourse was not recoded or adjusted to deal with these inconsistencies. Instead, it was flagged to indicate whether any of four types of inconsistencies

were found: (1) the respondent reported having first sex at a date later than the date of conception of her first child, (2) the age at first sexual intercourse exceeded the age at first conception by less than one year, (3) the respondent reported that she had first sex when she was first married but the age at first sex exceeded the age at first conception, and (4) the age at first sexual intercourse reported by the respondent is greater than the age at first marriage.[1] As a result of these differences in the editing procedure, it is difficult to assess whether the quality of reporting of age at first intercourse has improved. Overall, the low level of non-response in the DHS-II surveys confirms the observation made for the DHS-I surveys that women are willing and able to answer questions on sexual activity.

4.2 Trends in the Median Age at First Sexual Intercourse

It is difficult to ascertain the expected age pattern of the median age at first sexual intercourse. In settings where sexual activity occurs largely within marriage, trends in the age at first sexual intercourse are expected to closely follow trends in the age at first marriage. However, where informal visiting unions are common or on the increase, the trend in the age at first sexual intercourse may differ from the trend in the age at first marriage (Blanc and Rutenberg, 1990).

The median age at first sexual intercourse by age of the respondent at the time of the survey is shown in Table 4.1. In general, the median age at first sexual intercourse does not vary much across age groups, which perhaps reflects the fact that respondents were likely to report a normative age at first intercourse rather than their actual age at the event. Some countries, notably the Dominican Republic, Kenya, Madagascar, Rwanda, and Senegal show a slightly increasing trend over time. In contrast, Bolivia shows a substantial decline in the age at first sexual intercourse over time from 18.7 years in the 40-44 age group to 16.4 years at age 20-24. It is difficult to tell whether this pattern is a genuine trend or an artifact of misreporting by older cohorts, but it is worth noting that the age at first union does not show this pattern (see Table 2.3).

There is little evidence of forward or backward displacement of the age at first sexual intercourse by older women. In Colombia, Madagascar, Namibia, and Rwanda there is a difference of more than 0.5 years in the median age at first sexual intercourse between age 45-59 and age 40-44. Whereas Madagascar and Rwanda show a more or less consistent rise in the age at first sexual intercourse from the oldest to the youngest cohorts, in Colombia and Namibia there is a consistent trend (in opposite directions) from age 45-49 to 35-59, after which the trend in the age at first sexual intercourse is more or less flat. In Nigeria, women age 30-34 have a median age at first sexual intercourse that is at least 0.5 years lower than that for the two adjacent age groups. This pattern may result from the misreporting of the age at first sexual intercourse or the respondent's current age.

Trends in the age at first intercourse are further examined by comparing the proportion of women who had first sexual intercourse before age 20 in the DHS-II and previous surveys by the respondent's year of birth, which is categorized into five-year groups. The analysis is restricted to countries that had both a DHS-I and DHS-II survey since the WFS did not include a question on the age at first sexual intercourse.[2]

---

[1] This scenario is possible in settings where the marriage contract is formalized at a relatively early age whereas cohabitation and consummation may not occur until a number of years later.

[2] Senegal was excluded from this analysis because the DHS-I survey did not have a question on the age at first sexual intercourse.

Table 4.1 Median age at first sexual intercourse, by age of the woman at the time of the survey, Demographic and Health Surveys II

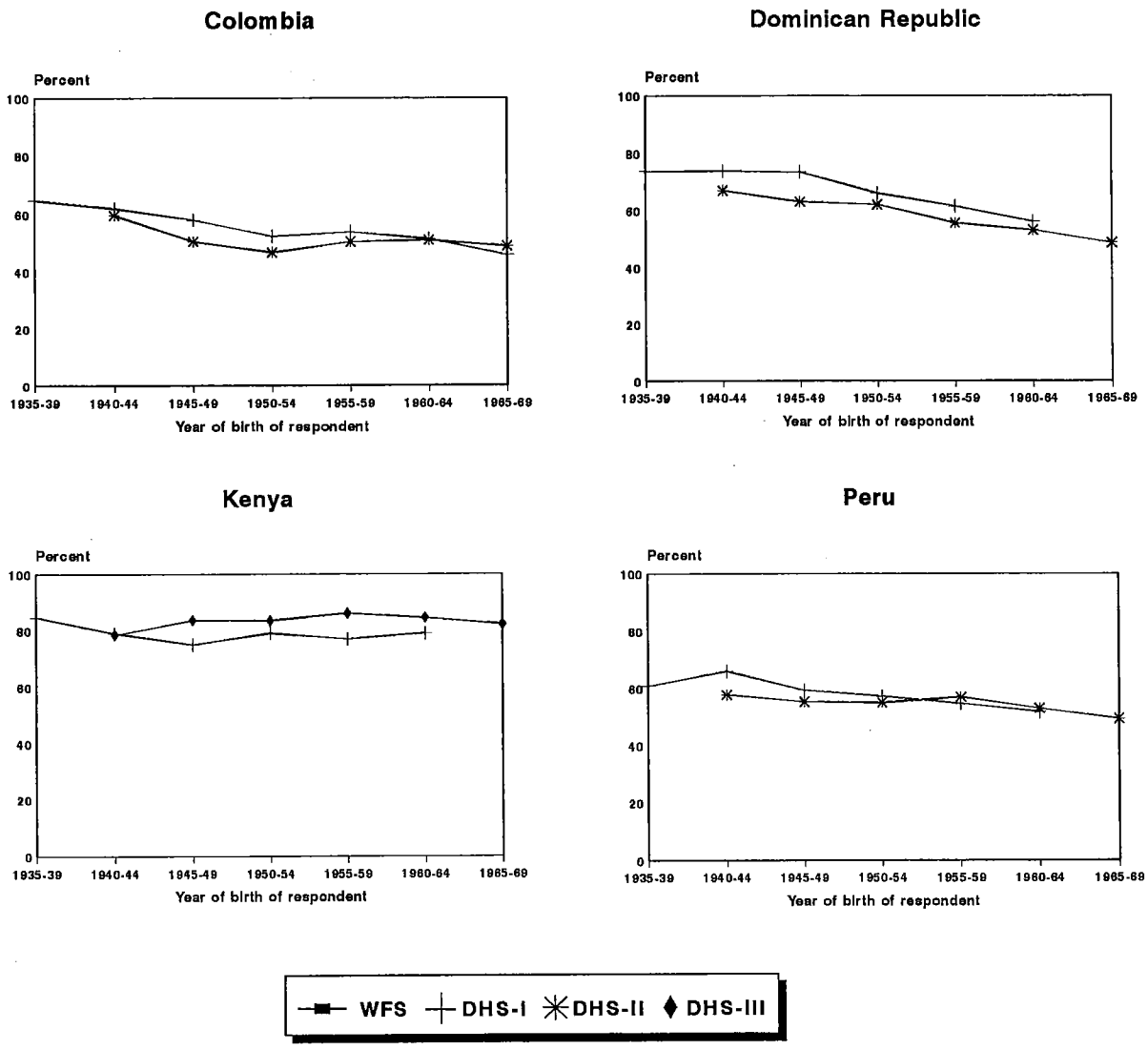
Country	Age of woman at the time of the survey					
	20-24	25-29	30-34	35-39	40-44	45-49
SUB-SAHARAN AFRICA						
Burkina Faso	17.2	17.2	17.3	17.4	17.3	17.5
Cameroon	16.1	16.0	15.7	15.9	15.7	15.7
Kenya[1]	16.4	16.2	15.8	15.9	15.8	16.1
Kenya[2]	17.3	17.0	16.6	16.3	16.3	16.1
Madagascar	17.0	17.0	16.6	16.6	16.6	16.0
Namibia	18.7	19.0	18.7	19.0	19.4	20.1
Niger	15.1	15.1	15.0	15.2	15.1	15.0
Nigeria	16.6	16.4	15.9	16.5	16.4	16.5
Rwanda	a	20.2	19.9	19.7	19.2	18.4
Senegal	17.5	16.5	16.0	16.0	15.8	15.8
Tanzania	17.3	17.2	16.4	16.4	16.3	16.4
Zambia	16.6	16.4	16.0	16.2	16.3	16.0
LATIN AMERICA						
Bolivia[1]	16.4	17.8	18.4	18.6	18.7	18.2
Brazil (NE)	20.0	19.0	18.9	19.5	19.9	19.7
Colombia	a	20.0	19.9	20.3	19.9	19.0
Dominican Republic	a	19.9	19.1	18.7	18.2	17.8
Paraguay	18.9	19.0	19.0	19.8	19.4	19.5
Peru	a	19.7	19.3	19.2	19.3	19.2

[a]Fewer than half of the women in the age group have had sexual intercourse by age 20.
[1]DHS-I survey
[2]DHS-III survey

The results of this exercise are shown in Figure 4.1. In Peru, the two curves are similar and follow each other closely. In Colombia, the data match reasonably well for women born since 1955 but for older cohorts, the DHS-II survey shows a slightly lower percentage of women who had first sexual intercourse in the teenage years than the DHS-I survey.

In the Dominican Republic, the curves show the same trend—a decline across cohorts in the propensity of sexual initiation during the teenage years. However, for all cohorts, the DHS-II survey shows a substantially lower proportion of women who had first sexual intercourse before age 20 than the DHS-I survey. In contrast, Kenya shows a slightly higher proportion of women who had first intercourse before age 20 in DHS-III than in DHS-I for all cohorts. The reasons for this discrepancy are unclear. The pattern may partly reflect the different editing procedures used in the DHS-I and DHS-II surveys. In DHS-I, the reported age at first sexual intercourse was reduced by one year if it exceeded the age at first birth by exactly one year, whereas in DHS-II, the reported age at first sexual intercourse was not adjusted to reconcile this inconsistency. The discrepancy may also arise from errors in the reporting of age, whereby the magnitude of the error will depend on the extent to which the age at first sexual intercourse is estimated independently of the age of the respondent or the age at first union.

Figure 4.1
Percentage of women who had first sexual intercourse before age 20 by five-year birth cohort



4.3 Interval Between Age at First Sexual Intercourse and First Union

Table 4.2 presents the distribution of women by the length of the interval between age at first sexual intercourse and age at first union. This analysis is based on the reported age at first union in order to have a clearer picture of the internal consistency of the data. If a high proportion of women report that they had first sexual intercourse more than one year after the start of first union, which is defined in the DHS as the month and year the couple started living together, it may indicate that either the age at first sexual intercourse or the age at first union was reported inaccurately. In countries with low levels of contraceptive prevalence, it is expected that there would be a close correspondence between the proportion of women who report that they had first intercourse prior to first union and the proportion of women who had first birth before first union or within the first seven months of first union. If the proportion of women who report a premarital birth or conception is substantially higher than the proportion who report that they had first intercourse prior to first union, then it is likely that the age at first sexual intercourse or date of first union or date of first birth has been misreported. The percent distribution of the interval between first union and first birth is not shown, but such discrepancies are discussed in the text. In addition, the proportion of women who report that they had first sexual intercourse before first union gives some indication of the appropriateness of the age at first union as a proxy for the beginning of women's exposure to the risk of pregnancy.

Table 4.2 Distribution of ever-married women by interval between first sexual intercourse (FSI) and first union, Demographic and Health Surveys II

Country	Age at FSI less than age at first union by 4+ yrs	Age at FSI less than than age at first union by 1-3 yrs	Age at FSI same as age at first union	Age at FSI greater than age at first union by exactly 1 yr	Age at FSI greater than age at first union by more than than 1 yr	Cannot be calculated	Don't know/Refused/ Missing	Total
SUB-SAHARAN AFRICA								
Burkina Faso	4.1	15.9	74.1	1.6	4.1	0.0	0.1	100.0
Cameroon	9.8	18.0	66.0	4.1	1.7	0.3	0.1	100.0
Kenya[1]	22.4	32.0	19.1	9.2	4.9	10.7	1.8	100.0
Kenya[2]	20.4	35.9	37.1	3.9	1.9	0.3	0.5	100.0
Madagascar	15.1	34.7	49.3	0.2	0.5	0.0	0.2	100.0
Namibia	30.9	21.7	40.9	2.9	2.7	0.0	0.9	100.0
Niger	1.1	1.6	85.9	4.1	7.0	0.3	0.0	100.0
Nigeria	6.4	10.6	79.0	2.0	2.0	0.0	0.0	100.0
Rwanda	3.2	9.4	86.2	0.3	0.8	0.0	0.2	100.0
Senegal	2.4	3.6	92.8	0.2	1.0	0.0	0.1	100.0
Tanzania	12.8	22.6	60.9	2.2	1.1	0.2	0.2	100.0
Zambia	12.9	26.1	60.1	0.3	0.4	0.1	0.1	100.0
LATIN AMERICA								
Bolivia[1]	12.3	34.6	46.7	2.0	1.7	0.0	2.7	100.0
Brazil (NE)	7.2	16.7	73.2	1.0	1.0	0.2	0.7	100.0
Colombia	8.8	19.6	69.9	0.8	0.8	0.0	0.1	100.0
Dominican Republic	1.9	9.1	74.0	0.1	10.0	4.8	0.0	100.0
Paraguay	11.6	21.0	52.7	6.8	7.9	0.0	0.0	100.0
Peru	11.6	34.5	46.3	0.0	7.5	0.0	0.0	100.0

[1]DHS-I survey
[2]DHS-III survey

In the African countries, the proportion of women who reported that they had sexual intercourse prior to first marriage ranges from 50 percent or more in Kenya, Madagascar, and Namibia to 3 percent in Niger. These differences partly reflect variations in the timing of first union and in patterns of sexual activity. In Niger and Rwanda, premarital sexual activity is relatively uncommon. In these countries, the gap in the age at first union and first sexual intercourse is close to zero and less than 8 percent of women had their first birth prior to first union (see Table 4.3). Whereas the low level of premarital sexual activity in Niger is partly related to the low age at first union (15.1 years), it is to be noted that the median age at first marriage in Rwanda is relatively high by sub-Saharan African standards (about 20 years for women age 25-49). In Kenya and Namibia, on the other hand, premarital pregnancies are fairly common; about 25 and 38 percent of women, respectively, report having their first birth prior to first marriage in the DHS-II surveys. In Namibia, in particular, many women never marry or marry in their mid-20s and the average gap between the median age at first sexual intercourse and median age at first marriage for women age 25-49 is approximately 6 years (Katjiuan et al., 1993). These patterns of sexual activity confirm the observation made in the DHS-I surveys that the age at first union may not be an adequate indicator of exposure to pregnancy in some settings.

Table 4.3 Distribution of ever-married women, by interval between first union and first birth, Demographic and Health Surveys II

Country	Negative Interval	0-7 Months	8-35 Months	36+ Months	Total
SUB-SAHARAN AFRICA					
Burkina Faso	10.1	21.1	49.9	7.9	100.0
Cameroon	15.8	17.8	43.7	23.5	100.0
Kenya[1]	25.3	16.2	48.3	10.1	100.0
Kenya[2]	25.7	18.5	46.7	9.1	100.0
Madagascar	16.8	21.4	51.3	10.6	100.0
Namibia	38.2	12.5	40.4	9.0	100.0
Niger	7.1	9.5	43.7	39.7	100.0
Nigeria	8.3	21.3	45.6	24.7	100.0
Rwanda	3.8	11.4	74.0	10.8	100.0
Senegal	7.4	19.8	44.2	28.6	100.0
Tanzania	16.2	17.7	52.2	14.0	100.0
Zambia	13.5	12.7	65.3	8.4	100.0
LATIN AMERICA					
Bolivia[1]	18.4	16.8	55.7	9.1	100.0
Brazil (NE)	8.0	13.6	66.5	11.9	100.0
Colombia	9.1	14.4	65.2	11.2	100.0
Dominican Republic	2.8	9.4	73.1	14.7	100.0
Paraguay	14.1	12.8	61.6	11.5	100.0
Peru	11.6	34.5	46.3	7.5	100.0

[1]DHS-I survey
[2]DHS-III survey

Despite relatively low aggregate levels of premarital sexual activity in Niger, at the individual level, there is some indication of misreporting of either the age at first sexual intercourse or age at first union. Seven percent of women in Niger have a negative first birth interval and an additional 10 percent report having had a birth within the first 7 months of first marriage. However, the age at first intercourse is lower

than the age at first marriage in only 2 percent of cases. A similar observation is made for Senegal. The proportion of Senegalese women reporting that they had sexual intercourse prior to first union is 6 percent (see Table 4.2), although 27 percent report either a premarital first birth or premarital conception, i.e., a birth within 7 months of first marriage. These inconsistencies may partly reflect difficulties of defining marriage and its timing, particularly in societies where marriage is not a single definitive event but a process involving a series of stages.

In Latin America, 40 percent or more women report the same age for first sexual intercourse and first union. The proportion who report having had sexual intercourse prior to first union ranges from 11 percent in the Dominican Republic to 47 percent in Bolivia. These proportions are fairly consistent with the percentage who report having had a premarital first birth or conception. As expected, the proportion of women who report a premarital first birth or conception is lower than or almost equal to the proportion who report having sexual intercourse prior to first marriage.

The percentage reporting an age at first sexual intercourse subsequent to first union gives further indication of the internal consistency of the data. In sub-Saharan Africa, there is considerable variation in the percentage of women who report an age at first sexual intercourse that is one or more years higher than the age at first union—from less than 1 percent in Madagascar and Zambia to more than 10 percent in the Kenya DHS-I and Niger. The magnitude of the inconsistency is greatest in Niger, where 7 percent of women report an age at first sexual intercourse that is two or more years greater than the age at first union. In Kenya, women were twice as likely as in Niger to report an age at first sexual intercourse that was exactly one year greater than the age at first union.

In Latin America, there is also considerable variation across countries in the percentage of women who report an age at first intercourse subsequent to the age at first union—from less than 4 percent in Bolivia, Northeast Brazil, and Colombia to more than 7 percent in the remaining countries. In Paraguay, the degree of inconsistency is substantial (around 14 percent), with slightly less than half of the inconsistent women reporting an age at first sexual intercourse exactly one year higher than the age at first union. In the Dominican Republic and Peru, almost all of the inconsistency arises from women who report an age at first sexual intercourse two or more years subsequent to the age at first union.

4.4 Interval Between Age at First Sexual Intercourse and First Birth

The percent distribution of mothers by the length of the interval between first sexual intercourse and first birth is shown in Table 4.4. The percentage of women reporting an age at first sexual intercourse subsequent to first birth gives some indication of the internal consistency of the data. Women in this category have been categorized into two groups: those who report that the age at first sexual intercourse is exactly one year greater than the age at first birth and those for whom the age at first sexual intercourse is more than one year greater than the age at first birth. The proportion of women reporting that they had first sexual intercourse after the birth of their first child ranges from less than 1 percent in six surveys to 12 percent in Namibia. In five surveys (Bolivia, Colombia, Dominican Republic, Kenya DHS-I, and Peru), there are no cases where the age at first sexual intercourse is greater than the age at first birth by exactly one year. In the other countries, less than 2 percent of women report having had first sex exactly one year after the birth of their first child except in Cameroon, Kenya, and Namibia where the corresponding proportions range between 3 and 6 percent. The proportion of cases in which the age at first sexual intercourse exceeds the age at first birth by more than one year is highest in Namibia (6 percent).

Table 4.4 also shows the proportion of cases in which the age at first sexual intercourse is less than the age at first birth by four or more years. In all six countries of Latin America, more than 10 percent of mothers reported that they first had sexual intercourse four or more years before the first birth. These are pro-

Table 4.4 Distribution of mothers, by interval between first sexual intercourse (FSI) and first birth, Demographic and Health Surveys II

Country	Age at FSI less than age at first birth by 4+ yrs	Age at FSI less than than age at first birth by 1-3 yrs	Age at FSI same as age at first birth	Age at FSI greater than age at first birth by exactly 1 yr	Age at FSI greater than age at first birth by more than than 1 yr	Cannot be calculated	Don't know/Refused/ Missing	Total
SUB-SAHARAN AFRICA								
Burkina Faso	10.4	22.4	62.3	0.4	4.4	0.0	0.1	100.0
Cameroon	17.0	33.5	44.3	2.5	2.2	0.3	0.1	100.0
Kenya[1]	24.1	49.1	13.4	0.0	0.6	11.0	1.8	100.0
Kenya[2]	21.1	39.7	33.0	2.7	2.8	0.3	0.5	100.0
Madagascar	15.7	48.1	35.7	0.2	0.2	0.0	0.2	100.0
Namibia	17.9	38.5	30.7	6.3	5.7	0.0	0.9	100.0
Niger	7.9	12.5	78.6	0.1	0.5	0.3	0.0	100.0
Nigeria	12.7	17.0	68.3	0.5	1.5	0.0	0.0	100.0
Rwanda	8.6	47.3	41.9	0.6	1.4	0.0	0.2	100.0
Senegal	2.8	6.9	88.6	0.9	0.7	0.0	0.1	100.0
Tanzania	14.3	29.7	52.1	1.7	1.9	0.3	0.2	100.0
Zambia	15.3	35.8	47.0	0.8	0.9	0.1	0.1	100.0
LATIN AMERICA								
Bolivia[1]	16.5	67.0	12.0	0.0	1.6	0.0	2.9	100.0
Brazil (NE)	12.1	30.5	55.0	0.3	1.2	0.2	0.7	100.0
Colombia	10.9	38.8	49.4	0.0	0.7	0.0	0.1	100.0
Dominican Republic	10.2	41.2	42.8	0.0	0.5	5.3	0.0	100.0
Paraguay	17.5	49.4	29.7	1.8	1.6	0.0	0.0	100.0
Peru	15.7	63.6	20.2	0.0	0.5	0.0	0.0	100.0

[1]DHS-I survey
[2]DHS-III survey

portions reasonable given that these countries have relatively modest levels of contraceptive use. In sub-Saharan Africa, the proportion of women with intervals of four or more years between first intercourse and first birth ranges from 3 percent in Senegal to 24 percent in Kenya. Countries with relatively early marriage patterns might be expected to show relatively long intervals between first intercourse and first birth due to the period of subfecundity in the early teenage years; however, this is clearly not the case. For example, in Niger where at least 40 percent of women marry before age 15 and only 11 percent of women have ever used a method of contraception (Kourguéni et al., 1993), the percentage of women reporting an age at first sexual intercourse that is 4 or more years lower than the age at first birth is less than 10 percent. In general, the proportion of women who had first intercourse four or more years before first birth is greatest in countries where premarital childbearing is a relatively common occurrence.

4.5 Summary

To summarize, the level of non-response to the question on age at first sexual intercourse is low in the DHS-II surveys. There is little evidence of forward displacement of the age at first sexual intercourse by older women. The percentage of women reporting an age at first sexual intercourse that is higher than the age at first birth is low in most countries with the exception of Burkina Faso, Cameroon, Kenya, Namibia, and Tanzania. In general, the percentage of women reporting an age at first sexual intercourse subsequent to first birth is lower than the percentage reporting age at first sexual intercourse subsequent to first union.

Chapter 5

Summary and Conclusion

This report provides an evaluation of the quality of DHS-II data on the age at first union, first birth, and first sexual intercourse. The techniques to detect deficiencies in the data include using indicators of completeness of date reporting and heaping, internal consistency checks, and comparisons of DHS-II data with similar information from the WFS and DHS-I surveys, where possible. The following is a summary of the findings, with recommendations for improving the quality of date reporting.

An examination of the completeness of reporting of the date of first union revealed wide regional variations. There is less complete reporting of the date of first union in sub-Saharan Africa than in Latin America, with countries of North Africa and Asia occupying an intermediate position. Overall, more than 90 percent of respondents provided either a date or age at first union with the exception of Malawi, where at least a quarter of respondents provided no information on the timing of first union. In general, the completeness of reporting of the date of first union tends to increase with the decreasing age of the respondent. There were few instances of serious heaping in the DHS-II surveys, except in Nigeria and Pakistan. With a few exceptions, heaping was more severe for the year of first union than for the duration since first union.

An examination of patterns of median age at first union across age groups does not reveal a substantial degree of backward or forward displacement of the age at first union. As expected, the proportion ever-married in the age groups 15-19 and 20-24 shows a generally declining trend from the highest interval to the date of the interview. However, some surveys show a large decline in the proportion married at age 15-19 from the fifth year preceding the survey to the date of the interview, an indication of some degree of misreporting of current age or marital status among the youngest cohort. This pattern is observed to a relatively large extent in Niger and Senegal.

Procedures for collecting information on the timing of first union were modified slightly in the DHS-II surveys in order to improve the quality of the information. Respondents were first asked the month and year in which they started living with their husband/partner (or date at which the marriage was consummated in Burkina Faso, Egypt, and Senegal); then they were asked to report the age at which co-residence (or consummation) occurred. Interviewers were required to compare the consistency of the date and age at first union and correct any discrepancies that were observed. In contrast, in the DHS-I surveys, respondents were asked to provide the age at first union only if they could not report the month and year of the event.

One way of assessing whether these procedures improved the quality of information on the date of first union is to compare indicators of data quality for the three DHS surveys. The results of this exercise for countries that have had more than one survey are shown in Table 5.1. Column one presents the completeness of date reporting. Columns two and three present the index of heaping on year of first union and duration since first union, respectively. Column four indicates whether the median age at first union for the age group 45-49 is 0.5 or more years higher than that for the age group 40-44, and column five indicates whether each survey shows a recent accelerated decline in the proportions married at age 15-19.

The completeness of reporting of the date of first union is much better in DHS-II than in DHS-I in five of the eight countries examined. In the Dominican Republic, Indonesia, and Senegal, there was a slight decline of about 1-5 percentage points in the completeness of reporting of the date of first union. The degree of improvement between DHS-I and DHS-II was dramatic in Egypt where the level of completeness of reporting of the date of first union increased by 27 percentage points. Although the quality of reporting of

Table 5.1 Data quality indicators for the age at first union, Demographic and Health Surveys I and II

Country	Year and month reported	Index of heaping on year of first union	Index of heaping on duration since first union	Median age at first union 45-49 > 40-44 by 0.5+ yrs	Recent accelerated decline in % married at 15-19[a]
SUB-SAHARAN AFRICA					
Kenya					
DHS-I	81.4	1.02	1.07	Yes	No
DHS-III	86.4	1.04	0.92	No	No
Senegal					
DHS-I	16.6	1.05	1.02	No	No
DHS-II	13.8	0.99	1.07	No	No
NORTH AFRICA/ASIA					
Egypt					
DHS-I	49.0	1.05	1.06	Yes	Yes
DHS-II	75.8	1.04	1.03	Yes	Yes
Indonesia					
DHS-I	68.2	1.11	1.00	No	Yes
DHS-II[b]	62.4	1.08	1.06	No	No
LATIN AMERICA					
Colombia					
DHS-I	87.9	1.08	0.91	No	Yes
DHS-II	91.1	1.17	0.99	No	Yes
Dominican Republic					
DHS-I	81.2	1.11	1.02	Yes	Yes
DHS-II	79.8	1.12	1.04	No	No
Peru					
DHS-I	87.9	1.13	1.01	No	No
DHS-II	93.0	1.07	1.00	No	Yes

Note: With the exception of Kenya and Egypt, all DHS-I estimates are derived from Blanc and Rutenberg (1990), Tables 2.1, 2.2, and 5.1. Although Morocco had both a DHS-I and a DHS-II survey, it could not be included in the analysis because different forms of date reporting were used in these surveys. In DHS-I, respondents had the option of providing the season and year of an event, whereas in DHS-II, they were required to report the month and year of an event.

[a]A percentage decline from 5 years prior to the survey to time of the survey that is at least double the percentage change from the tenth to the fifth year preceding the survey.
[b]Restricted to the 20 provinces that were included in the DHS-I survey.

marriage and birth dates may have improved in recent years as the level of education increased, the increase in the completeness of date reporting between the Egypt DHS-I and DHS-II surveys is larger than expected. It is possible that the collection of both date and age at first union from all respondents in DHS-II may have facilitated more complete reporting of the date of first union.

Overall, the severity of heaping on years of first union ending in digits 0 or 5 shows little change between DHS-I and DHS-II. Countries that had an index of heaping greater than 1.05 in the DHS-I survey continue to show severe heaping on the year of first union in DHS-II. In Colombia, there is a greater degree of heaping on the years of first union ending in digits 0 or 5 in DHS-II than in DHS-I, partly because the DHS-II survey was conducted in 1990.

Similarly, the severity of heaping on the duration since first union remained either unchanged or declined slightly between the two surveys. Four of the six countries that had shown low to moderate levels of heaping in DHS-I showed this same level in DHS-II. The other two countries (Senegal and Indonesia) showed more heaping on the duration since first union in DHS-II than in DHS-I. In contrast, Kenya and Egypt showed substantially more heaping in the DHS-I surveys.

A comparison of the median age at first union in the two oldest cohorts shows that in the DHS-I surveys conducted in Kenya and the Dominican Republic, the median age at first union was at least half a year older for women age 45-49 than for those age 40-44. This pattern is unexpected and possibly is due to the forward displacement of the date of first union or omissions of early unions by the oldest cohort. However, in subsequent DHS surveys, Kenya and the Dominican Republic show no evidence of this type of error, suggesting a possible improvement in the accuracy of reporting of the date of first union by the oldest cohort. This is not the case for Egypt, where both surveys show some indication of forward displacement of the date of first union by the oldest cohort. In contrast, none of the five other countries examined in Table 5.1 show a tendency toward forward displacement of the date of first union in either DHS-I or DHS-II.

An examination of the proportion of women ever-married at age 15-19 at the time of the survey and five years ago suggests some improvement in the reporting of marital status or age among younger women between DHS-I and DHS-II in two countries, Indonesia and the Dominican Republic. Conversely, in Peru, the proportion who are ever married at 15-19 at the time of the survey shows no large decrease in the five years preceding the survey in DHS-I but a recent accelerated decline in DHS-II. Although this pattern may reflect errors in the reporting of marital status or age among younger women in the DHS-II survey, it may partly be a consequence of a trend toward increasing age at first marriage (see Table 2.3). In Egypt and Colombia, the percentage decline in the proportion ever-married at 15-19 from the fifth year preceding the survey to the time of the survey is at least double the percentage change from the tenth to the fifth year prior to the survey. This pattern is observed in both DHS-I and DHS-II. It seems likely that in both surveys, never-married women may be understating their current age or young married women may be overstating their current age, leading to an apparent decline in the proportion married in the age group 15-19 at the time of the survey. In the case of Egypt (an ever-married sample), misreporting the marital status of young women in the household schedule may contribute to underestimating the proportion of women ever-married in this age group. This is quite possible since the respondent for information in the household questionnaire usually is a male head of household rather than the individual woman.

In evaluating the quality of the date of first birth, procedures were used that were similar to those used for date of first union. Overall, a greater proportion of respondents were able to report a complete date of first birth than could report a complete date of first union. The completeness of reporting of the date of first birth varied across regions; the lowest levels of completeness were in West Africa and the highest levels in Latin America. The dates of first birth reported by older respondents generally required more imputation than the dates reported by younger women.

Typically, surveys in sub-Saharan Africa are more likely than those in Latin America to exhibit a preference for years of first birth and durations of first birth ending in digits 0 and 5. Surveys conducted in sub-Saharan Africa also show a noticeable degree of displacement in the age at first birth compared to those in Latin America or North Africa and Asia. In general, comparing the percentage of women who were ever married or who had given birth at selected intervals prior to the survey date does not reveal gross displacement of the date of first union or omissions of first births by older women. However, a few surveys show moderate levels of distortion in the trend in the timing of first union and first birth, primarily in sub-Saharan Africa.

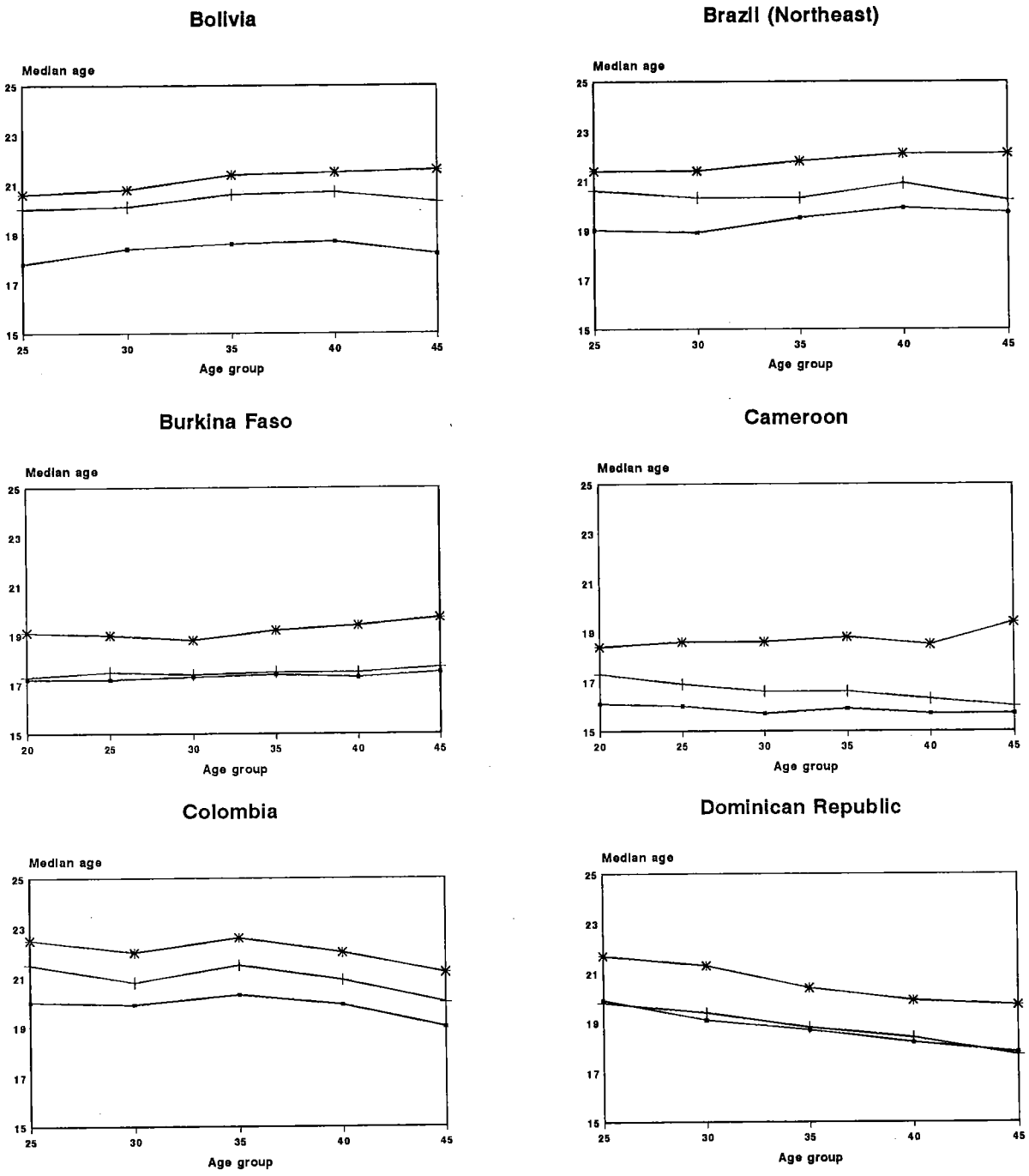
Figure 5.1 shows the medians for age at first union, first birth and first sexual intercourse for successive cohorts of women in the DHS surveys. None of the DHS-II surveys show an erratic pattern in the ages at first union, first birth, or first sexual intercourse. In most surveys, these indicators all show the same trend—an increase, decrease or stability over time—but a few surveys do not. For example, in Indonesia, the age at first union appears to have increased slightly over time whereas the age at first birth has remained constant. In the Kenya DHS-I survey, irregularities in the age at first union are mirrored in the age at first birth for the oldest age group. In addition, the age at first union shows an increasing trend from the oldest cohort to the age group 30-34 while the age at first birth shows a declining trend. These contrasting trends lead to a narrowing of the gap in the timing of first union and first birth over time in the Kenya DHS-I survey. This pattern is observed to a somewhat lesser degree in the Kenya DHS-III survey.

The consistency of the data on the age at first intercourse, age at first union, and age at first birth at the individual level was evaluated by examining the length of the intervals between these events. In some instances the reported age at first sexual intercourse is higher than the age at first birth, but this pattern of misreporting is not prevalent. The proportion of women who report having sexual intercourse a year or more before first marriage generally is consistent with the percentage who report negative first-birth intervals or premarital conceptions.

Overall, the quality of the data on age at first union, age at first birth, and age at first sexual intercourse is satisfactory in most surveys. The low levels of completeness of reporting of the dates of first union and first birth in Senegal and Niger and pronounced heaping on years and durations ending in digits 0 and 5 in Nigeria and Pakistan suggest that caution must be exercised in using these data. There is some evidence of omissions of early unions or first births (especially those who died at an early age) and displacement of the dates of first union and first birth by older women. However, these errors are not widespread. The comparison of DHS-II data with similar information from the WFS and DHS-I surveys show some distortions among the oldest and youngest cohorts, but for the remaining age groups, the DHS-II estimates are reasonably consistent with estimates from the earlier surveys. There is also some indication that the quality of data on the age at first union may have improved between the DHS-I and DHS-II surveys.

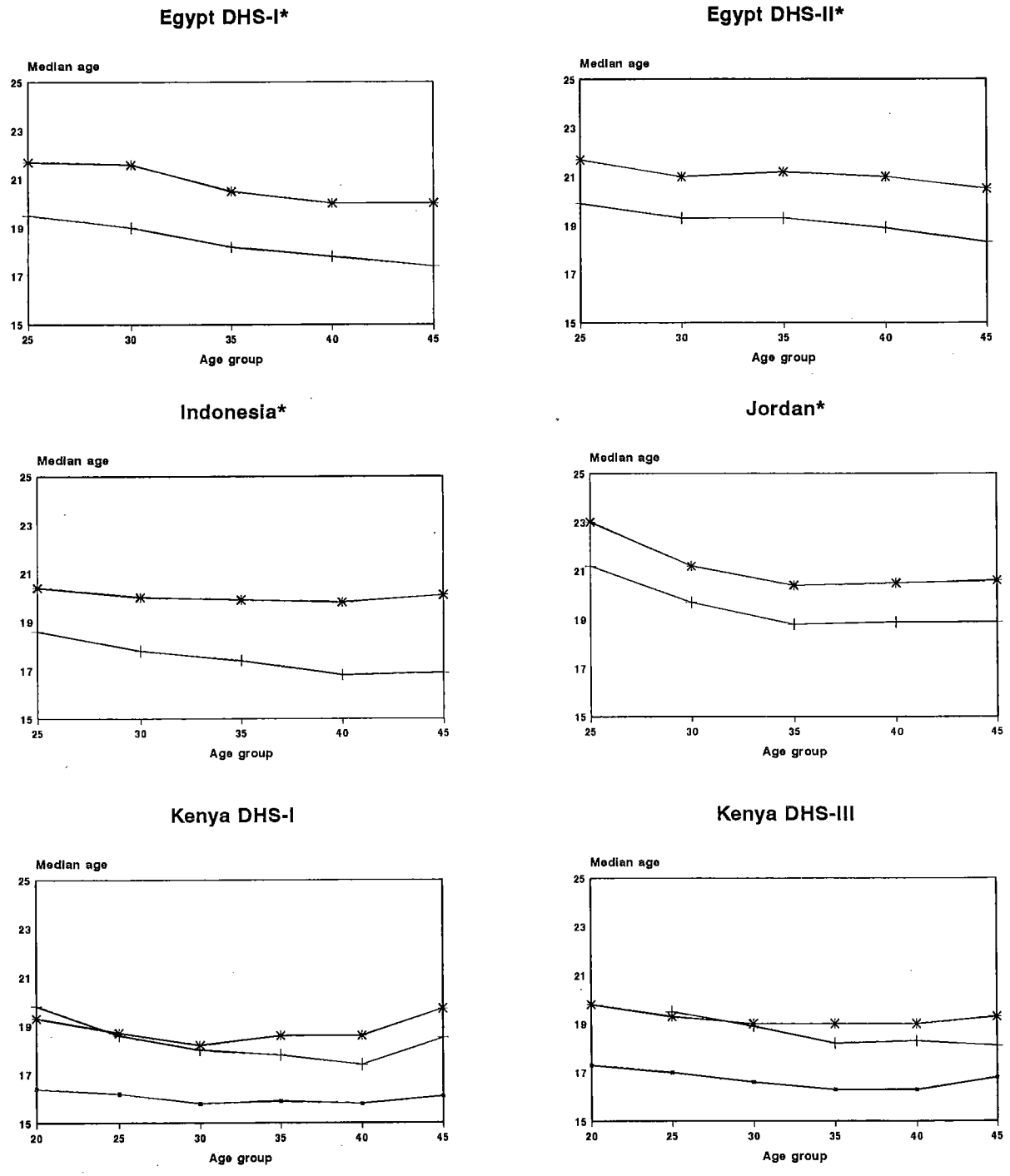
Some of the errors in the dating of first union and first birth are unavoidable in large-scale retrospective surveys that are conducted in settings where there is poor knowledge and documentation of dates of events. Substantial efforts are made in the DHS program to obtain information on the date of first marriage and first birth. If the respondent cannot remember the date of an event, interviewers are required to probe using various approaches. For example, the birth history may be used to probe for the date of first union, where possible. Interviewers are instructed to ask the respondent how old she was when her first child was born, and then ask how long before or after the birth she began living with her first husband or partner. In the DHS-II surveys, the consistency of year of first union was checked by summing the respondent's year of birth and the age at first union to see whether the result is equal to or within one year of the year of first

Figure 5.1
Median age at first sexual intercourse, first union, and first birth by five-year age group



*No comparable data were collected on age at first sexual intercourse

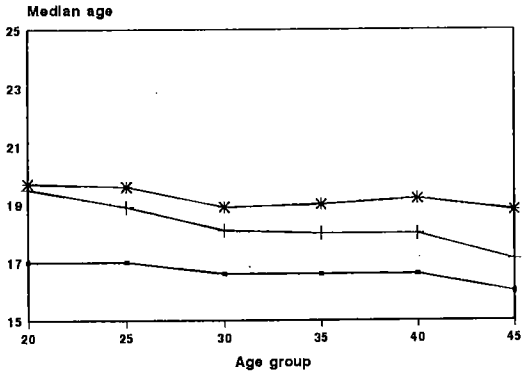
Figure 5.1- cont.
Median age at first sexual intercourse, first union, and first birth by five-year age group



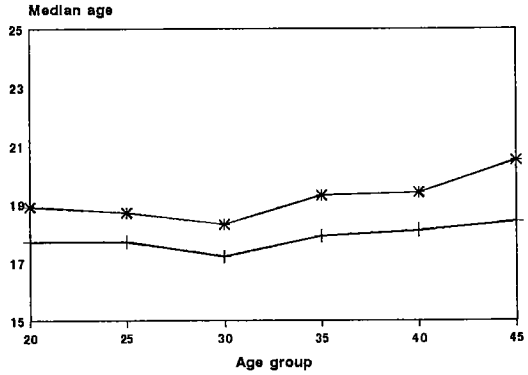
*No comparable data were collected on age at first sexual intercourse

Figure 5.1- cont.
Median age at first sexual intercourse, first union, and first birth by five-year age group

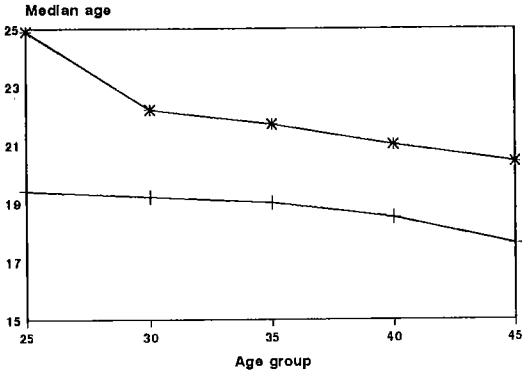
Madagascar



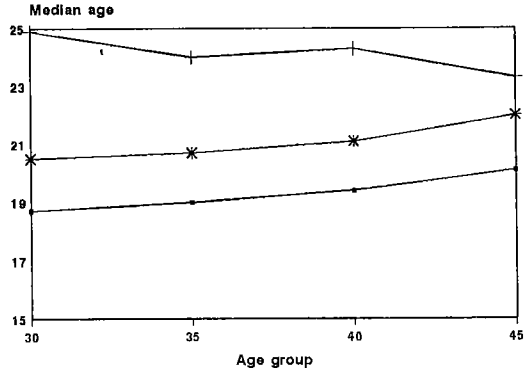
Malawi*



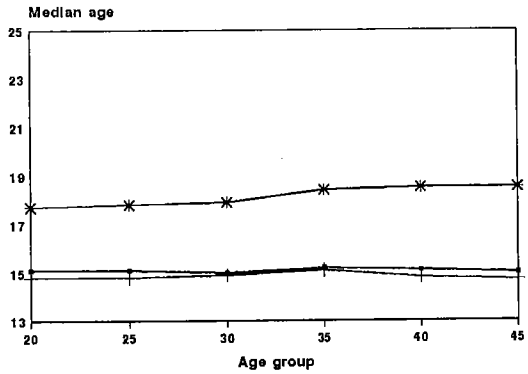
Morocco*



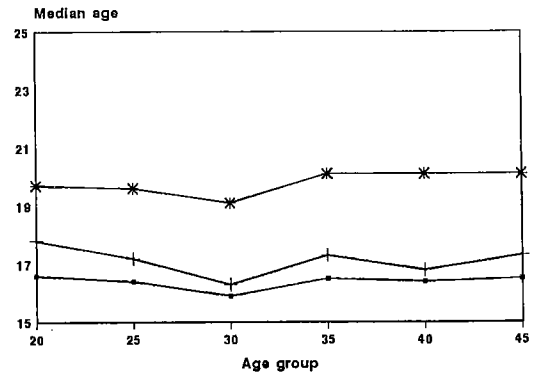
Namibia



Niger



Nigeria



*No comparable data were collected on age at first sexual intercourse

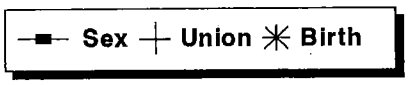
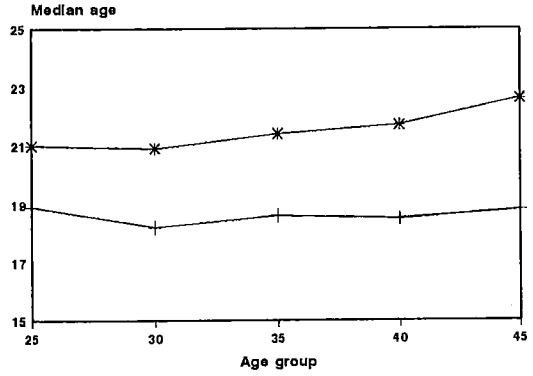
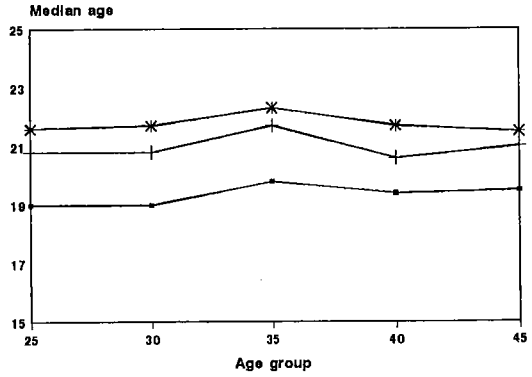


Figure 5.1- cont.
Median age at first sexual intercourse, first union, and first birth by five-year age group

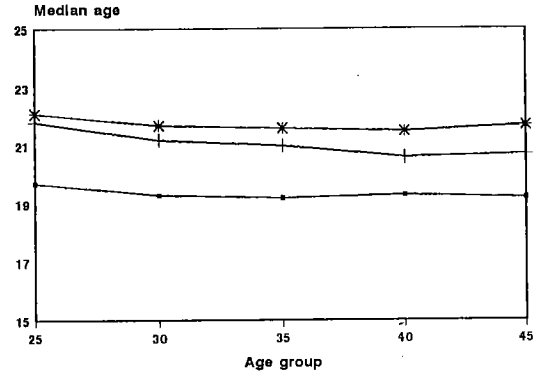
Pakistan*



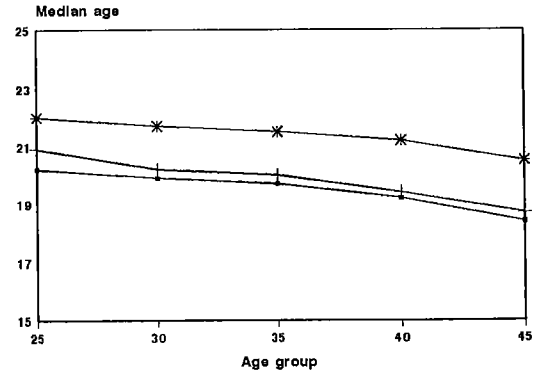
Paraguay



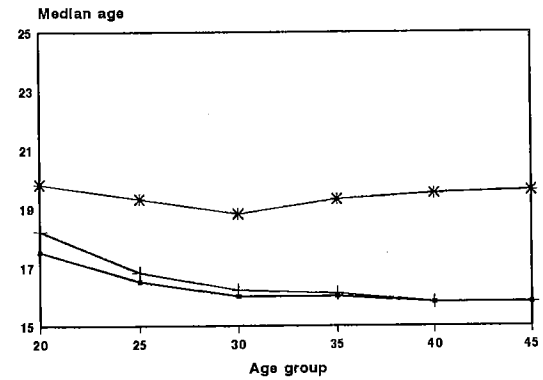
Peru



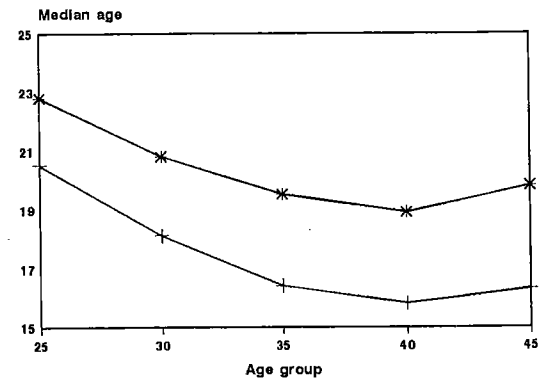
Rwanda



Senegal



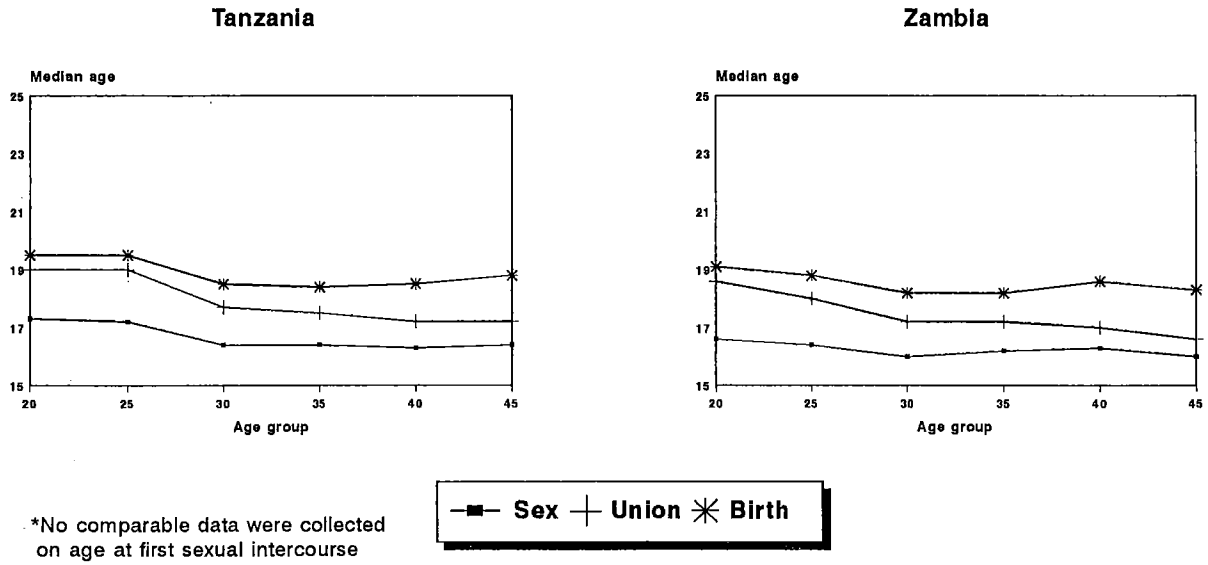
Sudan*



Sex Union Birth

*No comparable data were collected on age at first sexual intercourse

Figure 5.1- cont.
Median age at first sexual intercourse, first union, and first birth by five-year age group



*No comparable data were collected on age at first sexual intercourse

union. If not, the interviewer was required to probe and correct the information on the date of first union or age at first union, as necessary. However, an evaluation of the usefulness of this consistency check revealed that additional errors were introduced in the data by the interviewers in performing the required calculations. For this reason, the consistency check for year of first union was dropped from the DHS-III questionnaire.

Another modification was introduced in the section on marriage and sexual activity in the DHS-III questionnaire in order to reduce the likelihood of underreporting of sexual experience among unmarried women. This problem was evident in earlier DHS surveys, primarily in Latin America. First, women who report that they are not currently in union are asked whether they have a sexual partner. Second, all women are asked about the last time they had sexual intercourse and the phrase "if ever" is put in parentheses in the last portion of the question. This phrase is intended for women who have never been in union and do not currently have a sexual partner. It has been substituted for the earlier DHS version that asked unmarried women whether they had ever had sexual intercourse.

To conclude, there appears to have been some improvement in the quality of data on age at first union, age at first birth, and age at first sexual intercourse since the WFS and DHS-I surveys. However, caution must be exercised in using this data because of errors of recall, heaping, and displacement, particularly in countries with poor documentation and knowledge of dates. In these countries, and in settings where consensual unions are prevalent, the date of first union is not precise. Furthermore, in societies where marriage is not a single definitive event, culture-specific questions would be required to fully capture the marriage process and ethnic variations in marriage timing.

References

Blanc, Ann K. and Naomi Rutenberg. 1990. Assessment of the Quality of Data on Age at First Sexual Intercourse, Age at First Marriage, and Age at First Birth in the Demographic and Health Surveys. In *An Assessment of DHS-I Data Quality*, Institute for Resource Development, 41-79. DHS Methodological Reports No.1. Columbia, Maryland: Institute for Resource Development/Macro Systems Inc.

Bledsoe, Caroline. 1990. Transformations in sub-Saharan African Marriage and Fertility. *Annals of the American Academy of Political and Social Science* 510: 115-125.

Croft, Trevor. 1991. DHS Data Editing and Imputation. In *Proceedings of the Demographic and Health Surveys World Conference, Washington, D.C., 1991*. Vol. II, 1337-1356. Columbia, Maryland: Institute for Resource Development/Macro International, Inc.

Goldman, Noreen. 1985. Assessment of the Fertility Data Collected in WFS Individual Surveys. In *Assessment of the Quality of Data in 41 WFS Surveys: A Comparative Approach*. ed. Noreen Goldman, Shea Oscar Rutstein, and Susheela Singh, 38-62. WFS Comparative Studies No. 44. Voorburg, Netherlands: International Statistical Institute.

Katjiuanjo, Puumue, Stephen Titus, Maazuu Zauana, and J. Ties Boerma. 1993. *Namibia Demographic and Health Survey 1992*. Columbia, Maryland: Ministry of Health and Social Services and Macro International Inc.

Konaté, Désiré Lohé, Tinga Sinaré, and Michka Seroussi. 1994. *Enquête Démographique et de Santé Burkina Faso 1993*. Columbia, Maryland: Institut National de la Statistique et de la Démographie and Macro International Inc.

Kourguéni, Idrissa Alichina, Bassirou Garba, and Bernard Barrère. 1993. *Enquête Démographique et de Santé Niger 1992*. Columbia, Maryland: Direction de la Statistique et des Comptes Nationaux and Macro International Inc.

Rutstein, Shea Oscar and George T. Bicego. 1990. Assessment of the Quality of Data Used to Ascertain Eligibility and Age in the Demographic and Health Surveys. In *An Assessment of DHS-I Data Quality*, 5-37. DHS Methodological Reports No.1. Columbia, Maryland: Institute for Resource Development/Macro Systems Inc.

Saha, Tulshi and Gora Mboup. 1992. Data Evaluation: Age at First Union. Calverton, Maryland: Macro International Inc.

Singh, Susheela. 1985. Assessment of Nuptiality Data. In *Assessment of the Quality of Data in 41 WFS Surveys: A Comparative Approach*. ed. Noreen Goldman, Shea Oscar Rutstein, and Susheela Singh, 21-37. WFS Comparative Studies No. 44. Voorburg, Netherlands: International Statistical Institute.

van de Walle, Etienne. 1993. Recent Trends in Marriage Ages. In *Demographic Change in sub-Saharan Africa*. ed. Karen A. Foote, Kenneth H. Hill, and Linda G. Martin, 117-152. Washington, D. C.: National Academy Press.