

## **Trends in Contraceptive Use and Condom Use Among Single African Women: Evidence from DHS**

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### **Introduction**

An aura of disappointment and frustration surrounds global efforts to check the spread of HIV in poor and middle-income countries. Despite substantial investment in the promotion of safe sex and condom marketing, only Thailand and Uganda have clearly succeeded in stemming generalized epidemics, though there are recent encouraging signs in other countries in Africa and the Caribbean.<sup>1</sup> Even the achievements of intensive interventions targeted at young people or the general population in specific localities have been mixed.<sup>2,3,4</sup> Three responses to the perceived impasse predominate. The first proclaims that only fundamental changes in poverty and gender inequality can bring about the necessary changes in sexual conduct.<sup>5,6,7,8</sup> The second pins hope on the possibility that increased access to drug therapy for AIDS will present new opportunities for effective prevention.<sup>9,10</sup> The third pursues a moralistic pathway, as exemplified by the emphasis on virginity until marriage in PEPFAR initiatives.

The purpose of this paper is to assess the justification for this pessimism by presenting evidence on trends in protective behaviour among young women in sub-Saharan Africa, the region most affected by HIV/AIDS, stratified by education, rural-urban residence, wealth categories and age. It complements a recently published analysis of national trends by examination of sub-national trends.<sup>11</sup> Specifically, we are interested whether all major youth strata have benefited from the positive developments observed earlier. Specifically, we analyze trends in effective contraceptive knowledge, contraception and condom use among sexually active single (i.e. never married) women aged 15-24 years at the time of the survey in those countries that have conducted two or

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more comparable surveys between 1990 and 2005 for rural-urban, education, wealth and age strata.

## Methods

The data for this analysis come from the Demographic and Health Survey (DHS). The DHS is ideal for comparative and trend analysis because their surveys use nationally representative samples and standardized instruments, training, data collection and data processing. Sampling usually follows a stratified 2-stage design, with a first-stage selection of geographical clusters, followed by random selection of households within each cluster. The primary respondents are women aged 15-49 years in selected households. They are interviewed by well trained female staff using a structured instrument translated into local languages. Response rates are typically 90% or more<sup>12</sup>.

In a total of 18 countries in sub-Saharan Africa, the relevant information on contraception, together with the wealth index, has been collected from samples of women in two surveys. Trend data on condom use at most recent coitus are available for 16 out of the 18 countries (the exceptions being Nigeria and Senegal where the question on condom use at last act was not ascertained in the first round). Two countries were further excluded from the detailed analysis (Chad and Ethiopia) because the number of eligible women was not sufficient to permit stratified analysis. The remaining 14 countries comprise approximately 40% of sub-Saharan Africa's population.

The median of the starting date of the fieldwork of the earliest round is November 1996 and the median starting date for most recent round is May 2003. Sample sizes range from 105 to 869 single women aged 15-24 years who had sex in the last 3 months. The hierarchical distribution of the analysis populations (i.e., single sexually active women aged 15-24 years who had sex in the last three month), by country and survey round is summarized in Table A.

The median date of fieldwork was calculated for each survey and this information was used to estimate the rate of annual change in the prevalence of contraceptive use and condom use. In order to have sufficient cases in each category for the stratified analysis,

we dichotomized the selected background characteristics: education was grouped into primary or less vs. secondary or more, wealth quintiles into poor vs. rich, and age into 15-19 years vs. 20-24 years.

To take account of the changes in the composition of successive samples from each country that might distort or national trends, estimates from the most recent surveys for each country were standardized by the composition of the earlier survey with respect to age, place of residence, education level, and wealth categories. Similarly, trends within strata were standardised for compositional differences in the other stratifying factors.

Results are summarized in the paper in the form of paired box and whisker plots, one box for the earliest survey round and the other for the most recent round. Exact 95% confidence intervals for the median values were calculated using the binomial distribution. The statistical significance of within-country changes was assessed using logistic regression by including a binary indicator for the survey round (0=earliest survey and 1=most recent survey) taking into account the cluster-design of surveys and, adjusting for age, education and place of residence. The survey-normalized weights were applied to take account of variations in probabilities of selection corrected for non-response. All analyses were carried out in Stata 9.2.<sup>13</sup>

## Results

### *Contraceptive knowledge and use*

Effective knowledge of contraception (defined here as knowledge of the two most commonly used modern methods, oral contraceptives and condom) among the sexually active in the last three months rose from median of 76.4% to 85.7%. Upwards trends were particularly sharp in Madagascar and Mozambique. Knowledge changed little or declined slightly in Cameroon, Kenya, Mali, Malawi and Zimbabwe. Similar rises in ever use were noted (50.2% vs. 60.9%) (Table B and Figures 1a-1b). The exceptions here include Benin, Malawi, Mali and Zimbabwe.

As depicted in Figure 2, current use of any method of contraception among women who reported coitus in the past three months rose slightly from a median of 19.0% to 22.9%. Current use of a modern method rose from 19.5% to 28%. The upward trend exceeded 10 percentage points in six countries and was spectacularly large in Cameroon and Mozambique (Table B). Use of effective non-barrier methods (predominantly oral contraceptives) changed little, use of less effective methods (mainly periodic abstinence) decreased and use of condoms rose from a median level of 11.4% to 18.0%. The increase in condom use was significant in 8 of 14 countries and exceeded 10% in five countries. The rate of annual increase in condom use for pregnancy prevention between earliest and most recent survey were two percentage points or more in seven countries. The median rate of annual increase for all 14 countries was 1.44 (95% CI: 0.66-2.04) percentage points. In the more recent survey, condoms were the dominant contraceptive method in 10 of the 14 countries, the exceptions being Benin, Côte d'Ivoire, Madagascar and Mali where periodic abstinence was more commonly reported (Table 1)

#### *Condom use in last coital act*

The median level of condom use at most recent coitus also rose from 18.5% (95% CI: 12.3- 27.4) to 31.2% (95% CI: 25.7- 40.5) (Figure 3a). In nine out of 14 countries, the increase was significant and in seven countries exceeded 10%. The median rate of annual increase was 1.70 (95% CI: 0.55-2.47) percentage points. Positive trends were particularly pronounced in Cameroon, Mozambique and Tanzania (Table 2). Figures 3b-3e show standardised trends for strata. The visual impression from these box and whisker plots is that the increase in condom use has been more pronounced among urban, less educated, older and wealthier young women than among their rural, more educated, younger and poorer counterparts.

In Table 5, rates of change in standardised estimates and probabilities of condom use at last coital act are presented. The results of this analytical approach indicate that the median annual increase in condom use in the urban sector has been greater than in the rural sector (2.09 versus 1.29) percentage points. In 1997, urban young women were

2.03 times more likely to report condom use than rural women. By 2003 this ratio had increased to 2.21.

The medians of the standardized annual rates by educational strata differ little (1.59 for the less educated versus 1.99 for the more educated). Between 1997 and 2003, the ratio of condom use probabilities narrowed slightly, from 2.36 to 1.91. In terms of wealth strata, Table 5 reinforces the impression of the box and whisker plot. The median annual increase in condom use between 1997 and 2003 was 2.64 percentage points for women from more affluent households compared with 0.95 for the less affluent group. Over the same time period, the ratio of use widened from 1.95 to 2.58. Finally, differences by age group were modest. While the increase among older women was slightly more pronounced, the relative difference in condom use changed little in the six year period.

#### *Dual use*

As contraceptive use and condom use at most recent sex act are ascertained at different times in DHS interviews, and the question on use at last coitus makes no mention of the motive for use, examination of the contraceptive status of women who used a condom at last coitus provides insights into dual protection and the probable importance of pregnancy prevention as a motive for condom use. In the earlier survey round, the percent of condom users at last coital act who earlier reported current use of condoms for contraceptive ranges from less than 40% in Kenya, Tanzania and Zimbabwe to about 70% in Burkina Faso, Ghana and Uganda, with a median of 51.9% (Table 2). In the most recent survey round of the 14 countries, among women who used a condom at last coitus, the percentage who stated earlier in the interview that they were currently using the condom for pregnancy prevention ranges from 34.0% in Zambia to 82.1% in Madagascar, with a median value of 58.5%. At the more recent survey, the median percentages who reported use of an effective or less effective non-barrier method were 6.1% and 5.8%, respectively, while 25.5% had reported no current use. The combination of condom use at last sex and current use of an effective non-barrier contraceptive method exceeds 10% in Mali, Mozambique and Zimbabwe. The combination of condom use at last sex without current contraceptive use is most common in Malawi and Zambia

where over half of young women who reported condom use at last sex responded negatively to the question on current contraceptive use.

Table 5 presents variations in dual use (i.e. % of condom users at last sex who also reported current use of this method for pregnancy prevention) by strata. Differences by residence and education are small but the data suggest that younger women and those from more affluent backgrounds are more likely to be dual users.

### *Consistent Use*

The ascertainment of condom use status at two different points in DHS interviews also permits an assessment of consistency of reporting. We define consistency as the percentage of women reporting current use of condoms for contraception who also reported use at most recent coitus. In the earlier round, the level of consistency exceeds 70% in all countries except Cameroon and Madagascar, with a median value of 88.6% (Table 2). In the more recent survey, median consistency is slightly lower at 81.3%. Surprisingly, consistency is higher among rural than urban women and among poorer than richer women (Table 6).

### **Discussion**

The most positive finding from this analysis is the considerable increase in condom use reported by sexually active, single women thus confirming earlier published results on a slightly different set of countries with more recent data. Moreover, increases are recorded across all major strata. This increased uptake bears no relation to severity of national HIV epidemics: some of the sharpest increases were recorded in Western African countries where HIV prevalence is lower than in Eastern or Southern Africa. Some will argue that an annual increase of 1.4 percentage points per year--the median for all 14 countries--is far too slow a pace of change to justify any claim that condom promotion has been effective among young women in Africa. Nor do DHS enquiries shed light on consistency of use, though condom use at most recent coitus has been found to be highly correlated with consistent use.<sup>14, 15</sup>

This perspective raises the question of what pace of change might reasonably have been expected. One appropriate yardstick comes from the rise in contraceptive practice among married couples in developing countries because, like condom use, adoption of contraception requires considerable adjustment in attitudes towards procreation and sex. Between 1965 and 1998 the prevalence of contraceptive use in developing countries rose from about 10% to nearly 60%, corresponding to an average annual increase of 1.5 percentage points.<sup>16</sup>

This example serves to make the point that the recorded increase in condom use by young single women in these 14 African countries is encouraging and that condom promotion can be rightly regarded as, at least, a moderate success. Of course, in view of the severity of AIDS in Eastern and Southern Africa, a faster pace of behavioural modification was, and remains, highly desirable but it was probably unrealistic to expect abrupt, major changes in behaviour so closely linked to such central preoccupations of life as sex and procreation. Moreover, the nature of the threat posed by AIDS and the remedies were largely forged in the West and were initially greeted with denial and suspicion in much of Africa. Behavioural change has to be preceded by a period in which alien messages become assimilated into local social networks and this takes time.<sup>17</sup>

The results suggest that a majority of condom users are motivated, mainly or partially, by the desire to avoid pregnancy. This has potentially major implications for the style of condom promotion in Africa. Most funding for condom promotion comes from agencies primarily concerned with HIV prevention and thus promotional messages tend to associate the product with disease rather than pregnancy prevention. The results of this analysis suggest that condom promotion for contraception might be more effective, because it must be easier to introduce condoms into a relationship with the declared motive of preventing pregnancy than with the declared (or implicit) motive of preventing infection with HIV or other sexually transmitted infections. It might be possible to assess this conjecture through an areal trial that used different promotional strategies in local radio or television stations.

Most condom users obtain supplies at commercial outlets, either at full cost or at a subsidised price via social marketing programmes. Understandably equity of access is a major concern. Fears have been expressed the people from poor backgrounds and rural areas may be disadvantaged compared with richer, urban people. The results presented in this paper contain mixed messages. In the more recent round, urban and better educated young women were twice as likely to have used a condom at most recent coitus than their rural, less educated counterparts. The difference by wealth stratum was wider, a ratio of 2.6. However, it is unclear whether these large differences arise from inequalities of physical access or affordability and whether they reflect differences in perceived need or acceptability of condoms. Furthermore, these persistent disparities in condom use should not be allowed to mask the fact that substantial increases in use have occurred in rural areas and among less educated women. Of potentially greater concern is the slow pace of change among women from poorer households. Further research to establish whether or not price is a barrier for poor young women and their partners is an urgent priority.



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**Tables and Figures****Table 1: Distribution of current contraceptive method used by women who had sex in the last 3 month, by type of method, country and survey round**

Country	Survey round	Current method					Total
		Pill	Condom	Other modern	Periodic Abstinence	Other traditional	
Benin	1996	3.2	13.0	0.0	76.4	7.3	100
	2001	3.8	41.1	1.4	46.3	7.4	100
Burkina Faso	1998/99	8.8	76.5	1.3	11.7	1.7	100
	2003	6.0	84.1	3.6	6.1	0.2	100
Cameroon	1998	2.9	22.4	1.6	67.9	5.2	100
	2003/04	0.5	68.5	1.2	29.1	0.8	100
Cote d'Ivoire	1994	8.2	21.2	2.0	64.5	4.2	100
	1998/99	11.1	32.7	3.0	51.3	2.0	100
Ghana	1998/99	12.0	42.5	3.6	28.5	13.3	100
	2003	11.2	59.9	2.3	19.0	7.6	100
Kenya	1998	21.6	19.9	17.4	39.9	1.3	100
	2003	10.5	47.9	15.5	21.8	4.3	100
Madagascar	1997	9.0	10.6	2.6	71.9	6.0	100
	2003/04	7.4	25.6	11.6	49.8	5.6	100
Malawi	2000	15.2	68.6	11.1	3.1	2.0	100
	2004/05	3.5	62.7	32.0	0.0	1.8	100
Mali	1995/96	36.2	25.7	0.1	34.7	3.3	100
	2001	17.1	31.3	15.5	32.2	4.0	100
Mozambique	1997	25.5	27.9	20.8	20.4	5.4	100
	2003/04	26.5	62.9	2.7	3.9	4.1	100
Tanzania	1996	34.0	30.8	9.3	20.8	5.2	100
	1999	10.4	61.1	18.3	9.0	1.2	100
Uganda	1995	7.3	59.4	3.1	27.8	2.4	100
	2000/01	9.1	74.4	6.5	7.6	2.4	100
Zambia	1996/97	9.7	63.6	2.8	15.1	8.8	100
	2001/02	21.4	57.4	6.1	4.5	10.6	100
Zimbabwe	1994	42.6	46.4	1.6	9.3	0.0	100
	1999	23.8	61.7	9.6	0.0	5.0	100
<b>Total</b>	Earlier survey	<b>12.6</b>	<b>31.0</b>	<b>4.2</b>	<b>47.4</b>	<b>4.5</b>	<b>100</b>
	Later survey	<b>11.1</b>	<b>58.2</b>	<b>6.0</b>	<b>21.4</b>	<b>3.3</b>	<b>100</b>

**Table 2: Condom use for dual protection (sexually active last 3 months), by country and survey round**

Country	Survey round	N	Use at last sex		Current contraceptive status among condom users last act				Consistent use <sup>(1)</sup>		
			n	%	Not using	Condom	Non-barrier	Traditional	Total	n	%
Benin	1996	235	21	9.0	4.6	57.5	5.7	32.2	100	16	76.5
	2001	376	83	22.1	36.0	57.5	0.0	6.5	100	61	78.6
	1998/99	207	89	42.9	19.7	72.9	1.4	6.0	100	77	84.4
Burkina Faso	2003	396	220	55.6	13.2	78.9	5.8	2.2	100	182	95.7
	1998	458	81	17.7	7.6	55.2	1.4	35.8	100	74	60.6
Cote d'Ivoire	2003/04	555	297	53.5	13.0	73.6	1.0	12.4	100	277	78.9
	1994	869	168	19.3	18.6	47.5	4.5	29.4	100	88	91.0
	1998/99	348	97	27.9	13.9	48.8	6.0	31.3	100	65	73.2
Ghana	1998/99	202	50	24.6	15.4	68.1	4.7	11.8	100	35	96.6
	2003	269	99	36.7	30.9	58.5	3.8	6.8	100	73	79.1
Kenya	1998	444	76	17.1	44.7	35.5	10.3	9.5	100	29	91.7
	2003	227	65	28.5	35.4	58.6	4.1	2.0	100	40	93.5
Madagascar	1997	373	13	3.4	25.2	49.8	0.0	25.0	100	10	63.7
	2003/04	330	23	7.1	14.6	82.1	0.0	3.3	100	26	72.5
Malawi	2000	339	106	31.3	53.1	41.1	5.8	0.0	100	50	87.2
	2004/05	233	92	39.5	59.6	34.5	5.9	0.0	100	34	92.7
Mali	1995/96	295	38	13.0	24.3	58.9	4.3	12.5	100	27	82.8
	2001	343	50	14.5	35.0	43.4	12.3	9.4	100	28	75.9
Mozambique	1997	362	24	6.6	31.8	48.7	7.0	12.6	100	12	98.3
	2003/04	752	253	33.6	12.2	72.2	15.1	0.5	100	233	78.2
Tanzania	1996	401	56	13.9	45.2	39.1	10.9	4.8	100	25	86.7
	1999	408	148	36.2	43.7	50.9	4.1	1.2	100	79	94.9
Uganda	1995	146	39	26.6	19.3	73.0	5.4	2.3	100	31	89.9
	2000/01	231	115	49.9	24.5	70.2	5.2	0.2	100	85	94.7
Zambia	1996/97	477	101	21.1	41.2	56.0	0.7	2.0	100	60	93.4
	2001/02	328	95	28.9	55.5	34.0	8.0	2.6	100	39	83.5
Zimbabwe	1994	105	40	38.4	46.1	37.2	9.7	7.0	100	17	90.3
	1999	125	47	37.5	28.8	58.8	10.8	1.7	100	29	96.1
Total	Earlier survey	4,835	901	(18.4)	29.6	51.9	4.8	13.6	100	551	(88.6)
	Later survey	4,920	1,682	(34.9)	25.5	62.6	6.1	5.8	100	1,252	(81.3)

<sup>(1)</sup> condom use last act among current condom users for pregnancy prevention

Note: Figures in brackets are medians

**Table 3: Crude percentages of condom use in last sex, by place of residence, education level and survey round**

	<b>Place of residence</b>				<b>Education level</b>			
	1 <sup>st</sup> round		2 <sup>nd</sup> round		1 <sup>st</sup> round		2 <sup>nd</sup> round	
	Rural	Urban	Rural	Urban	Primary	Secondary	Primary	Secondary
Benin	6.1	10.6	8.5	27.4	4.6	19.6	12.8	35.9
Burkina Faso	31.9	57.4	30.2	75.3	36.0	61.1	44.5	80.9
Cameroon	11.1	23.1	28.3	61.9	9.6	21.6	35.4	60.5
Cote d'Ivoire	18.0	20.6	16.5	37.0	14.6	30.3	22.1	42.9
Ghana	18.1	33.3	31.7	40.3	9.9	31.3	28.0	39.8
Kenya	13.7	23.8	25.6	35.0	12.9	25.6	21.7	41.8
Madagascar	1.6	6.5	4.9	11.5	0.7	9.7	1.0	15.1
Malawi	23.5	53.8	30.8	54.1	22.0	50.5	35.9	45.3
Mali	7.4	15.2	3.4	20.6	9.0	21.4	5.3	30.3
Mozambique	1.2	12.2	15.3	41.8	4.8	16.4	24.3	54.3
Tanzania	8.2	23.7	25.7	48.1	11.7	32.9	32.0	63.9
Uganda	20.7	41.6	44.2	60.0	15.6	49.1	39.3	63.8
Zambia	13.9	29.7	22.2	38.1	14.1	33.3	19.4	43.7
Zimbabwe	27.9	53.8	23.6	54.5	24.6	45.1	33.1	40.1
<b>Total (median)</b>	<b>(13.8)</b>	<b>(23.7)</b>	<b>(24.6)</b>	<b>(41.1)</b>	<b>(12.3)</b>	<b>(30.8)</b>	<b>(26.1)</b>	<b>(43.3)</b>

**Table 4: Crude percentages of condom use in last sex, by wealth category, age and survey round**

	<b>Wealth category</b>				<b>Age group</b>			
	<b>1<sup>st</sup> round</b>		<b>2<sup>nd</sup> round</b>		<b>1<sup>st</sup> round</b>		<b>2<sup>nd</sup> round</b>	
	Poor	Rich	Poor	Rich	15-19	20-24	15-19	20-24
Benin	4.7	10.6	8.5	26.3	7.3	12.4	21.2	23.3
Burkina Faso	31.3	50.3	26.1	67.6	40.6	50.0	46.4	75.8
Cameroon	13.3	20.4	32.8	62.8	17.9	17.4	52.5	55.0
Cote d'Ivoire	16.4	21.5	13.4	35.7	19.3	19.4	23.5	34.9
Ghana	16.8	31.6	25.2	46.2	26.0	23.1	39.1	33.5
Kenya	11.9	21.6	15.9	39.6	15.7	19.0	23.5	35.2
Madagascar	0.8	6.2	0.1	12.8	3.1	4.0	5.9	9.1
Malawi	20.4	40.9	34.5	42.4	30.2	34.3	41.2	36.0
Mali	7.8	14.3	3.5	18.5	15.9	6.9	13.6	16.2
Mozambique	0.6	8.7	12.7	39.8	4.0	15.6	32.0	37.4
Tanzania	7.1	19.5	18.9	48.2	12.3	16.3	37.4	34.1
Uganda	12.0	36.3	36.3	56.4	22.6	33.3	52.5	43.8
Zambia	11.2	32.3	22.7	36.3	18.4	28.1	25.8	35.8
Zimbabwe	27.0	47.1	19.9	54.1	30.7	45.8	32.5	42.0
<b>Total (median)</b>	<b>(11.9)</b>	<b>(21.6)</b>	<b>(19.4)</b>	<b>(41.1)</b>	<b>(18.2)</b>	<b>(19.2)</b>	<b>(32.3)</b>	<b>(35.5)</b>

**Table 5: Median percent with 95%CI of contraceptive knowledge and use and condom use last sex**

	Survey round				Annual Change		
	1997		2003		Median	95%CI	
	Median	95%CI	Median	95%CI			
<b><u>Contraceptive knowledge &amp; use</u></b>							
Effective knowledge	78.1	(70.0 81.4)	83.1	(77.7 85.5)	1.16	(0.45 2.09)	-
Ever use of any method	50.2	(35.3 63.3)	55.9	(42.0 66.4)	0.27	(0.50 1.45)	-
Current use							-
<i>Any method</i>	35.0	(21.3 47.5)	37.2	(26.5 47.4)	0.11	(0.33 1.19)	-
<i>Condom</i>	11.4	(6.5 16.3)	18.0	(13.2 26.9)	1.44	(0.66 2.04)	-
<i>Non-barrier modern</i>	5.2	(3.2 9.5)	6.4	(4.7 9.0)	0.01	(0.23 0.43)	-
<i>Traditional methods</i>	12.3	(4.5 21.7)	6.9	(2.7 13.5)	-0.82	(1.33 0.25)	-
<b><u>Condom use last act</u></b>							
Over all	18.5	(12.3 27.4)	31.2	(24.8 38.1)	1.70	(0.55 2.47)	-
Place of residence							-
<i>Rural</i>	13.8	(7.2 21.1)	25.2	(13.1 28.2)	1.29	(0.56 2.29)	-
<i>Urban</i>	23.7	(14.7 43.6)	39.5	(28.5 54.8)	2.09	(0.57 3.88)	-
<i>Ratio</i>	2.03	(1.79 2.39)	2.21	(1.65 2.84)			-
Education level							-
<i>Primary or less</i>	12.3	(8.3 16.7)	23.6	(18.8 30.4)	1.59	(1.04 2.67)	-
<i>Secondary+</i>	30.8	(21.1 45.8)	41.8	(38.0 55.3)	1.99	(1.39 4.28)	-
<i>Ratio</i>	2.36	(2.06 3.19)	1.91	(1.62 2.76)			-
Wealth category							-
<i>Poor</i>	11.9	(6.7 17.4)	18.2	(9.3 27.6)	0.95	(0.70 2.36)	-
<i>Rich</i>	21.6	(13.7 37.1)	37.1	(31.3 50.0)	2.64	(0.54 3.31)	-
<i>Ratio</i>	1.95	(1.75 2.90)	2.58	(1.78 3.30)			-
Age group							-
<i>15-19 years</i>	18.2	(11.5 26.7)	30.2	(21.8 37.2)	1.38	(0.64 2.76)	-
<i>20-24 years</i>	19.2	(15.0 33.5)	37.1	(31.3 50.0)	1.94	(0.98 3.01)	-
<i>Ratio</i>	1.26	(1.00 1.50)	1.21	(0.94 1.39)			-

**Table 6: Median percentages of dual use and consistent use in most recent survey**

	<b>Dual use</b>		<b>Consistent use</b>	
	Median	95%CI	Median	95%CI
<b>Over all</b>	58.5	(47.9 72.4)	81.3	(77.8 94.8)
<b>Place of residence</b>				
<i>Rural</i>	54.7	(42.1 70.6)	93.2	(71.7 97.9)
<i>Urban</i>	58.9	(50.3 72.5)	81.3	(75.8 91.2)
<b>Education level</b>				
<i>Primary or less</i>	56.1	(39.2 70.1)	86.7	(76.3 94.9)
<i>Secondary+</i>	58.7	(50.8 73.8)	82.8	(79.1 94.4)
<b>Wealth category</b>				
<i>Poor</i>	49.6	(37.1 65.5)	91.5	(71.4 98.4)
<i>Rich</i>	61.8	(45.3 72.9)	82.2	(76.1 93.9)
<b>Age group</b>				
<i>15-19 years</i>	63.7	(41.1 73.7)	81.0	(75.6 94.2)
<i>20-24 years</i>	54.0	(47.7 73.3)	85.6	(79.8 95.7)



Figure 1a: Effective knowledge of contraception

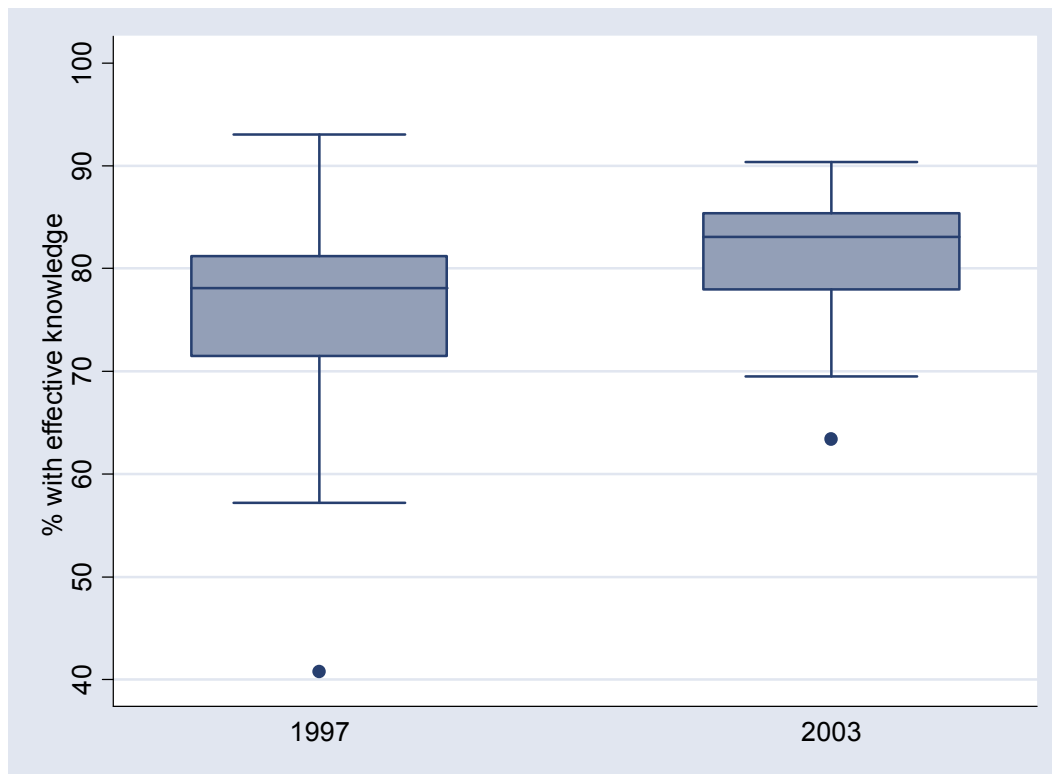


Figure 1b: Ever use of any contraceptive method

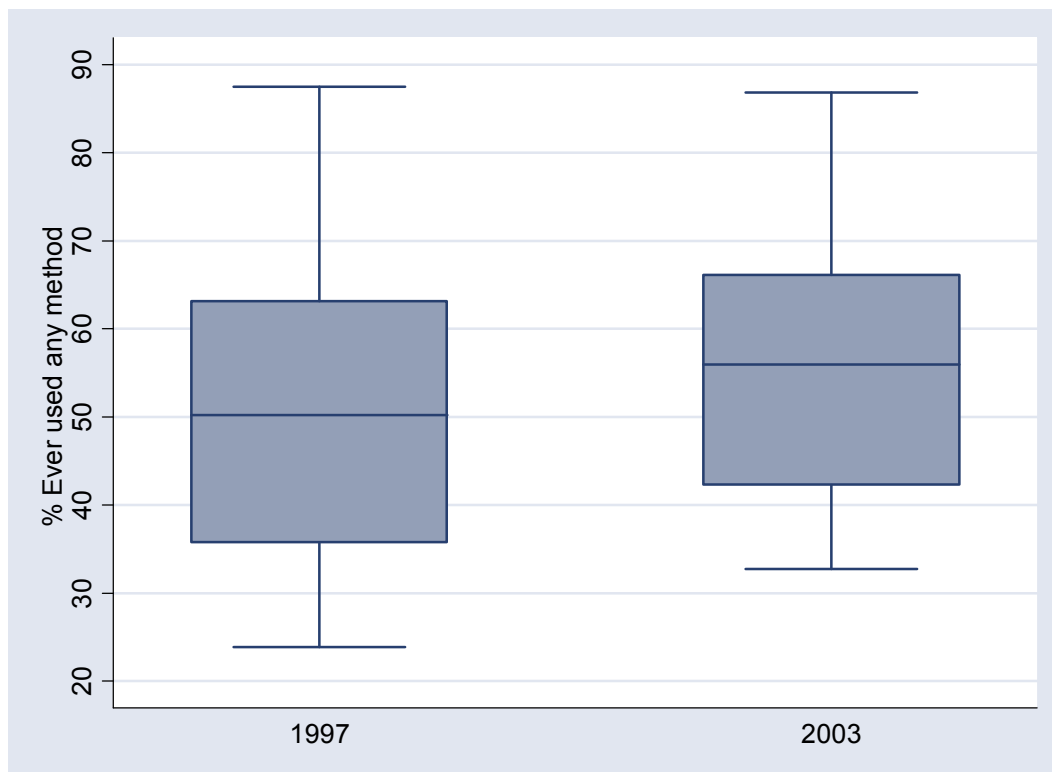


Figure 2: Trends (1997-2003) in current contraceptive use among single women aged 15-24 who were sexually experienced in the last 3 months before the survey

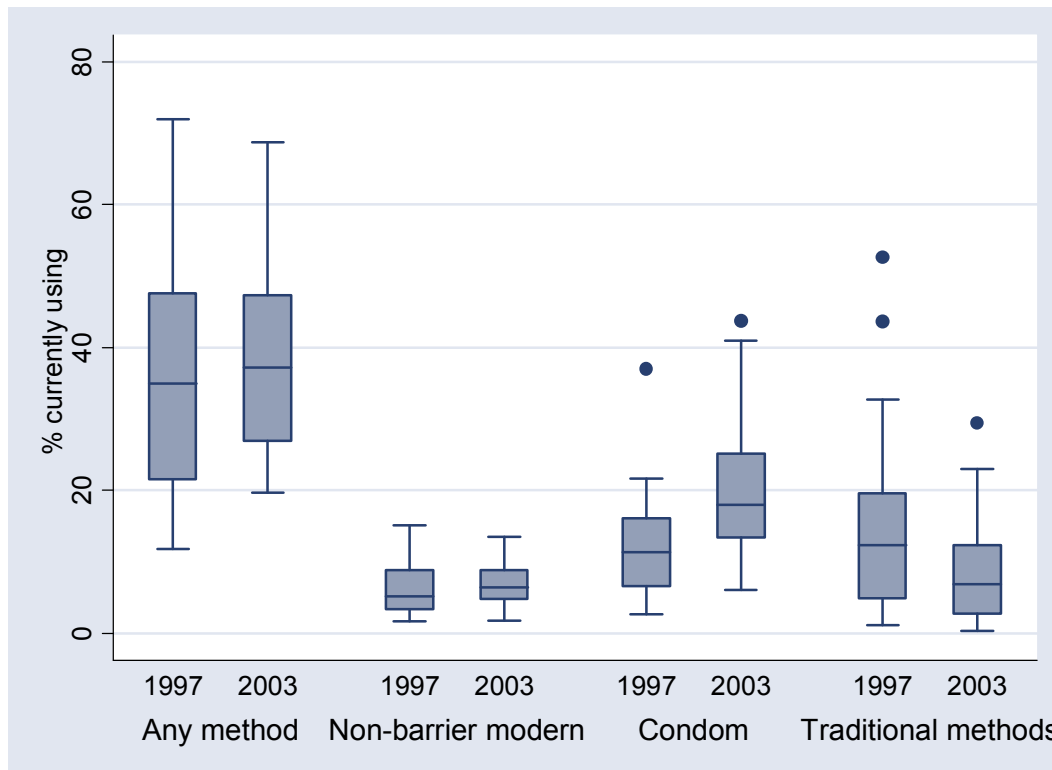


Figure 3a: Trends in standardized %s of condom use at last sex (among sexually active in last 3 month), by survey round

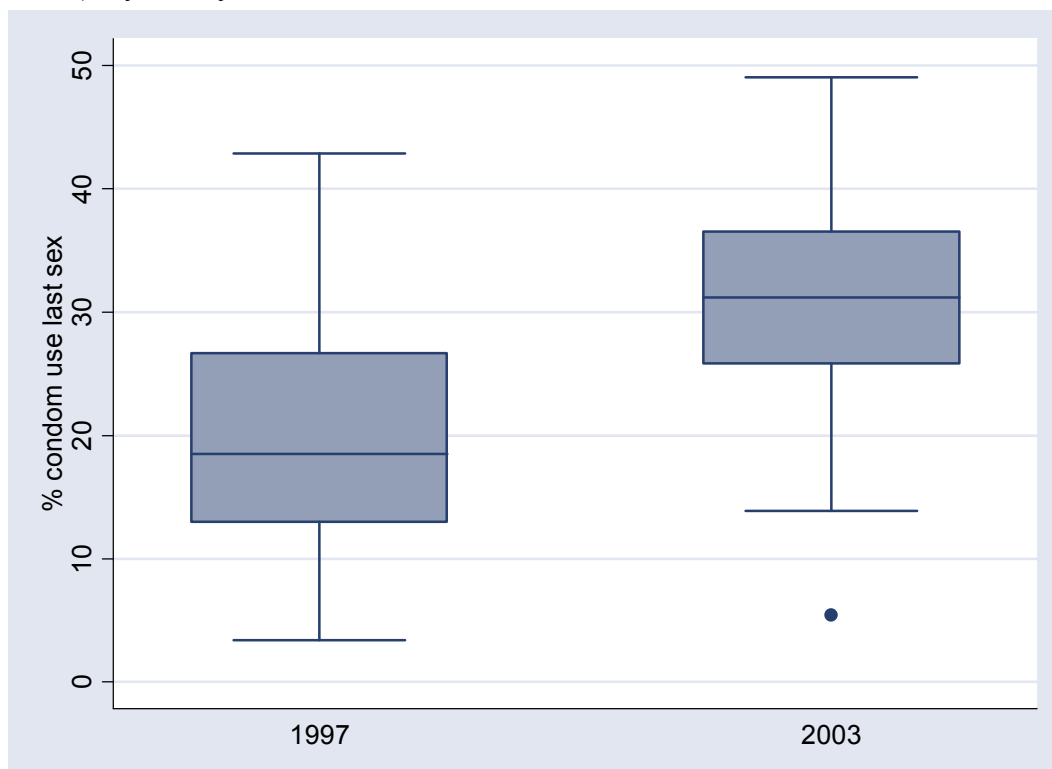


Figure 3b: Trends in standardized %s of condom use at last sex, by place of residence and survey round

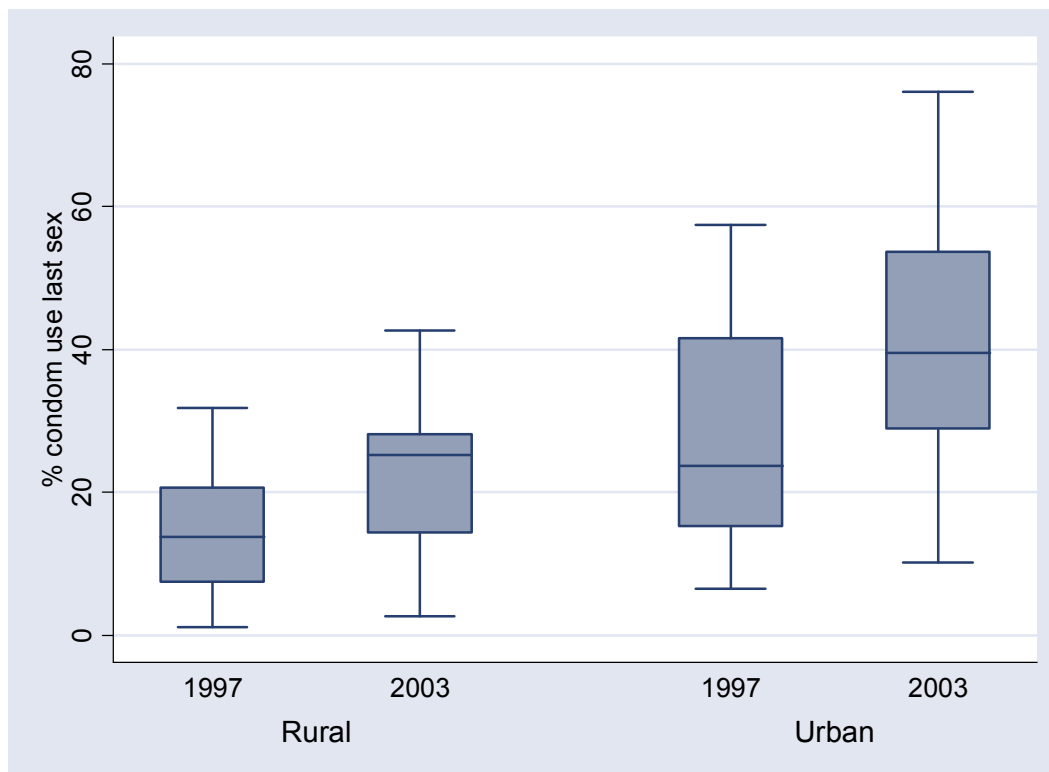


Figure 3c: Trends in standardized %s of condom use at last sex, by education level and survey round

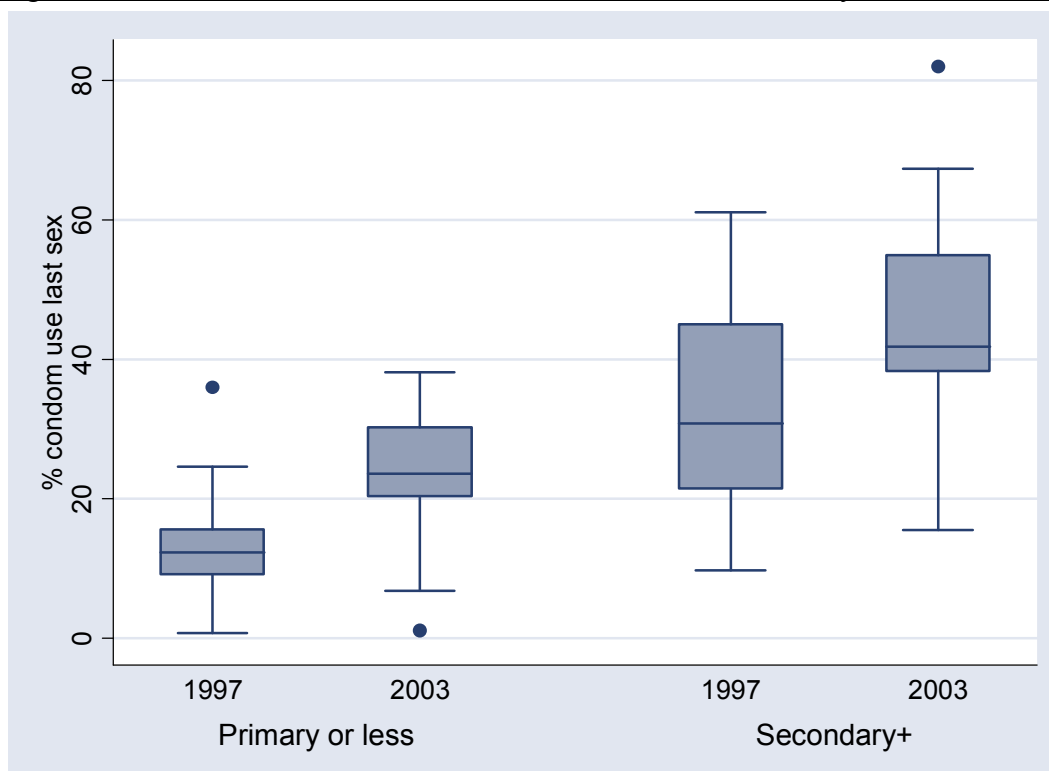


Figure 3d: Trends in standardized %s of condom use at last sex, by wealth and survey round

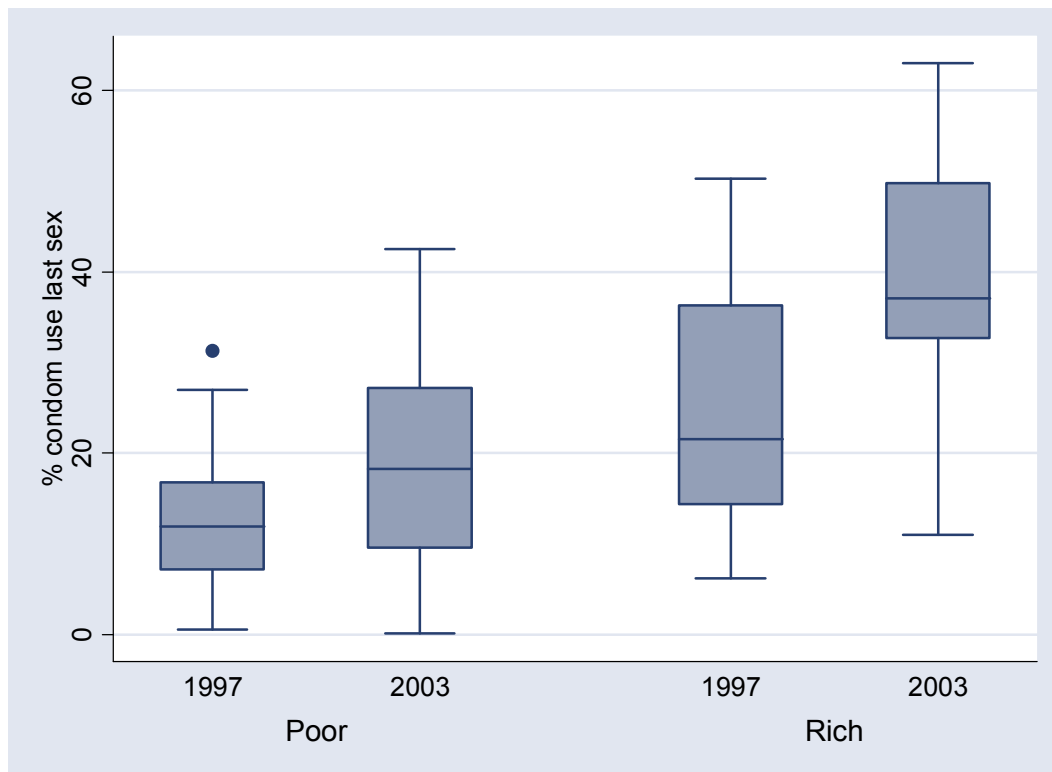
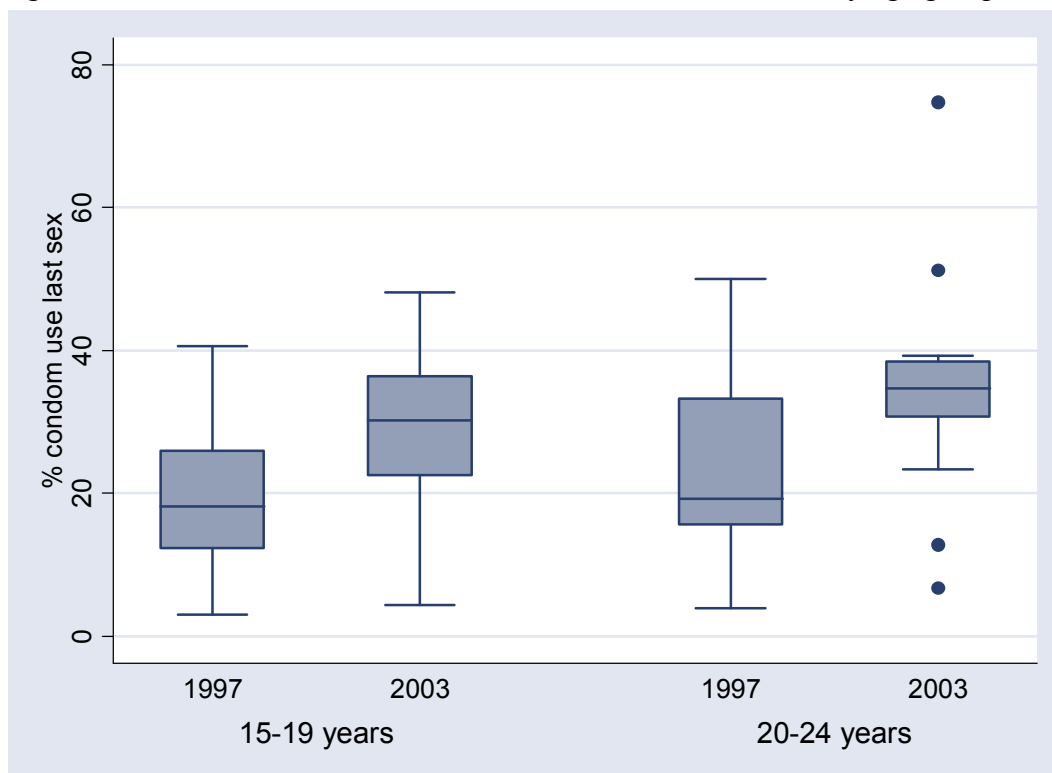


Figure 3e: Trends in standardized %s of condom use at last sex, by age group and survey round



**Appendix A: Analysis population, by country and survey round**

Country	Survey round	N= women age 15-45	Age 15-24	Single, age 15-24	Ever had sex	Had sex in the last 3 month
Benin	1996	5,491	38.1	46.4	41.8	58.0
	2001	6,219	39.4	51.0	51.4	58.5
Burkina Faso	1998/99	6,445	40.4	40.5	26.4	74.4
	2003	12,477	40.5	44.5	30.8	57.3
Cameroon	1998	5,501	43.8	46.5	57.4	71.2
	2003/04	10,656	46.3	47.0	41.9	57.1
Cote d'Ivoire	1994	8,099	43.6	53.7	69.5	65.9
	1998/99	3,040	44.5	58.0	62.5	70.8
Ghana	1998/99	4,843	37.4	56.5	37.4	52.8
	2003	5,691	38.0	65.6	39.4	48.2
Kenya	1998	7,881	43.1	61.3	41.6	51.2
	2003	8,195	43.3	58.9	36.5	29.7
Madagascar	1997	7,060	40.8	47.6	42.6	63.9
	2003/04	7,949	36.7	47.6	42.2	56.2
Malawi	2000	13,220	44.1	37.4	37.9	41.1
	2004/05	11,698	45.0	35.5	32.0	39.0
Mali	1995/96	9,704	35.8	32.9	40.2	64.1
	2001	12,849	38.2	32.6	36.3	59.2
Mozambique	1997	8,779	39.9	33.1	47.7	65.7
	2003/04	12,418	39.5	36.1	60.8	69.7
Tanzania	1996	8,120	42.0	49.9	40.2	58.6
	1999	10,329	41.2	49.3	37.7	51.6
Uganda	1995	7,070	44.7	31.5	32.9	44.5
	2000/01	7,246	43.0	42.4	37.1	47.0
Zambia	1996/97	8,021	47.8	48.5	49.9	51.5
	2001/02	7,658	45.4	49.8	49.4	38.4
Zimbabwe	1994	6,128	44.7	55.7	18.2	37.9
	1999	5,907	46.4	54.1	20.4	41.4
<b>Total (median)</b>	Earlier survey	<b>7,476</b>	<b>(42.6)</b>	<b>(47.1)</b>	<b>(40.9)</b>	<b>(58.3)</b>
	Later survey	<b>8,072</b>	<b>(42.1)</b>	<b>(48.5)</b>	<b>(38.6)</b>	<b>(53.9)</b>

**Appendix B: Contraceptive use by single women aged 15-24 who had sex in the last 3 months, by country and survey round**

Country	Survey round	N	Effective knowledge	Ever used any method	Currently using any method	Currently using modern method
Benin	1996	235	62.4	64.3	52.1	8.5
	2001	376	72.7	62.2	39.4	18.2
Burkina Faso	1998/99	207	75.9	62.3	48.4	41.9
	2003	396	84.7	68.2	54.5	51.1
Cameroon	1998	458	79.2	87.4	72.0	19.4
	2003/04	555	79.1	90.6	72.9	51.1
Cote d'Ivoire	1994	869	77.1	67.2	47.6	14.9
	1998/99	348	89.7	75.6	57.0	26.6
Ghana	1998/99	202	79.1	63.2	40.7	23.7
	2003	269	88.8	71.9	45.4	33.3
Kenya	1998	444	91.3	48.7	33.3	19.6
	2003	227	86.7	59.6	37.3	27.5
Madagascar	1997	373	40.8	33.1	25.1	5.6
	2003/04	330	68.7	38.1	31.4	14.0
Malawi	2000	339	81.2	35.7	21.5	20.4
	2004/05	233	82.7	37.8	23.4	23.0
Mali	1995/96	295	79.1	50.5	35.9	22.3
	2001	343	81.3	41.5	26.4	16.9
Mozambique	1997	362	57.2	23.9	11.8	8.7
	2003/04	752	84.2	63.4	49.3	45.4
Tanzania	1996	401	71.5	30.6	20.4	15.1
	1999	408	89.3	44.3	31.8	28.5
Uganda	1995	146	82.2	49.9	36.4	25.4
	2000/01	231	87.7	71.6	49.7	44.7
Zambia	1996/97	477	72.9	38.6	19.9	15.1
	2001/02	328	87.2	53.3	20.5	17.4
Zimbabwe	1994	105	93.1	60.9	34.1	30.9
	1999	125	93.6	58.8	37.2	35.4
<b>Total (median)</b>	Earlier survey	<b>351</b>	<b>(78.1)</b>	<b>(50.2)</b>	<b>(35.0)</b>	<b>(19.5)</b>
	Later survey	<b>337</b>	<b>(85.7)</b>	<b>(60.9)</b>	<b>(38.3)</b>	<b>(28.0)</b>

N=number of single women age 15-24 years who had sex in the last 3 month