

Contraceptive Use Information from DHS Surveys: The Quality and Consistency of Reproductive Calendar Data

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Introduction

Programs like FP2020 have recently brought renewed interest and attention to contraceptive discontinuation rates as a measure of family planning service quality and utilization (PMA2020 2016; Askew and Castle 2015). The primary source of information for the study of contraceptive use dynamics, particularly rates of contraceptive discontinuation, failure, and switching, in low- and middle-income countries, is retrospective calendars collected through the Demographic and Health Survey (DHS) Program (Ali, Cleland, and Shah 2012). DHS calendar data are retrospective month-by-month histories of women's reproductive events (births, pregnancies, and terminations) and episodes of contraceptive use that occurred in the five to seven years prior to interview. The process of filling in the contraceptive calendar asks women to recall episodes of contraceptive use that may have occurred up to six years in the past. It is unclear how reliable such retrospective recall is, especially for short episodes of use and coitus-dependent methods.

Few studies to date have examined the quality of the contraceptive information collected using retrospective calendars. The quality of these data is of particular relevance given the use of discontinuation rates in FP2020 and PMA2020 programs. Most of the existing studies focus on the first few calendars collected: the 1986 Peru and Dominican Republic DHS and the 1995 DHS Panel survey in Morocco (Goldman, Moreno, and Westoff 1989a; Goldman, Moreno, and Westoff 1989b; Westoff, Goldman, and Moreno 1990; Moreno, Goldman, and Babakol 1991; Strickler et al. 1997). The majority of DHS surveys are now conducted in sub-Saharan Africa and include the contraceptive calendar. We are aware of only two prior studies that assessed the quality of calendar data in any sub-Saharan African countries, and these used data collected in the 1990s and early 2000s (Curtis and Blanc 1997; Bradley, Schwandt, and Khan 2009). This analysis aims to broaden the understanding of the quality and consistency of retrospective calendar data on contraceptive use by conducting a comprehensive analysis of every available dataset, including recently collected data from a wide range of countries in Asia, Eastern Europe, Latin America and the Caribbean, and sub-Saharan Africa.

Data and methods

We analyze all DHS surveys that collected a contraceptive calendar (hereafter referred to as a calendar survey) that overlaps in time with a previous DHS in that country. Because the calendar collects approximately six years of data, this roughly means that we analyze all pairs of surveys in which a calendar survey was preceded by a DHS conducted up to six years prior. We allow for a gap of up to one year between the first month covered by the calendar and the median date of interview in the prior survey. This selection gives us a sample of 106 pairs of DHS surveys conducted in 37 countries, including 18 countries in sub-Saharan Africa.

The consistency of reported levels of total contraceptive prevalence, as well as the prevalence of each contraceptive method, is evaluated by comparing contraceptive prevalence use collected in the calendar with the independently estimated level of current contraceptive use reported in a prior survey. We compared estimates from the two data sources for the same point in time, and to women of the same ages. Because reporting about something a person is currently doing (i.e., current contraceptive use) is not subject to recall biases or other problems associated with reporting of events that occurred in the past, we generally assume that reports of current contraceptive use are more likely to be accurate than retrospective reports in the calendar. We therefore consider the current use estimates to be the “gold

standard” to which we compare the calendar estimates of contraceptive use, and consider the calendar data to not accurately capture contraceptive use if estimates of the CPR from the calendar are statistically significant from those from current use estimates for the same date.

Results

We first analyze the correspondence between calendar and current status reports of contraceptive use graphically. Three representative example graphs are shown here. The graphs below plot the total CPR for women ages 15-43 years old reported in each month from the calendar and in the median month of interview from current status data. In each graph, the calendar data are represented as a line over time, with a shaded region representing 95% confidence intervals. Current status data are presented as circles, also with 95% confidence intervals, plotted at the median month of interview in that survey.

Figure 1. Total contraceptive prevalence rates among women 15-43, Dominican Republic

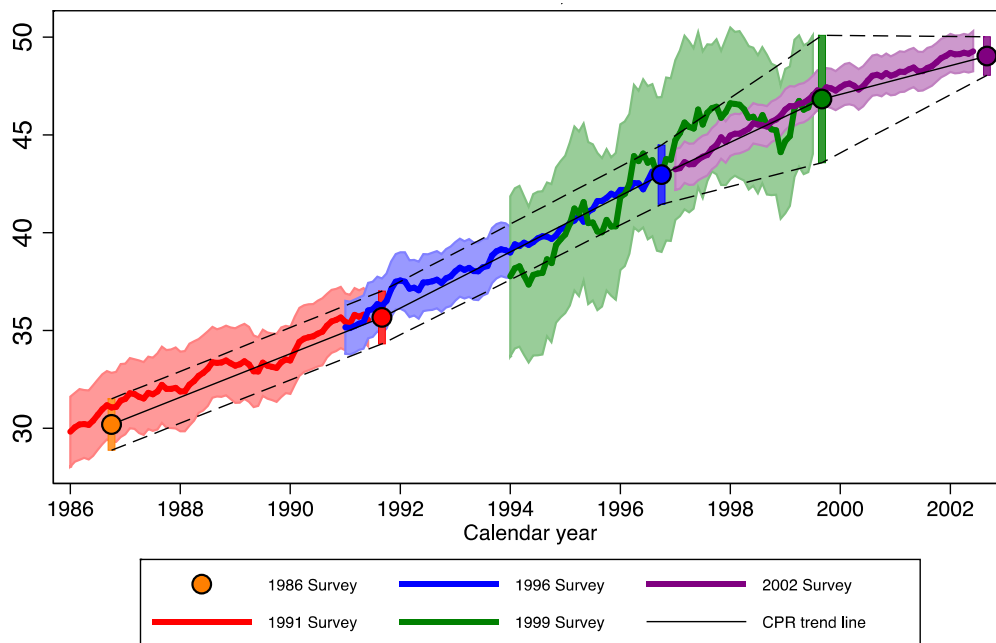
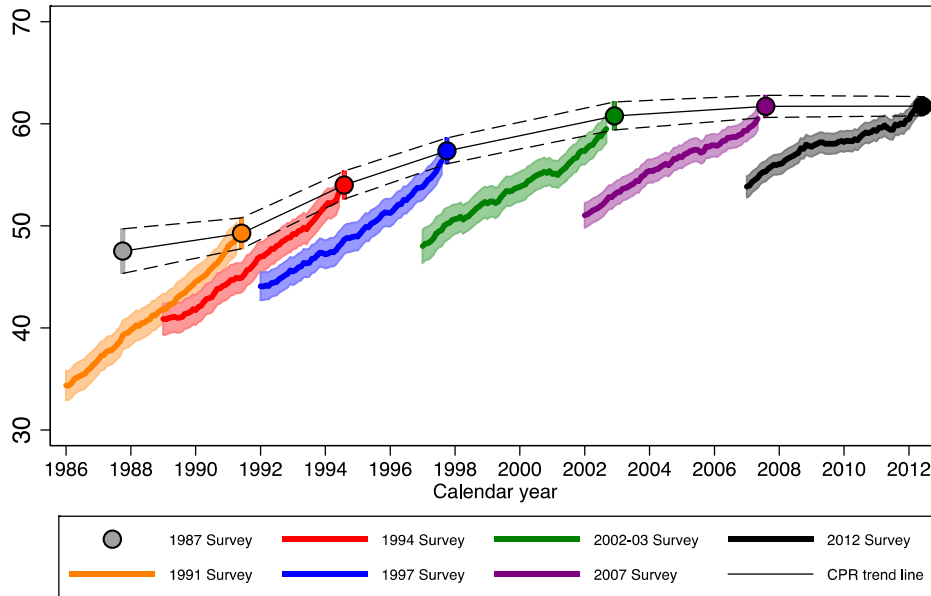


Figure 1 summarizes the CPR from five surveys in the Dominican Republic. The thin black line connects the current status estimates of the CPR in 1986, 1991, 1996, 1999, and 2002 via linear interpolation. The dashed lines connect the confidence intervals around each current status point. The calendar data overlap perfectly with the current status data in each survey. The CPR was estimated to be 30.2 percent (95% CI 28.9-32.5) in the 1986 survey (the orange circle in Figure 1), and the 1991 survey, shown in red, tracked back to 1986 produced a nearly identical CPR of 31.1 (95% CI 29.4-32.9). Results match similarly well for the current status and calendar-based CPRs from the rest of the Dominican Republic surveys. The calendars from the Dominican Republic surveys all appear to accurately capture women’s contraceptive use.

By contrast, Figure 2 shows that contraceptive use appears to be underestimated in all six calendars from Indonesia compared with current status data. In 1987, the CPR was estimated to be 47.5 percent (CI 45.3-49.7) at the time of survey, shown by the grey circle. The overlapping 1991 calendar, shown in orange,

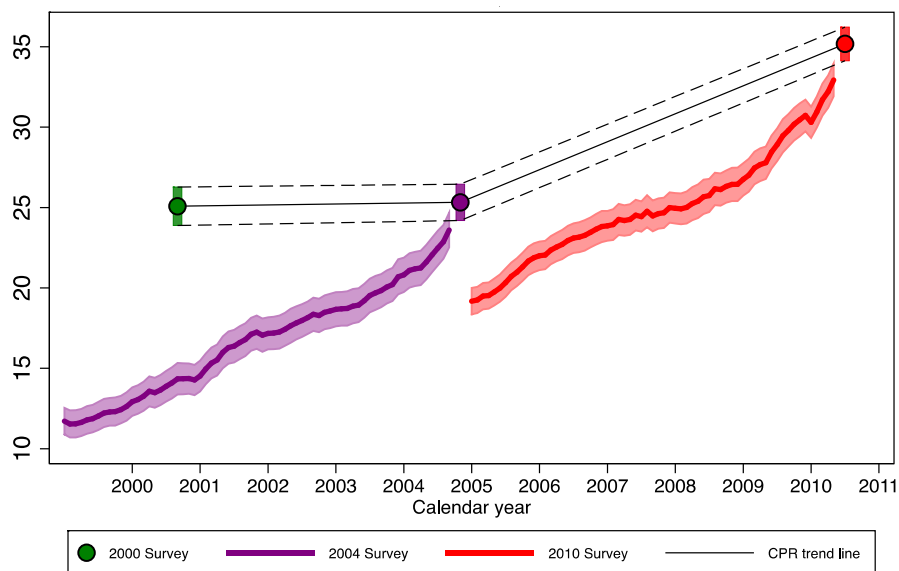
estimated the CPR in 1991 to be 39.3 percent (CI 37.8-40.7). All of the calendars in Indonesia show similar patterns, with much lower reporting of contraceptive use in the earlier periods of the calendar, far lower than the current status reports for the same time period. There is poor correspondence between calendar and current status data for all of the Indonesia surveys analyzed here.

Figure 2. Total contraceptive prevalence rate among ever-married women 15-43, Indonesia



Both the 2010 and 2004 calendars in Malawi appear to underestimate contraceptive use relative to the current status estimates. The gap between current status and calendar data is particularly large in the 2004 calendar: the current-status CPR in 2000 is 25.1 percent (CI 23.9-26.3), while data from the 2004 calendar show only 14.3 percent of women using contraception at that time (CI 13.4-15.4), underestimating the CPR by almost 11 percentage points, or 43 percent.

Figure 3. Total contraceptive prevalence rate among women 15-43, Malawi



In addition to graphical analyses, the full paper will summarize results by region and survey characteristics, and present results for each contraceptive method.

Conclusions

This analysis finds evidence of substantial underreporting of contraceptive use in the majority of calendars analyzed. Condom use was reported at significantly lower levels in the calendar than in the current use data for the same time point in more than half of surveys analyzed. The lactational amenorrhea method also appeared inconsistently reported. Traditional and short-term methods (periodic abstinence, withdrawal, pills, injectables) were reported at significantly different levels in the calendar than current use in approximately 40 percent of surveys analyzed. Reporting of long-term methods (IUD, sterilization, and implant) appeared far more consistent between the two data sources.

There also appears to be regional variation in the consistency of contraceptive use reporting in the calendar. Results suggest that the calendar does not accurately capture contraceptive use in the vast majority of surveys in sub-Saharan Africa and South/Southeast Asia. By contrast, the calendar appears to capture contraceptive use with a reasonable degree of consistency in many surveys in the Latin American and Caribbean and North Africa/West Asia/Eastern Europe subregions.

We note that some of the discrepancies between data sources are likely to be explained by the fact that women's memories are fallible, especially when asked to recall the use of short-term episodes of contraceptive use that may have occurred up to six years prior to the interview. At the same time, we also note that evidence from some surveys shows that what appears to be near-perfect recall of contraceptive use throughout the calendar period is possible, at least in some settings. We suggest further investigation of the methods used to collect calendar data in surveys that demonstrated complete reporting of contraceptive use, to see if strategies used in these surveys could be applied more broadly. We recommend experiments with shorter calendars and potentially alternative methods of collecting retrospective contraceptive use electronically in an effort to limit recall biases and improve the consistency of contraceptive use reporting in calendar data.

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