A Panel Study of Fertility Preferences and Contraceptive Dynamics in Uganda

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Abstract

This study assesses the influence of fertility preferences and contraceptive use intentions on the subsequent adoption and discontinuation of contraception in a Ugandan cohort of women. The data are derived from a 2018 follow-up survey of a 2014 national sample of 3,800 female respondents of childbearing age. The survey re-interviewed 1,716 women (45.8%) and used a five-year contraceptive calendar for collecting data on pregnancy, births, contraceptive use dynamics, and the causes of discontinuation. With baseline measures on fertility preferences and contraceptive intentions, we estimate the hazards of adoption and discontinuation behavior, adjusting for confounding covariates, competing pregnancy risk, loss-to-follow-up and complex survey design. We find women's fertility preferences are not significantly associated with time to adoption or discontinuation, but contraceptive intentions are, although not always in expected directions. Women discontinue short-acting methods more quickly than long-acting ones. A distinctive finding is women appear able to use contraception to satisfy their demand to space births but discontinue while still exposed to pregnancy risk. Improved access to long-acting methods may enhance the avoidance of unwanted pregnancies.

Extended abstract

Background

The fertility preferences of women – as measured by their desired family size and intention for limiting or postponing child bearing – have been studied continuously over the past decades to assess their influence on subsequent contraceptive and fertility behavior (e.g., Curtis and Westoff, 1996; Roy et al. 2003; Morgan (1982); Vlassoff (1990); Westoff (1990); Westoff and Ryder (1977). Absent among these, however, are studies of the fertility preferences of men—with a few exceptions being Rackin and Morgan (2010), Lindberg and Kost (2014) and Brown et al. (2017)--and their relationship to those of female partners. In the West, researchers have been able to take advantage of panel data from national longitudinal surveys of women and men (e.g., Rackin and Morgan, 2018; Iacovou and Tavares, 2018), while elsewhere insights into the correlates of fertility preferences and associated behaviors have been constrained by a reliance on cross-sectional survey data. Only a few studies have been able to assess temporal patterns of consistency in fertility preferences or contraceptive use intentions among women in low-income settings, especially in sub-Saharan Africa (SSA) (e.g., Bawah et al., 2016; Machiyama et al., 2015); Agadjanian, 2005; Yeatman et al., 2013).

The stability and consistency of fertility preferences over time and the related role of contraceptive demand have been the focus of much research as fertility and contraceptive behavioral change evolves in different parts of the world, across low-, middle- and high-income settings. A review of the research literature on findings from longitudinal study designs in low-income countries located several studies that investigated the predictive validity of childbearing preferences after two years in Malawi (Machiyama et al., 2015) and three years in Morocco (Curtis and Westoff, 1996), of fertility intentions and subsequent fertility in Bangladesh (Callahan and Becker, 2014; Islam and Bairagi, 2003), and of unmet contraceptive need and unintended pregnancy in Egypt (Casterline et al, 2003). These studies did not observe a high degree of

consistency in fertility preferences over time. Two studies based on a 1998-1999 follow-up of a female respondent subsample from the 1992-93 National Family Household Survey in India examined both consistency in childbearing and contraceptive intentions at the two time points and how these were related to subsequent fertility and contraceptive use (Roy et al., 2003; Roy et al., 2008). With the same data, Koenig et al. (2006) examined the classification of unwanted births prospectively and retrospectively and found that about one quarter of births were re-classified prospectively as unwanted but only about one tenth retrospectively. Their study also found a woman's number of children, son preference and sex composition served as important predictors of her future fertility. A recent study in urban India (Speizer et al., 2013) investigated the impact of fertility desires on subsequent childbearing behaviors over a two-year period (2010 to 2012) and found consistency in women's stated desires for no additional children; however, a woman's fertility desires to delay or have a child soon was less predictive of her later pregnancy experience.

To address such gaps in understanding, our analysis uses data from a longitudinal study and aims to assess the influence of fertility preferences and contraceptive use intentions reported by Ugandan women of childbearing age in 2014 on the timing of their subsequent adoption of contraception and any contraceptive discontinuation by 2018. Specifically, we examine two behavioral outcomes – time to adoption of contraception among women not contracepting in 2014 and time to discontinuation among women contracepting in and after 2014. Our two main covariates of interest are the woman's stated fertility preferences and contraceptive intentions in 2014. We hypothesize that both fertility preferences and contraceptive intentions will be significantly related to time to adoption and discontinuation and expect contraceptive intentions be associated positively with the rate of adoption.

We adopt a panel design to more firmly establish a causal relationship between reported fertility preferences and contraceptive intentions with behaviors that unfold over a four-year interval. This study is one of few conducted with data collected recently in a sub-Saharan African setting and in a country with an emergent fertility transition. The relationship between a female's childbearing motivations, her recognition of contraception's ability to enable their achievement, and time to contraceptive adoption, subsequent discontinuation and pregnancy are key considerations behind fertility behavioral change.

Data and Methods

Data. The Uganda Performance Monitoring and Accountability (PMA) Round 1 (R1) survey was conducted between April and June of 2014. As a multi-stage cluster survey, PMA Uganda Round 1 had a sample of 110 clusters or enumeration areas (EA)[1]; each EA has approximately 200 households. Following mapping and listing of households in each EA, a sample of 44 households was systematically selected and all occupants enumerated. From the enumeration of household members, all eligible women between the ages of 15 and 49 were identified and consented for interview. Both surveys were conducted using Open Data Kit software-programmed forms and administered by trained resident enumerators (RE) using smartphones. Collected data were subsequently transmitted to a cloud server for data cleaning, processing and file management. Further information on the design of PMA2020 surveys is available from www.pma2020.org and Zimmerman et al (2017).

[1] In Round 1, one EA was not included due to an outbreak of foot and mouth disease. For the purposes of the follow-up study fieldwork, we included Round 2 household and female respondent data for that one EA, which were collected 6 months after Round 1. These additions bring the total households targeted for relocation and re-interview to 4,295 and the total women to 3,800.

The Round 1 Follow Up (R1F) Survey was fielded from June to August of 2018 with a primary objective of assessing the predictive utility of reproductive and contraceptive intentions reported in Round 1 and measures used frequently by reproductive health practitioners, and secondarily, assessing respondent relocation rates and testing a smartphone-based pregnancy and contraceptive calendar. The target sample was all original R1 households and female respondents. Methods of data collection were approved by IRBs at the Makerere University School of Public Health in Kampala, Uganda, at the Bloomberg School of Public Health at Johns Hopkins University in Baltimore, USA, and at the Uganda National Council of Sciences and Technology.

Household dwellings selected into the R1 sample were revisited. When needed, community guides assisted the interviewers to relocate R1 dwellings. Once the dwelling was relocated, interviewers confirmed the identity of the original Round 1 household. As an aid, R1 household information (members' first names, ages, gender, marital status and relationship to household head) was pre-loaded onto the ODK form for each RE's assigned EA.

If the Round 1 dwelling was not found, destroyed, or vacant, the interviewer recorded this result and moved on. If all members of the original Round 1 household had moved and been replaced by new occupants between the two surveys, the interview effort ended. Due to resource constraints, no attempt was made to locate and follow up households or occupants that had moved.

If at least one original adult member of the PMA Round 1 household was present in the dwelling, the interviewers consented that individual for the household survey. The interviewers updated the demographic information for all original Round 1 household members, additionally enumerating any new household members. If a Round 1 household member was no longer

resident, the interviewer updated her/his status if known: moved out of cluster, moved within cluster, moved out to attend school, or deceased. Once the household survey was completed, the interviewers continued to conduct the female survey with all consenting eligible females in the household. Interviewers did not attempt to re-locate any eligible women from Round 1 who were no longer resident in the Round 1 dwelling. In R1F, female respondent eligibility was defined as being between ages 18 to 55 years (allowing for aging over the four years since Round 1) and a resident of an R1 household. To protect the confidentiality of R1 female respondents, all resident females ages 18 to 55 in the original R1 household, irrespective of their R1 participation, were consented for interview.

For the R1 sample, 4,802 households were selected, and 4,257 heads interviewed (88.7% response rate). Of household occupants, 3,987 females were of eligible age, with 3,762 were successfully interviewed (94.4% response rate). Because one EA was missed in Round 1, its households were included in R1F, resulting in a total baseline sample of 4,295 households and 3,800 women with completed interviews (see Appendix table 1).

In R1F, 2,814 R1 households and 1,716 women were successfully re-interviewed (65.5% and 45.2% respectively). Of the 1,716 women, 1,655 (96.4%) had completed Round 1 interviews and their R1F data could be successfully linked to create a panel dataset. There were an additional 1,006 female residents in the R1 households of eligible age who were also interviewed; they are not included in this cohort analysis.

Our analytic sample is then the 1,655 female respondents successfully relocated and re-interviewed after four years. Because of potential bias from loss-to-follow-up (LFU), we constructed a weight based on inverse probabilities of LFU from a propensity score model estimated with multivariate logistic regression with female age, parity, marital status, school,

wealth quintile and residence as covariates. The predicted LFU probability was then multiplied by the R1 individual female survey weight and its inverse applied to re-weight the R1F responses. Except where noted, the R1F results in this analysis have been weighted to adjust for LFU.

Measurement. The R1F questionnaire measured many of the same items in the R1 questionnaire. One addition was a five-year reproductive and contraceptive calendar, modeled after the Demographic and Health Survey (DHS 2018), covering the period June 2013 to June 2018. The interviewer recorded the woman's pregnancies, pregnancy outcomes and episodes of contraceptive use and type of method in this period. For each episode of contraceptive adoption, the source of the method and decision-maker in choosing the method was also recorded. For contraceptive discontinuation, the reason for termination was recorded. We used the contraceptive and pregnancy calendar data to construct the two outcomes of interest:

1) The time to first reproductive event, defined as adoption of contraception or pregnancy, in months after Round 1 interview among non-contracepting women.
2) The time to discontinuation of any contraceptive episode in months and reason for discontinuation among women contracepting at baseline or thereafter in the calendar period.

Fertility preferences and contraceptive intentions. Female respondents were interviewed in Round 1 about their fertility preferences and contraceptive use intentions. The relevant questions for fertility preferences were: Would you like to have a/another child, or would you prefer not to have any more children?" and "How long would you like to wait before the birth of a/another child?" In case of currently pregnant women, the questions were prefixed with "After the child you are expecting now." Fertility preferences are classified as: 1) want another child in less than 2 years, 2) want another child after 2 or more years or undecided; and 3) want no

more children. For contraceptive intentions, women not contracepting were asked: “You said you are not currently using a contraceptive method. Do you think you will use a contraceptive method to delay or avoid getting pregnant any time in the future?” Contraceptive intentions at Round 1 are classified as: 1) intend to use in future and 2) do not intend to use in future. A third category of women currently using any contraception in R1 is included to serve as a reference category and retain the original sample size.

Methods. To test the two main hypotheses that fertility preferences and contraceptive use intentions influence the rates of contraceptive adoption and discontinuation, we estimate their effects first through multivariate proportional hazard regression, and second, through competing risk hazard regression, models (Kalbfleisch and Prentice, 2002; Lau et al., 2009) of time to adoption and time to discontinuation. Our descriptive analysis first provides the composition of the R1 sample and follow-up sample, both with R1 weights only and then also adjusted for LFU (Table 1). The outcomes of interest are similarly presented in Table 2. We then examine the association between fertility preferences and contraceptive use intentions within R1 and R1F separately to test for internal consistency within respondent (Table 3). The associations of two covariates of interest with subsequent contraceptive adoption or pregnancy events are presented in Table 4. The results of the cause-specific and competing risk regression models, testing the effects of R1 fertility preferences and R1 contraceptive intentions on timing of adoption and discontinuation, are shown respectively in Tables 5 and 6. All regression model estimates of the hazard ratios and standard errors are adjusted for background covariates and the multi-stage complex survey design and weighting for sample selection probability and any loss to follow-up.

Results and discussion

This study has aimed to assess the influence of fertility preferences and contraceptive use intentions reported in 2014 on subsequent contraceptive adoption and discontinuation by mid-2018 among a nationally representative sample of reproductive-aged women in Uganda. It aimed to better understand the consistency of women's fertility preferences both with and beyond contraceptive use intentions and how these relate to fertility regulating behaviors over time. This connection is a fundamental expectation underlying the programmatic measure of unmet contraceptive need. Our study did not find empirical support, however, for the hypothesized relationship between fertility preferences and subsequent contraceptive adoption and discontinuation but found the relationship between contraceptive intentions and adoption to be statistically significant. Round 1 non-users intending future use, adopted at a rate 2.34 faster than those not intending to use, adjusting for fertility preferences and other background variables. At the same time, R1 non-users who intended future use, while adopting for the first time more quickly than their non-intending counterparts, discontinue at a rate nearly equal to those not intending future use and faster than those using at the time of Round 1. The type of contraceptive method (short versus long-acting) had a strong, significant influence on the timing of discontinuation--with the use of short-acting contraception, largely driven by injectables, leading to termination 1.57 times more quickly than long-acting methods such as implants. Our findings suggest that the perceived utility of achieving fertility preferences and initiating contraceptive use are not conceptually equivalent and that their combined measurement in one indicator may not perfectly serve decisions on programmatic investments.

This study thus has offered new insights into the parallel movement of a cohort's fertility preferences and contraceptive use intentions over time. At a time when social ideation around contraceptive use was still nascent, there was a strong individual interest in spacing births. Recent studies on women's covert contraceptive use, i.e., use without the partner's knowledge,

in Uganda (Heck et al., 2018) and Sub-Saharan Africa (Gasca and Becker, 2018) have suggested that discordant fertility desires between partners, negative community stereotypes and financial insecurity are contributing factors. Individual demand for contraception appears well established in Uganda as of 2014 and increasingly realized through the subsequent adoption of primarily injectables, a short-acting method. Contraceptive discontinuation rates for short acting methods exceed those of long-acting ones, irrespective of the woman's earlier fertility preferences or contraceptive intentions. While women have been able to satisfy their individual demand for birth spacing through contraceptive adoption, our study findings suggest that further progress for the fertility transition in Uganda will be needed before women's reproductive preferences and contraceptive intentions are more closely aligned.

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Table 1. Distribution of female respondent characteristics for Uganda 2014 Round 1 and 2018 Follow-Up samples

	Round 1 (2014)		Follow-Up (2018)	
Covariate	Baseline Sample	Followed-up Sample in 2014	Round 1 Sample (2018)	Follow-up Sample weighted for LFU
Number of females	3,800	1,655	1,655	1,655
Age				
15-17 years	11.9	5.2	--	--
18-24 years	30.5	20.8	13.8	23.7
25-29 years	18.9	20.6	15.2	19.6
30-34 years	13.6	15.9	18.9	17.9
35-39 years	10.9	15.6	15.9	13.5
40-44 years	8.7	13.5	16.5	11.7
45 + years	5.7	8.6	19.7	13.6
Education				
Never attended	13.6	16.4	14.9	11.9
Primary	58.0	62.5	63.9	59.9
Secondary/university	25.4	18.2	17.7	24.0
Other/vocational/technical	2.9	2.9	3.4	4.1
Parity				
0-2 children	51.6	34.0	20.2	33.7
3-4 children	19.8	23.5	24.8	26.6
5 + children	28.0	42.3	55.1	39.8
Marital status				
Never married	22.8	11.3	7.8	15.6
Currently married/cohabiting	65.0	76.5	76.3	68.1
Widowed/divorced/separated	12.0	12.2	15.9	16.3
Wealth quintile[b]				
Lowest quintile	18.8	21.3	17.3	16.0
Lower quintile	20.7	22.0	17.6	16.8
Middle quintile	18.7	20.2	20.2	18.3
Higher quintile	21.0	21.1	23.6	22.1
Highest quintile	20.8	15.5	21.3	26.9
Urban/Rural residence				
Urban	20.4	12.6	12.6	21.6
Rural	79.6	87.4	87.4	78.4

[a] Round 1 (2014) values are weighted with original selection probabilities; loss to follow-up weight based on inverse propensity score

[b] Wealth quintile constructed using set of assets, water sources, and santiation facilities common to R1 and R1F

Table 2. Round-specific measures of contraceptive use, fertility preferences and future contraceptive use intentions

	Round 1 (2014)		Follow-Up (2018)	
Round-specific measure	Baseline Sample	Followed-up Sample in 2014	Round 1 Sample (2018)	Follow-up Sample weighted for LFU
Number of females	3,800	1,655	1,655	1,655
Contraceptive prevalence	22.1	25.8	33.0	32.9
Modern contraceptive prevalence[b]	20.9	24.1	31.0	31.0
Type of method[c] among users (n)	(827)	(413)	(527)	(527)
Long acting method (LAM)	18.5	22.8	32.8	28.1
Implant	12.1	12.3	17.9	18.5
Other LAM	6.4	10.5	14.9	9.6
Short acting method (SAM)	81.5	77.2	67.2	72.0
Injectable	54.9	52.7	45.9	47.6
Other SAM	26.6	24.5	21.3	24.4
Fertility preferences				
Wants more children in <24 months	11.4	9.7	8.5	11.3
Wants more children, 24+ months; or undecided	53.6	44.6	36.7	46.7
Wants no more children	32.2	42.3	49.0	37.7
Infertile	2.9	3.4	5.9	4.3
Future contraceptive intentions among non-users				
Intention to use	54.6	51.5	51.3	59.5
No intention to use	45.4	48.5	48.7	40.5

[a] Round 1 (2014) values are weighted with original selection probabilities; loss to follow-up weight based on inverse propensity score

[b] Modern contraceptives include: Female sterilization, male sterilization, implant, IUD, injectables, pill, emergency contraception, male condom, female condom, diaphragm, foam/jelly, standard days/cycle beads, and lactional amenorrhea method

[c] Long acting contraceptives include: Female sterilization, male sterilization, implant, IUD. All others are coded as short acting.

Table 3. Association of fertility preferences with contraceptive use intentions for Ugandan female samples in 2014 Round 1 and 2018 Round 1 Follow-Up[a]

Fertility preferences	Current contraceptive use	Intention to use contraception in the future		Total
		Yes	No	
Follow-up Sample in 2014 (N=1,611)	Outcome in 2014			
Wants more <24 months (167)	17.4	49.3	33.3	100.0
Wants more children, 24+ months; or undecided (720)	22.5	49.3	28.2	100.0
Wants no more (671)	29.0	30.8	40.2	100.0
Infertile (53)	25.1	12.6	62.2	100.0
Follow-up Sample in 2018 (N=1,651)	Follow-up outcome in 2018			
Wants more <24 months (169)	30.1	49.0	20.9	100.0
Wants more children, 24+ months; or undecided (736)	33.8	50.8	15.5	100.0
Wants no more (676)	34.9	28.0	37.1	100.0
Infertile (53)	14.8	3.9	81.4	100.0

[a] Round 1 Follow-Up values are weighted for loss to follow-up using inverse propensity score

Table 4. Association of fertility preferences and contraceptive use intentions for Ugandan female not using contraception in 2014 Round 1 with subsequent adoption of contraception or pregnancy [a]

	Subsequent event		
R1 fertility preferences/contraceptive intentions	Adopted contraception	Became pregnant	Never adopted contraception
Follow-up Sample (N=1,128)			
Wants more <24 months (128)	17.2	56.8	25.9
Wants more children, 24+ months; or undecided (521)	25.9	50.3	23.7
Wants no more (423)	19.0	28.0	53.0
Infertile (36)	5.5	23.4	71.1
Follow-up Sample (N=1,112)			
Intention to use contraception (535)	31.9	49.9	18.3
No intention to use contraception (577)	11.5	36.7	51.8

[a] Round 1 Follow-Up values are weighted for loss to follow-up using inverse propensity score

Table 5. Results of cause-specific and competing risk hazard regression models of time to contraceptive adoption among Round 1 non-users[a]

	Adjusted Cause-Specific Hazard Ratio (n=1,085)			Adjusted Competing Risk Hazard Ratio (n=1,085)		
Round 1 Covariate	Hazard ratio	Confidence interval	p-value	Hazard ratio	Confidence interval	p-value
Fertility Preferences						
Wants in <2 years	Ref			Ref		
Wants more children, in more than 2 years; or undecided	1.12	(0.61, 2.03)	0.72	1.34	(0.80, 2.27)	0.27
Wants no more	1.29	(0.63, 2.65)	0.48	1.67	(0.88, 3.15)	0.12
Contraception Intentions						
No intention to use	Ref			Ref		
Intention to use	**2.34**	**(1.48, 3.69)**	**<0.01**	**2.11**	**(1.40, 3.18)**	**<0.01**
Age						
<30 years	Ref			Ref		
30-39 years	0.64	(0.41, 1.01)	0.06	0.79	(0.55, 1.13)	0.19
40 + years	**0.20**	**(0.10, 0.41)**	**<0.01**	**0.29**	**(0.15, 0.54)**	**<0.01**
Parity						
0-2 children	Ref			Ref		
3-4 children	1.15	(0.72, 1.84)	0.56	1.24	(0.83, 1.87)	0.30
5 + children	1.36	(0.71, 2.60)	0.36	1.26	(0.70, 2.27)	0.45
Education						
Never attended	Ref			Ref		
Primary	**2.30**	**(1.30, 4.09)**	**<0.01**	**2.30**	**(1.32, 4.00)**	**<0.01**
Secondary/University/Technical/ Other/Vocational	**3.21**	**(1.65, 6.26)**	**<0.01**	**3.21**	**(1.67, 6.16)**	**<0.01**
Marital Status						
Currently married	Ref			Ref		
Widowed/divorced/separated	**0.43**	**(0.23, 0.82)**	**0.01**	**0.56**	**(0.33, 0.95)**	**0.03**
Never married	**0.44**	**(0.26, 0.75)**	**<0.01**	0.68	(0.42, 1.08)	0.10
Residence						
Urban	Ref			Ref		
Rural	0.79	(0.50, 1.27)	0.33	0.84	(0.53, 1.34)	0.48
Wealth Quintile						
Lowest quintile	Ref			Ref		
Lower quintile	1.02	(0.62, 1.66)	0.95	1.06	(0.68, 1.65)	0.80
Middle quintile	0.97	(0.65, 1.46)	0.90	0.95	(0.65, 1.40)	0.80
Higher quintile	1.10	(0.69, 1.74)	0.69	1.13	(0.74, 1.73)	0.56
Highest quintile	1.63	(0.71, 3.71)	0.24	1.62	(0.82, 3.19)	0.16

[a] Round 1 Follow-Up values are weighted for loss to follow-up using inverse propensity scores. Analysis excludes women who were using contraception at Round 1, women self-reporting to be infertile (n=37), and those with discordant calendar and Round 1 reported use status (n=68). Analysis uses Fine and Gray competing risk regressions where possible outcomes include censoring (never adopt); adoption of contraception (outcome of interest); and pregnancy (competing risk)

Table 6. Results of cause-specific and competing risk hazard regression models of time to contraceptive discontinuation among contraceptive users, 201

	Adjusted Cause-Specific Hazard Ratio (n=937)			Adjusted Subdistribution Hazard Ratio (n=935)		
Round 1 Covariate	Hazard ratio	Confidence interval	p-value	Hazard ratio	Confidence interval	p-value
Fertility Preferences						
Wants no more	Ref			Ref		
Wants in <2 years	1.09	(0.62, 1.93)	0.75	1.03	(0.62, 1.70)	0.91
Wants more children, in more than 2 years; or undecided	1.35	(0.88, 2.08)	0.17	1.16	(0.82, 1.65)	0.42
Contraception Intentions						
Contraceptive user in Round 1	Ref			Ref		
No intention to use	**2.02**	**(1.26, 3.23)**	**<0.01**	**2.46**	**(1.61, 3.74)**	**<0.01**
Intention to use	**2.18**	**(1.27, 3.74)**	**<0.01**	**2.30**	**(1.35, 3.91)**	**<0.01**
Method[b]						
Long acting	Ref			Ref		
Short-acting	**1.57**	**(1.09, 2.27)**	**0.02**	**2.02**	**(1.36, 3.02)**	**<0.01**
Age						
<30 years	Ref			Ref		
30-39 years	**0.59**	**(0.42, 0.85)**	**<0.01**	**0.67**	**(0.46, 0.98)**	**0.04**
40 + years	**0.47**	**(0.24, 0.94)**	**0.03**	0.78	(0.47, 1.40)	0.41
Parity						
0-2 children	Ref			Ref		
3-4 children	0.87	(0.57, 1.32)	0.51	0.96	(0.68, 1.33)	0.79
5 + children	0.93	(0.65, 1.35)	0.72	1.40	(0.95, 2.08)	0.09
Education						
Never attended	Ref			Ref		
Primary	0.69	(0.44, 1.11)	0.13	0.77	(0.48, 1.22)	0.26
Secondary/University/Technical/ Other/Vocational	0.77	(0.44, 1.35)	0.35	0.96	(0.55, 1.67)	0.89
Marital Status						
Currently married	Ref			Ref		
Widowed/divorced/separated	0.59	(0.30, 1.17)	0.13	0.67	(0.36, 1.23)	0.20
Never married	1.16	(0.70, 1.93)	0.56	1.52	(0.92, 2.49)	0.10
Residence						
Urban	Ref			Ref		
Rural	**1.52**	**(1.01, 2.29)**	**0.04**	1.12	(0.68, 1.82)	0.66
Wealth Quintile						
Lowest quintile	Ref			Ref		
Lower quintile	0.99	(0.67, 1.46)	0.95	0.92	(0.62, 1.37)	0.69
Middle quintile	0.77	(0.50, 1.18)	0.22	0.66	(0.41, 1.05)	0.08
Higher quintile	0.69	(0,43, 1.10)	0.12	**0.49**	**(0.30, 0.81)**	**<0.01**
Highest quintile	0.61	(0.33, 1.13)	0.11	**0.58**	**(0.35, 0.96)**	**0.04**

[a]Analysis restricted to episodes from women using at or after Round 1, excludes women self-reporting to be infertile, and adjusts for clustering by woman. Round 1 Follow-Up values are weighted for loss to follow-up using inverse propensity scores. Analysis uses Fine and Gray competing risk regressions where possible outcomes include censoring (never discontinue); discontinuation of contracepetion due to any reasons except for desire to get pregnant (outcome of interest); and discontinuation due to desire to get pregnant (competing risk)

[b] Long acting methods include female sterilization, male sterilization, IUD and implant. Short acting include injectables, pill, emergency contraception, male condoms, female condoms, standard days/cycle, LAM, and other traditional methods. This grouping was made due to the small sample size.

Figure 1 Cumulative Incidence of Contraceptive Adoption by Round 1 Fertility Preferences and Contraceptive Use Intention, Adjusted for Competing Pregnancy Risk

1a

1b

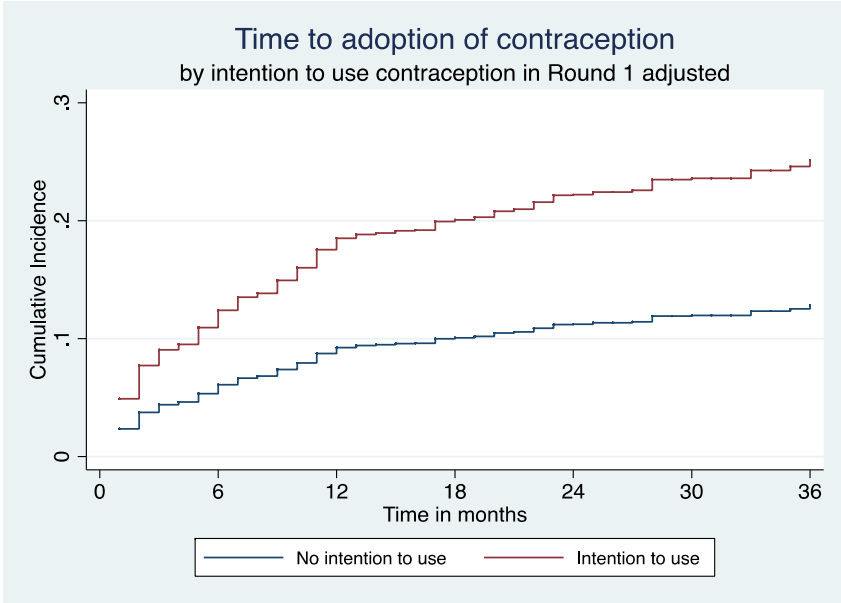
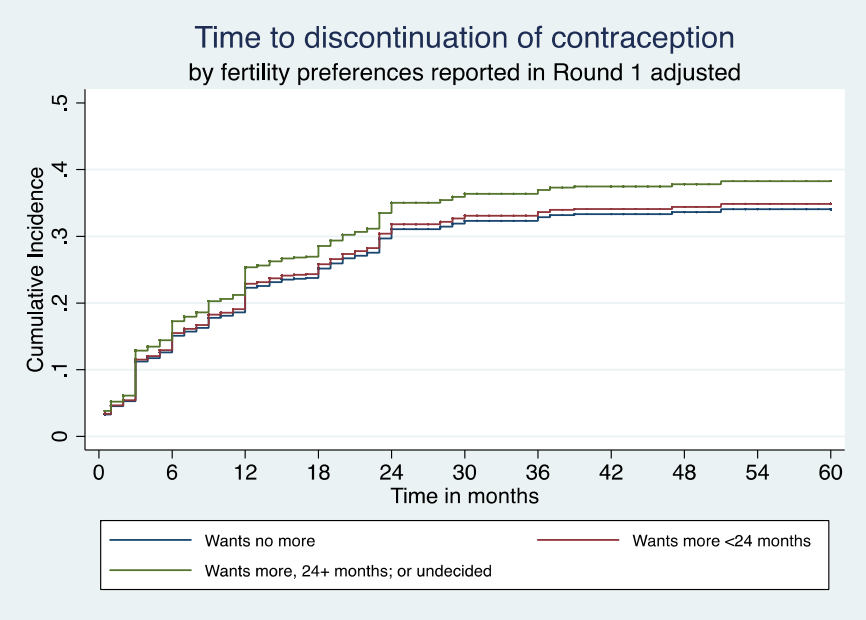
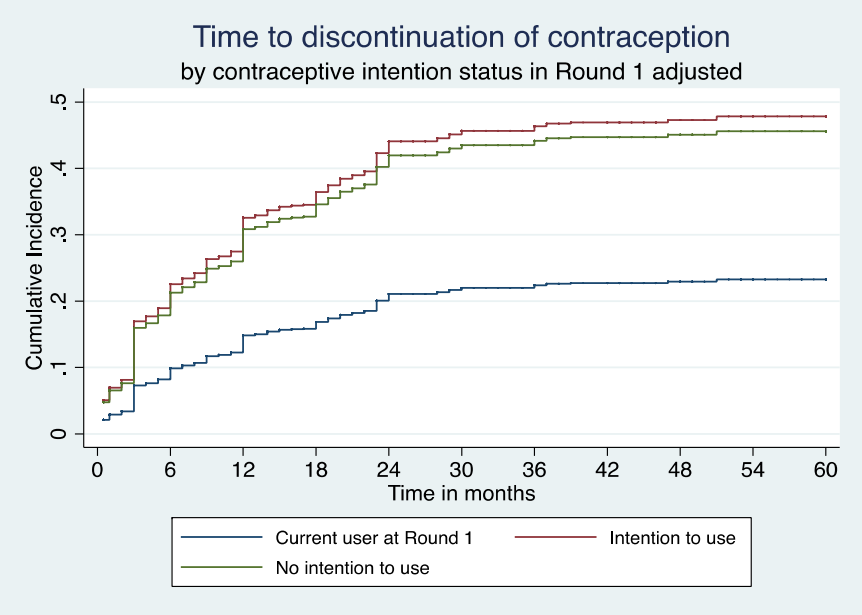


Figure 2 Cumulative Incidence of Contraceptive Discontinuation by Round 1 Fertility Preferences and Contraceptive Use Intention, Adjusted for Competing Pregnancy Risk

2a



2b



Appendix 1. Relocation measures for Uganda Round 1 households and eligible females (2014) followed up in 2018 (R1F)								
Unit	Status	R1	% response	Follow up status	R1F Relocated	Not R1	% response	Follow up %
Households	Selected*	4846		Dwelling	4830			
	Occupied	4414	91.1%	Occupied	4146			
	Interviewed	4295	97.3%	R1 household confirmed	2833	1313		
				Interviewed	2814		99.3%	65.5%
Eligible women	Enumerated**	4034		Enumerated	2809			
	Interviewed	3800	94.2%	Interviewed	2722		96.9%	
				R1 woman confirmed	1716	1006		45.2%
				Linked to R1 record	1655		96.4%	43.6%
*Includes 44 households in 1 EA that could not be visited in R1 but were in R2								
**Includes 47 eligible women in the 44 HHs visited in R2								

Appendix 2. Twelve-month contraceptive discontinuation rates for Ugandan female respondents in 2014 Round 1 and 2018 Round 1 Follow Up, by reason and method

			Still in need							No further need			
	Number of episodes	Total 12 month discontinuation rate	Became pregnant while usng	Side effects/ health concerns/ interferes with body	Wanted more effective method	Inconvenient to use	No access/No method available/ Cost	Husband opposition	Other	Wanted to become pregnant	No/infrequent sex/husband away	Difficult to conceive	Don't know/ Missing
IUD	24	12.5	4.4	-	-	-	-	4.6	-	4.2	-	-	-
Implant	196	25.1	1.3	12.0	0.5	-	0.6	0.5	3.4	5.4	0.8	0.9	1.3
Injectable	671	44.4	5.2	22.6	1.4	0.2	1.4	1.6	3.6	13.0	4.3	0.3	0.7
Pill	96	46.6	6.7	19.2	-	3.5	1.4	1.2	1.1	13.7	11.8	-	-
Male condom	109	43.4	7.0	7.1	1.7	-	1.1	4.6	9.0	7.4	15.4	-	1.0
Rhythm, withdrawal, other traditional	100	37.2	17.7	1.5	2.3	1.7	-	1.1	4.3	9.7	4.4	-	1.2
All methods	1288	38.2	5.6	16.1	1.3	0.5	1.0	1.6	3.7	9.8	5.2	0.3	0.7
UDHS 2016 (5 years)	10,475	45.0	3.4	18.1	2.7		4.7			8.8	2.2		--
Estimated with life table methods, unweighted													