

Appendix 1. Details of explanatory variables

Variable	Question	Categories	Re-code
Respondent-Level Variables			
Age	How old were you at your last birthday? [confirmed agreement with birth date]	Integer	- Treated as continuous
Education	What is the highest level of school you attended? [Only record formal schooling]	Never attended Primary Secondary Higher Secondary [India only] Tertiary / Higher / Graduate No response	- 'Higher secondary' grouped with 'Secondary' - No response treated as missing
Marital status	Are you currently married or living together with a man as if married? [Probe: If no, ask whether the respondent is divorced, separated, or widowed.]	Currently married Currently married, gauna not performed [India only] Living with a man Divorced / separated Widow No, never in union No response	- 'Married, gauna not performed' coded as 'Currently married' - Divorced/separated grouped with Widowed - No response treated as missing.
Ever given birth	Have you ever given birth?	Yes No No response	- No response treated as missing.
Number of birth events	How many times have you given birth?	Integer	- No response treated as missing
Wealth	Household wealth index questions administered in household questionnaire	Lowest quintile Lower quintile Middle quintile Higher quintile Highest quintile	- Pre-constructed in dataset
Previous PMA participation	Has the respondent previously participated in PMA 2020 surveys? [completed by interviewer]	Yes No Do not know No response	- Do not know and No response coded as missing
Community-Level Variables			
Region / State	Enumeration area categorised based on sampling frame	Vary by country	- Pre-constructed in dataset
Urban /rural		Urban Rural	- Pre-constructed in dataset
Abortion care facility in community	Does this facility provide post-abortion care for pregnancies of 12 weeks or less / more than 12 weeks? AND Does this facility provide abortion for pregnancies of 12 weeks or less / more than 12 weeks?	Yes No Do not know No response	- Binary variable coded 1 if any facilities in or serving the enumeration area answered yes to providing abortion or post-abortion care for either gestational age group, and 0 if all facilities answered no to all questions. Public hospitals were excluded as hospital catchment areas can be very large, so an enumeration area may not have abortion care available if it only has a public hospital serving the area.
Monthly mean number of abortions	In an AVERAGE / the LAST month, how many post-abortion care patients would you estimate are/were treated as INPATIENTS / OUTPATIENTS in this facility as a whole? Please remember to include all patients	Integer variable -88 for do not know -99 for no response.	- Average of the number of post-abortion care services in the last month and in an average month was calculated for each facility (to get a more accurate average that accounts for possible seasonal variation). - Average of the number of abortion services in the last month and in an average month was calculated for each facility (to get a

	treated for extremely serious or minor abortion complications, whether the abortions were spontaneous or induced. Ensure provider responds from memory and does NOT reference the log book.		more accurate average that accounts for possible seasonal variation).
	In an AVERAGE / the LAST month, how many abortions are/were provided?		- The average numbers of abortions and post-abortion care services were summed per facility, and then per cluster to give a cluster total of the number of abortions / post-abortion care services reported by facilities per month on average.
Interview-level Variables			
Interviewer-respondent familiarity	How well acquainted are you with the respondent? [completed by interviewer]	Very well acquainted Well acquainted Not well acquainted Not acquainted	- Very well acquainted and well acquainted grouped together to give a categorical variable with three groups.
Survey language	Administrative data recorded by interviewer	Varied by country	- Languages used in <20 interviews grouped into 'Other'
Interviewer-level Variables			
Number of respondents	-	-	- Constructed by summing the number of interviews completed per interviewer
Age	How old were you at your last birthday?	Integer	- Treated as continuous
Marital status	Select your marital status	Never Married Currently Married Living with a partner Divorced Widowed	- Coded as binary variable where 1 is married ('Currently Married') and 0 is all other categories
Children	Do you have any children?	Yes No	-
Education	What is the highest level of education that you have completed?	Primary School Secondary School Higher Secondary [India only] University Technical School Graduate School (Masters) Graduate School (Doctoral) [Côte D'Ivoire only]	- Recoded into a binary variable where 1 is "Primary/Secondary" and 2 is "Technical / Uni graduate and above"
Existing staff	Have you ever completed a round of data collection for PMA2020 before the round you are preparing for now?	Yes, I am a returning PMA2020 staff member No, this will be my first round of data collection	-
Previous experience	Do you have any previous survey experience?	Yes No	-
Comfort asking about abortion	Are you comfortable asking respondents questions about abortion?	Yes, completely Somewhat No	- Binary variable coded as 1 if interviewer answered 'yes completely' and 0 if they answered 'somewhat' or 'no'

Appendix 2. Characteristics of respondents and communities by country (weighted)						
Respondent characteristics	Côte d'Ivoire (n=2798)		Rajasthan, India (n=5915)		Nigeria (n=11,303)	
	N	%	N	%	N	%
Mean age (SE)	28.5 (0.21)		29.1 (0.15)		29.1 (0.13)	
Education						
No formal schooling	1,282	45%	2,212	37%	2,389	18%
Primary school	733	26%	1,424	24%	1,931	15%
Secondary school	626	23%	1,509	26%	5,039	47%
Higher education	154	6%	770	14%	1,944	20%
Marital status						
Currently married	1,187	41%	4,547	77%	7,069	59%
Living with partner	622	24%	9	0%	414	5%
Divorced or widowed	129	4%	153	3%	528	5%
Never married	859	31%	1,188	20%	3,288	31%
Parity						
Ever given birth	2,080	74%	4,082	69%	7,456	65%
Mean number of births (SE)	2.5 (0.12)		1.9 (0.04)		2.3 (0.06)	
Previous PMA participant	387	23%	1,281	25%	1,884	23%
Community characteristics						
Urban	1,768	62%	1,503	35%	5,664	57%
Rural	1,096	38%	4,561	65%	5,875	43%
Abortion care facility in community	2,129	76%	1,624	27%	5,602	50%
Mean monthly facility-reported number of abortions, per community with abortion facility (SE)	2.7 (0.09)		12.7 (0.51)		5.9 (0.11)	

Abbreviations: SE = Standard Error.

Appendix 3: Full multilevel random intercept logit model (Model 2) for the odds of reporting removing a pregnancy, adjusted for interviewer, interview, respondent and community characteristics

	Côte d'Ivoire		Rajasthan, India		Nigeria	
	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]
Interviewer characteristics						
Number of respondents	1.00	[0.98;1.01]	0.99	[0.97;1.01]	0.99	[0.98;1.00]
Interviewer age	0.99	[0.96;1.02]	1.02	[0.99;1.06]		
Married (vs not married)	1.17	[0.84;1.64]	0.73	[0.39;1.34]		
Has children (vs no children)	1.33	[0.96;1.83]	1.52	[0.85;2.74]		
Technical / Uni grad (vs secondary)	1.47	[0.95;2.29]	1.08	[0.73;1.59]		
Existing staff (vs new staff)	1.34	[0.52;3.44]	1.11	[0.66;1.87]		
Previous survey experience (v none)	1.36	[0.82;2.26]	1.01	[0.62;1.64]		
Very comfortable asking about abortion (vs somewhat/not comfortable)	1.88	[0.9;3.9]	1.55	[0.45;5.34]		
Interview Characteristics						
Very well or well acquainted	Ref		Ref		Ref	
Not well acquainted	1.22	[0.28;5.22]	0.68	[0.49;0.96]	0.75	[0.58;0.97]
Not acquainted	1.67	[0.45;6.17]	0.91	[0.57;1.45]	0.85	[0.65;1.13]
Language of interview						
French	Ref		Ref		Ref	
Baoule	3.11	[2.00;4.83]	0.77	[0.08;6.97]	1.59	[1.19;2.14]
Yacouba	0.54	[0.15;1.93]	1.54	[0.69;3.47]	1.13	[0.72;1.78]
Attie	0.75	[0.28;2.02]			1.94	[1.16;3.25]
Dioula	0.26	[0.14;0.48]			1.57	[0.99;2.47]
Lobi	0.17	[0.02;1.35]			1.61	[0.73;3.55]
Other	0.67	[0.27;1.72]				
Respondent Characteristics						
Age	1.35	[1.22;1.50]	1.40	[1.21;1.61]	1.46	[1.38;1.56]
Age squared	1.00	[0.99;1.00]	0.99	[0.99;1.00]	0.99	[0.99;1.00]
No formal schooling	Ref		Ref		Ref	
Primary school	1.96	[1.48;2.60]	2.01	[1.48;2.72]	1.62	[1.21;2.16]
Secondary school	2.10	[1.50;2.92]	1.46	[1.00;2.14]	2.19	[1.63;2.94]
Higher education	1.31	[0.8;2.150]	1.49	[0.92;2.41]	1.94	[1.39;2.7]
Married	Ref		Ref		Ref	
Living with partner	2.85	[2.12;3.83]	1.33	[0.14;13.0]	2.75	[2.07;3.65]
Divorced or widowed	2.25	[1.39;3.63]	0.94	[0.47;1.89]	1.44	[1.11;1.87]
Never married	3.66	[2.54;5.27]	0.14	[0.04;0.51]	1.30	[1.01;1.67]
Ever given birth (vs never)	3.63	[2.41;5.46]	2.76	[1.49;5.13]	1.39	[1.09;1.79]
Number of birth events	0.92	[0.85;1.00]	1.08	[0.97;1.19]	0.96	[0.92;1.01]
Lowest wealth quintile	Ref		Ref		Ref	
Lower quintile	1.36	[0.90;2.05]	0.81	[0.51;1.29]	1.44	[1.10;1.90]
Middle quintile	1.23	[0.78;1.95]	1.06	[0.67;1.66]	1.33	[0.96;1.84]
Higher quintile	1.61	[0.97;2.64]	0.88	[0.54;1.43]	1.50	[1.07;2.11]
Highest quintile	1.88	[1.12;3.15]	1.07	[0.64;1.78]	1.75	[1.22;2.52]
Previous PMA respondent (vs not)	1.26	[0.90;1.75]	0.82	[0.62;1.10]	0.91	[0.74;1.10]
Community Characteristics						
Region or state	0.99	[0.97;1.01]	0.99	[0.97;1.01]	1.01	[0.94;1.08]
Rural (vs urban)	0.99	[0.68;1.46]	0.57	[0.36;0.91]	0.77	[0.56;1.05]
Monthly number of abortions per community (mean, facility-reported)	0.99	[0.95;1.04]	1.00	[0.97;1.02]	0.97	[0.94;0.99]
Abortion care facility in community (vs none)	0.75	[0.55;1.03]	1.42	[0.90;2.26]	1.36	[1.04;1.78]

Intra-Interviewer Correlation	0.01	0.15	0.22
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Notes: Coefficients in bold are significant at the <0.05 level, coefficients in bold and italics are significant at the <0.10 level. Interviewer characteristics were unavailable for Nigeria. OR = odds ratio. CI = confidence intervals.

Appendix 4. Multilevel logit models with interviewer effects for PMA survey outcomes

	Côte d'Ivoire				Rajasthan, India				Nigeria			
	Level 2 variance	IIC	95% CI	LR test P value	Level 2 variance	IIC	95% CI	LR test P value	Level 2 variance	IIC	95% CI	LR test P value
Abortion-related survey questions												
Ever removed a pregnancy												
Null model	0.60	0.15	[0.10;0.23]		0.81	0.20	[0.14;0.28]		1.86	0.36	[0.31;0.42]	
Model 1	0.24	0.07	[0.03;0.13]	<0.001	0.74	0.18	[0.12;0.26]	<0.001	1.05	0.24	[0.20;0.30]	<0.001
Model 2	0.03	0.01	[0.00;0.11]	<0.001	0.60	0.15	[0.10;0.24]	0.15	0.94	0.22	[0.18;0.27]	<0.001
Ever regulated a period												
Null model	1.63	0.33	[0.23;0.45]		0.74	0.18	[0.10;0.32]		1.95	0.37	[0.31;0.44]	
Model 1	1.56	0.32	[0.22;0.45]	<0.001	0.67	0.17	[0.08;0.31]	<0.001	1.55	0.32	[0.26;0.39]	<0.001
Model 2	1.10	0.25	[0.15;0.38]	0.03	0.45	0.12	[0.05;0.27]	0.08	1.51	0.32	[0.25;0.38]	0.30
Confidante removed pregnancy												
Null model	0.40	0.11	[0.06;0.18]		1.17	0.26	[0.20;0.34]		1.33	0.29	[0.24;0.35]	
Model 1	0.34	0.09	[0.05;0.17]	<0.001	1.15	0.26	[0.20;0.33]	<0.001	1.10	0.25	[0.20;0.31]	<0.001
Model 2	0.15	0.04	[0.01;0.12]	0.01	0.99	0.23	[0.17;0.31]	0.18	1.01	0.23	[0.19;0.29]	<0.001
Less stigmatised survey questions												
Current contraceptive user												
Null model	0.40	0.11	[0.07;0.17]		0.35	0.10	[0.07;0.13]		1.15	0.26	[0.22;0.31]	
Model 1	0.27	0.08	[0.04;0.13]	<0.001	0.83	0.20	[0.16;0.26]	<0.001	0.95	0.22	[0.18;0.27]	<0.001
Model 2	0.17	0.05	[0.02;0.10]	<0.001	0.73	0.18	[0.14;0.24]	0.07	0.92	0.22	[0.18;0.26]	0.07
Ever given birth												
Null model	0.43	0.11	[0.07;0.17]		0.06	0.02	[0.01;0.03]		0.37	0.10	[0.08;0.13]	
Model 1*	0.09	0.03	[0.01;0.12]	<0.001	0.10	0.03	[0.01;0.10]	<0.001	0.25	0.07	[0.05;0.11]	<0.001
Model 2	0.02	0.01	[0.00;0.00]	0.19	0.02	0.00	[0.00;0.85]	0.06	0.23	0.06	[0.04;0.10]	<0.001
Currently pregnant												
Null model	0.06	0.02	[0.00;0.00]		0.19	0.05	[0.02;0.12]		0.27	0.08	[0.05;0.11]	
Model 1**	0.00	0.00	[0.00;0.00]	<0.001	0.15	0.04	[0.01;0.13]	<0.001	0.17	0.05	[0.03;0.08]	<0.001
Model 2	0.00	0.00	[0.00;0.00]	0.29	0.11	0.03	[0.01;0.14]	0.41	0.17	0.05	[0.03;0.08]	0.08

Notes: Model 1 includes respondent variables (age, education, marital status, ever given birth, number of birth events, wealth, previous PMA experience) and community variables (region or state, rural / urban status, presence of facility providing abortion, monthly average number of abortions reported by facilities in community).

Model 2 includes respondent, community, and interviewer / interview-related variables (interviewer age, marital status, children, education, previous PMA staff, previous survey experience, comfort asking questions about abortion, respondent-interviewer familiarity and survey language).

*Excluding parity variables. **Excludes respondent marital status for Rajasthan. IIC = intra-interviewer correlation. CI = confidence intervals. LR test = Likelihood ratio test.