

Online Appendix *for*

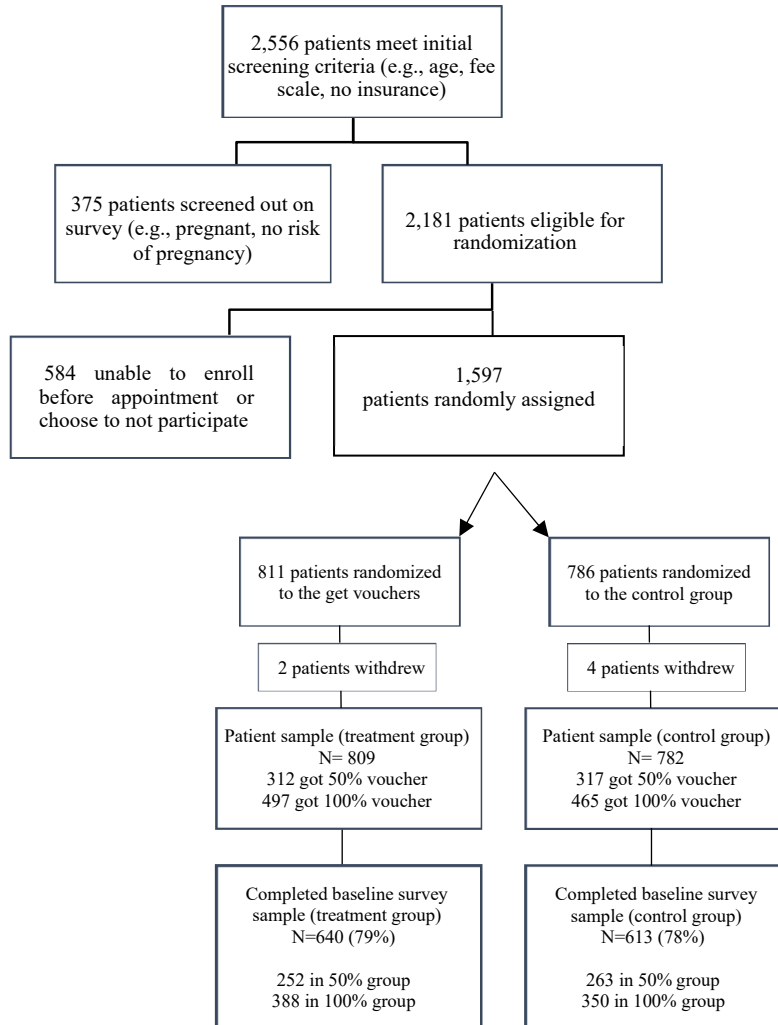
“How Subsidies Affect Contraceptive Use among Low-Income Women in the U.S.:
A Randomized Control Trial”

March 23, 2021

Appendix A. Additional Tables and Figures

Appendix A contains figures and tables referenced in the main text.

Appendix Figure A1. M-CARES Enrollment and Randomization of Patients



Notes: Participants in the 50% phase received vouchers between August 20, 2018 and March 3, 2019, valued at 50% of the cost of receiving a name-brand IUD. Participants in the 100% phase received vouchers between March 4, 2019 and November 3, 2019, valued at 100% of the cost of receiving a name-brand IUD.

Appendix Table A1. Correlates of Voucher Use

Dependent Variable	Used the voucher (0/1)		Share of voucher used	
	(1)	(2)	(3)	(4)
<i>Z Covariates: Demographic Characteristics</i>				
Age 20-22	0.009 (0.064)	0.010 (0.063)	0.059 (0.056)	0.048 (0.056)
Age 23-25	-0.086 (0.063)	-0.078 (0.060)	0.002 (0.053)	-0.003 (0.052)
Age 26-29	0.014 (0.062)	0.008 (0.060)	0.097* (0.056)	0.079 (0.056)
Age 30-35	-0.031 (0.069)	-0.031 (0.067)	0.065 (0.060)	0.048 (0.060)
Black	-0.152** (0.066)	-0.134** (0.068)	-0.203*** (0.043)	-0.194*** (0.044)
Other	-0.036 (0.040)	-0.027 (0.040)	-0.023 (0.037)	-0.019 (0.037)
151-200%FPL	-0.041 (0.039)	-0.037 (0.040)	-0.031 (0.035)	-0.036 (0.035)
201-250% FPL	0.023 (0.051)	0.040 (0.053)	0.047 (0.048)	0.044 (0.048)
251+% FPL	-0.141*** (0.053)	-0.128** (0.054)	-0.102** (0.044)	-0.105** (0.043)
No high school	-0.214* (0.129)	-0.193 (0.130)	-0.116 (0.097)	-0.103 (0.097)
High school	-0.027 (0.043)	-0.024 (0.043)	-0.018 (0.038)	-0.019 (0.038)
College degree or more	-0.004 (0.042)	0.007 (0.041)	0.030 (0.037)	0.042 (0.037)
Married	0.100** (0.050)	0.100** (0.050)	0.031 (0.048)	0.029 (0.047)
Cohabit with partner	0.036 (0.037)	0.022 (0.037)	0.020 (0.033)	0.013 (0.033)
1 birth	-0.023 (0.059)	-0.040 (0.060)	-0.038 (0.054)	-0.059 (0.054)
2 births	-0.063 (0.101)	-0.055 (0.101)	-0.092 (0.087)	-0.075 (0.085)
3+ births	0.224** (0.099)	0.203** (0.090)	0.154 (0.126)	0.115 (0.121)
<i>C. Method Use before Visit to PPMI</i>				
LARCs	-0.233*** (0.067)	-0.223*** (0.067)	-0.034 (0.056)	-0.026 (0.057)
Birth control pills	0.186*** (0.047)	0.199*** (0.047)	0.151*** (0.039)	0.162*** (0.038)
Condoms/withdrawal	0.081 (0.053)	0.085 (0.054)	0.126*** (0.045)	0.122*** (0.045)
Other method	0.146** (0.063)	0.170*** (0.062)	0.059 (0.058)	0.072 (0.056)
Constant	0.734*** (0.067)	0.590*** (0.083)	0.350*** (0.057)	0.279*** (0.069)
Clinic fixed effects	N	Y	N	Y
Observations	678	675	678	675
R ²	0.148	0.177	0.096	0.130
Mean	0.729	0.727	0.443	0.443

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are corrected for heteroscedasticity and presented in parentheses beneath point estimates. The estimates presented in column 1 & 2 are exclude clinic fixed effects, and columns 3 & 4 presents the estimates with clinic fixed effects. Reference categories include age 18-19, White, 101-150 FPL, some college, not in a relationship, and no contraceptive method. Used voucher is coded 1 if respondent used and 0 if they did not use. Share used is measured by dividing the total amount spent by the total amount given. Other dependent variables as defined in the pre-analysis plan are available upon request.

Appendix Table A2. Voucher Amounts by Income Group and Study Phase

Income as Share of Federal Poverty Line (FPL)	Sliding Scale: % of Fee Charged	Randomly Assigned Voucher Amounts toward Remaining Out of Pocket Cost			
		50% Phase		100% Phase	
≤ 100%	0%	--	--	--	--
101-150%	25%	\$0	\$123	\$0	\$223
151-200%	50%	\$0	\$246	\$0	\$446
201-250%	75%	\$0	\$369	\$0	\$669
≥ 251%	100%	\$0	\$492	\$0	\$892

Notes: Participants in the 50% phase received vouchers between August 20, 2018 and March 3, 2019. Participants in the 100% phase received vouchers between March 4, 2019 and November 3, 2019. The tablet customized voucher amounts to each patient's out-of-pocket costs for contraceptives. Patients who were below the FPL (fee scale 1/A) are not charged for contraceptive services and are, therefore, excluded from the study. Uninsured patients with incomes at 101-150% of the federal poverty line (FPL, fee scale 2) pay 25% of PPMI prices; 151-200% (fee scale 3) pay 50%; 201-250% (fee scale 4) pay 75%; and above 250% (fee scale 5) pay 100%.

Appendix Table A3. Method Transitions

A. Contraceptive Switching Matrix, 50% Treatment Group

Most Effective Method Billed Post-Visit and within 100 days of Enrollment ¹							
Most Effective Birth Control Method Pre-Visit	LARC	Shot	Pill	Ring/Patch	Diaphragm	Did not purchase BC at PPMI	Total
LARC	4	0	7	2	0	28	41
Shot	1	10	0	1	0	3	15
Pill	5	0	79	3	0	20	107
Ring/Patch	1	0	1	5	0	2	9
Non-Hormonal ²	10	7	23	7	1	23	71
No Method ³	10	13	24	0	0	22	69
Total	31	30	134	18	1	98	312
	Total	Share of Total					
Switched to more effective	102	0.327					
Stayed on same method	99	0.317					
Switched to less effective	13	0.042					
No purchase of BC at PPMI	98	0.314					

B. Contraceptive Switching Matrix, 50% Control Group

Most Effective Method Billed Post-Visit and within 100 days of Enrollment ¹							
Most Effective Birth Control Method Pre-Visit	LARC	Shot	Pill	Ring/Patch	Diaphragm	Did not purchase BC at PPMI	Total
LARC	1	0	3	1	1	39	45
Vasectomy/Sterilization	0	0	0	0	0	1	1
Shot	0	15	3	0	0	1	19
Pill	5	1	49	3	0	46	104
Ring/Patch	0	0	1	5	0	0	6
Non-Hormonal ²	7	7	20	7	0	34	75
No Method ³	4	9	16	4	0	34	67
Total	17	32	92	20	1	155	317
	Total	Share of Total					
Switched to more effective	81	0.256					
Stayed on same method	70	0.221					
Switched to less effective	11	0.035					
No purchase of BC at PPMI	155	0.489					

¹ Post enrollment birth control methods uses data from the PPMI billing records. ² Non-Hormonal includes: Diaphragm, Condom, Withdrawal, Rhythm, Spermicide. ³ Baseline No Method includes: Abstinence, Plan B, Abortion, Miscarriage, and No Method reported

C. Contraceptive Switching Matrix, 100% Treatment Group

Most Effective Method Billed Post-Visit and within 100 days of Enrollment ¹							
Most Effective Birth Control Method Pre-Visit	LARC	Shot	Pill	Ring/Patch	Diaphragm	Did not purchase BC at PPMI	Total
LARC	19	0	10	2	0	38	69
Shot	3	27	0	1	0	3	34
Pill	13	4	100	3	0	26	146
Ring/Patch	1	0	2	6	0	2	11
Non-Hormonal ²	29	8	33	10	1	39	120
No Method ³	15	12	36	4	0	49	116
Missing	0	1	0	0	0	0	1
Total	80	52	181	26	1	157	497

	Total	Share of Total
Switched to more effective	171	0.344
Stayed on same method	153	0.308
Switched to less effective	16	0.032
No purchase of BC at PPMI	157	0.316

D. Contraceptive Switching Matrix, 100% Control Group

Most Effective Method Billed Post-Visit and within 100 days of Enrollment ¹							
Most Effective Birth Control Method Pre-Visit	LARC	Shot	Pill	Ring/Patch	Diaphragm	Did not purchase BC at PPMI	Total
LARC	4	0	10	2	0	47	63
Shot	0	20	1	0	0	6	27
Pill	5	4	63	1	0	62	135
Ring/Patch	1	0	0	8	0	3	12
Non-Hormonal ²	6	11	29	2	1	60	109
No Method ³	3	13	35	5	0	62	118
Missing	0	0	0	0	0	1	1
Total	19	48	138	18	1	241	465

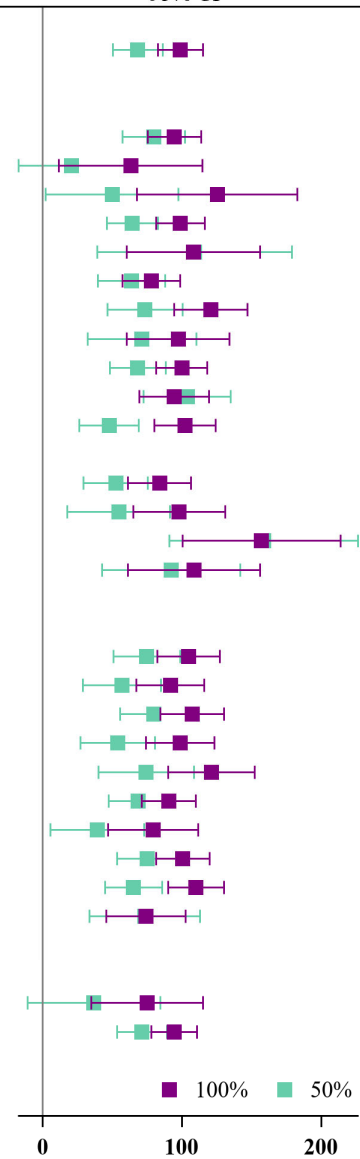
	Total	Share of Total
Switched to more effective	114	0.245
Stayed on same method	96	0.206
Switched to less effective	14	0.030
No purchase of BC at PPMI	241	0.518

¹ Post enrollment birth control methods uses data from the PPMI billing records. ² Non-Hormonal includes: Diaphragm, Condom, Withdrawal, Rhythm, Spermicide. ³ Baseline No Method includes: Abstinence, Plan B, Abortion, Miscarriage, and No Method reported

Appendix Table A4. Heterogeneity in the Treatment Effects of Receiving a 50% or 100% Voucher on the Five Primary Outcomes

A. PPMI charges in dollars

	100% Voucher Group				50% Voucher Group				Percent Increase over Control Mean 95% CI			
	N	T	Ste.	C	N	T	Ste.	C				
Overall effect on PPMI charges	758	290	24.9	***	293	++	559	199	27.0	***	291	
A. Pre-specified demographic groups												
Non-Hispanic White	519	297	31.4	***	315		391	230	33.8	***	288	
Non-Hispanic Black	83	154	64.0	**	244		58	60	56.4		292	
Hispanic any race	88	341	80.0	***	273	+	69	157	76.7	**	315	
Non-mother	654	290	26.8	***	294	++	482	196	29.2	***	305	
Mother	104	313	71.0	***	290		77	224	73.5	***	206	
Age<26	419	227	31.1	***	291		297	187	36.7	***	292	
Age≥ 26	339	358	40.2	***	296	++	262	213	40.3	***	290	
Below associate's degree	158	245	47.8	***	252		110	180	50.9	***	253	
Associate's degree or higher	600	302	28.9	***	302	++	449	204	31.1	***	299	
Married or cohabiting	296	281	38.6	***	298		228	273	42.6	***	263	
Single	462	297	33.2	***	291	+++	331	148	34.6	***	310	
Pay scale												
101-150% FPL	335	262	36.7	***	313	+	267	162	36.9	***	310	
151-200% FPL	212	291	50.2	***	297		145	181	62.9	***	333	
201-250% FPL	100	424	78.0	***	270		70	379	82.5	***	239	
251+% FPL	109	268	60.0	***	247		77	190	52.2	***	206	
B. Pre-specified pre-randomization characteristics												
Have a usual place of care for BC	412	303	33.8	***	289	+	343	214	35.4	***	286	
Do not have a usual place of care for BC	343	273	37.8	***	298		188	181	46.2	***	318	
Using Tier 1 or 2 method pre-randomization	403	315	34.7	***	294	++	310	214	33.6	***	268	
Not using tier 1 or 2 method pre-randomization	339	283	36.7	***	286	+	234	178	45.7	***	329	
Delayed getting BC	221	359	47.6	***	296		150	262	61.8	***	352	
Did not delay BC	536	265	29.4	***	292	+	383	187	29.9	***	274	
Positive desire to have a baby	176	216	45.2	***	272		125	110	48.3	**	281	
Negative desire to have a baby	543	300	29.9	***	298	+	396	223	33.5	***	297	
More likely than not to meet career aspirations	530	312	29.6	***	284	+++	399	194	31.7	***	297	
Less likely to meet career aspirations	226	235	46.8	***	316		134	217	60.2	***	295	
C. Exploratory												
Planning to get a LARC before appointment	77	455	124.3	***	607		55	207	137.3		564	
Not planning to get a LARC before appointment	681	252	23.1	***	267	+	504	189	24.9	***	266	



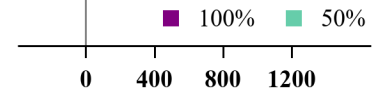
B. Any birth control purchase

	100% Voucher Group				50% Voucher Group				Percent Increase over Control Mean		
	N	T	Ste.	C	N	T	Ste.	C	95% CI		
Overall effect on any birth control purchase	758	0.22	0.03	***	0.50	559	0.18	0.04	***	0.52	
A. Pre-specified demographic groups											
Non-Hispanic White	519	0.20	0.04	***	0.53	391	0.21	0.05	***	0.52	
Non-Hispanic Black	83	0.15	0.11		0.38	58	0.09	0.13		0.48	
Hispanic any race	88	0.18	0.11	*	0.55	69	0.06	0.11		0.60	
Non-mother	654	0.23	0.04	***	0.50	482	0.18	0.04	***	0.55	
Mother	104	0.14	0.10		0.52	77	0.23	0.11	**	0.34	
Age<26	419	0.20	0.05	***	0.51	297	0.13	0.05	**	0.59	
Age≥ 26	339	0.25	0.05	***	0.48	262	0.25	0.06	***	0.44	
Below associate's degree	158	0.11	0.08		0.53	110	0.17	0.09	*	0.53	
Associate's degree or higher	600	0.25	0.04	***	0.49	449	0.18	0.04	***	0.52	
Married or cohabiting	296	0.20	0.05	***	0.56	228	0.27	0.06	***	0.50	
Single	462	0.23	0.04	***	0.46	331	0.13	0.05	**	0.54	
Pay scale											
101-150% FPL	335	0.09	0.05	*	0.63	267	0.11	0.06	*	0.62	
151-200% FPL	212	0.22	0.07	***	0.48	145	0.17	0.08	**	0.53	
201-250% FPL	100	0.40	0.09	***	0.38	70	0.28	0.12	**	0.46	
251+% FPL	109	0.45	0.09	***	0.22	77	0.38	0.11	***	0.23	
B. Pre-specified pre-randomization characteristics											
Have a usual place of care for BC	412	0.21	0.05	***	0.54	343	0.19	0.05	***	0.53	
Do not have a usual place of care for BC	343	0.24	0.05	***	0.45	188	0.20	0.07	***	0.49	
Using Tier 1 or 2 method pre-randomization	403	0.24	0.05	***	0.53	310	0.21	0.05	***	0.49	
Not using tier 1 or 2 method pre-randomization	339	0.19	0.05	***	0.45	234	0.17	0.06	***	0.55	
Delayed getting BC	221	0.28	0.06	***	0.46	150	0.30	0.07	***	0.60	
Did not delay BC	536	0.20	0.04	***	0.51	383	0.17	0.05	***	0.49	
Positive desire to have a baby	176	0.07	0.08		0.45	125	0.11	0.09		0.53	
Negative desire to have a baby	543	0.24	0.04	***	0.52	396	0.21	0.05	***	0.51	
More likely than not to meet career aspirations	530	0.22	0.04	***	0.51	399	0.18	0.05	***	0.53	
Less likely to meet career aspirations	226	0.20	0.06	***	0.48	134	0.26	0.08	***	0.50	
C. Exploratory											
Planning to get a LARC before appointment	77	0.28	0.11	**	0.61	55	0.17	0.13		0.58	
Not planning to get a LARC before appointment	681	0.20	0.04	***	0.49	504	0.18	0.04	***	0.52	

■ 100% ■ 50%

C. LARC insertion

	100% Voucher Group				50% Voucher Group				Percent Increase over Control Mean			
	N	T	Ste.	C	N	T	Ste.	C	95% CI			
Overall effect on LARC insertion	758	0.15	0.02	***	0.04	++	559	0.07	0.02	***	0.06	
A. Pre-specified demographic groups												
Non-Hispanic White	519	0.16	0.03	***	0.06	+	391	0.09	0.03	***	0.06	
Non-Hispanic Black	83	0.00	0.04		0.02		58	-0.03	0.03		0.03	
Hispanic any race	88	0.24	0.07	***	0.03	++	69	0.02	0.08		0.10	
Non-mother	654	0.14	0.02	***	0.05	++	482	0.06	0.03	**	0.07	
Mother	104	0.27	0.06	***	0.00		77	0.14	0.07	**	0.03	
Age<26	419	0.11	0.03	***	0.05		297	0.08	0.03	**	0.05	
Age≥ 26	339	0.21	0.04	***	0.04	+++	262	0.06	0.04		0.07	
Below associate's degree	158	0.13	0.04	***	0.02		110	0.07	0.05		0.04	
Associate's degree or higher	600	0.16	0.03	***	0.05	++	449	0.07	0.03	**	0.06	
Married or cohabiting	296	0.13	0.04	***	0.05		228	0.14	0.04	***	0.04	
Single	462	0.17	0.03	***	0.04	+++	331	0.02	0.03		0.07	
Pay scale												
101-150% FPL	335	0.15	0.03	***	0.04	++	267	0.05	0.03		0.05	
151-200% FPL	212	0.12	0.04	***	0.05		145	0.08	0.06		0.09	
201-250% FPL	100	0.25	0.07	***	0.06		70	0.18	0.08	**	0.05	
251+% FPL	109	0.15	0.05	***	0.02	++	77	0.00	0.05		0.05	
B. Pre-specified pre-randomization characteristics												
Have a usual place of care for BC	412	0.17	0.03	***	0.03	+	343	0.09	0.03	***	0.05	
Do not have a usual place of care for BC	343	0.12	0.03	***	0.06	+	188	0.03	0.05		0.10	
Using Tier 1 or 2 method pre-randomization	403	0.16	0.03	***	0.04	++	310	0.06	0.03	**	0.04	
Not using tier 1 or 2 method pre-randomization	339	0.16	0.03	***	0.04		234	0.08	0.04	*	0.10	
Delayed getting BC	221	0.27	0.04	***	0.02	+++	150	0.07	0.06		0.13	
Did not delay BC	536	0.11	0.03	***	0.05		383	0.08	0.03	***	0.04	
Positive desire to have a baby	176	0.11	0.03	***	0.01		125	0.02	0.04		0.04	
Negative desire to have a baby	543	0.15	0.03	***	0.06		396	0.09	0.03	***	0.07	
More likely than not to meet career aspirations	530	0.17	0.03	***	0.05	++	399	0.07	0.03	**	0.06	
Less likely to meet career aspirations	226	0.12	0.04	***	0.04		134	0.05	0.05		0.06	
C. Exploratory												
Planning to get a LARC before appointment	77	0.43	0.12	***	0.32	+	55	0.13	0.14		0.42	
Not planning to get a LARC before appointment	681	0.10	0.02	***	0.02	+	504	0.05	0.02	**	0.03	



D. 1-method failure rate

	100% Voucher Group				50% Voucher Group				Percent Increase over Control Mean		
	N	T	Ste.	C	N	T	Ste.	C	95% CI		
Overall effect on efficacy (1-method failure rate)	758	0.21	0.03	***	0.46	559	0.17	0.04	***	0.48	
A. Pre-specified demographic groups											
Non-Hispanic White	519	0.20	0.04	***	0.49	391	0.20	0.04	***	0.48	
Non-Hispanic Black	83	0.14	0.10		0.35	58	0.08	0.12		0.45	
Hispanic any race	88	0.19	0.10	*	0.51	69	0.05	0.11		0.56	
Non-mother	654	0.22	0.03	***	0.46	482	0.17	0.04	***	0.51	
Mother	104	0.15	0.09		0.48	77	0.22	0.11	**	0.32	
Age<26	419	0.19	0.04	***	0.48	297	0.12	0.05	**	0.55	
Age≥ 26	339	0.24	0.05	***	0.44	262	0.23	0.06	***	0.41	
Below associate's degree	158	0.11	0.07		0.49	110	0.16	0.08	*	0.49	
Associate's degree or higher	600	0.24	0.04	***	0.45	449	0.17	0.04	***	0.48	
Married or cohabiting	296	0.19	0.05	***	0.52	228	0.25	0.06	***	0.46	
Single	462	0.22	0.04	***	0.43	331	0.12	0.05	**	0.50	
Pay scale											
101-150% FPL	335	0.09	0.05	**	0.59	267	0.10	0.05	*	0.58	
151-200% FPL	212	0.21	0.06	***	0.44	145	0.16	0.08	**	0.49	
201-250% FPL	100	0.39	0.09	***	0.35	70	0.26	0.11	**	0.43	
251+% FPL	109	0.42	0.08	***	0.21	77	0.34	0.10	***	0.21	
B. Pre-specified pre-randomization characteristics											
Have a usual place of care for BC	412	0.20	0.04	***	0.50	343	0.18	0.05	***	0.49	
Do not have a usual place of care for BC	343	0.23	0.05	***	0.42	188	0.18	0.07	***	0.46	
Using Tier 1 or 2 method pre-randomization	403	0.24	0.04	***	0.49	310	0.19	0.05	***	0.45	
Not using tier 1 or 2 method pre-randomization	339	0.19	0.05	***	0.42	234	0.16	0.06	***	0.51	
Delayed getting BC	221	0.28	0.06	***	0.43	150	0.28	0.06	***	0.56	
Did not delay BC	536	0.19	0.04	***	0.47	383	0.16	0.05	***	0.45	
Positive desire to have a baby	176	0.07	0.07		0.41	125	0.10	0.08		0.48	
Negative desire to have a baby	543	0.23	0.04	***	0.48	396	0.20	0.04	***	0.47	
More likely than not to meet career aspirations	530	0.22	0.04	***	0.47	399	0.17	0.04	***	0.49	
Less likely to meet career aspirations	226	0.19	0.06	***	0.44	134	0.24	0.08	***	0.46	
C. Exploratory											
Planning to get a LARC before appointment	77	0.29	0.11	***	0.58	55	0.17	0.12		0.57	
Not planning to get a LARC before appointment	681	0.19	0.03	***	0.45	504	0.17	0.04	***	0.48	

E. Days of coverage

	100% Voucher Group				50% Voucher Group				Percent Increase over Control Mean			
	N	T	Ste.	C	N	T	Ste.	C	95% CI			
Overall effect on temporal coverage	758	339	45.8	***	153	++	559	194	48.6	***	173	
A. Pre-specified demographic groups												
Non-Hispanic White	519	347	58.1	***	180		391	236	61.9	***	176	
Non-Hispanic Black	83	36	117.2		117		58	26	49.0		96	
Hispanic any race	88	455	122.8	***	98	++	69	44	141.5		262	
Non-mother	654	311	48.8	***	168	+	482	181	53.2	***	190	
Mother	104	532	124.8	***	59		77	314	119.6	***	60	
Age<26	419	249	53.9	***	152		297	243	58.4	***	138	
Age≥ 26	339	438	76.3	***	156	+++	262	136	81.1	*	212	
Below associate's degree	158	266	64.6	***	72		110	170	103.2	*	149	
Associate's degree or higher	600	356	54.7	***	171	++	449	197	54.4	***	178	
Married or cohabiting	296	235	71.9	***	211	++	228	364	75.5	***	119	
Single	462	406	61.2	***	120	+++	331	81	63.9		209	
Pay scale												
101-150% FPL	335	281	60.3	***	157		267	188	55.6	***	140	
151-200% FPL	212	268	91.1	***	190		145	120	120.2		258	
201-250% FPL	100	532	146.3	***	149		70	428	147.5	***	138	
251+% FPL	109	497	135.1	***	68	++	77	81	132.1		165	
B. Pre-specified pre-randomization characteristics												
Have a usual place of care for BC	412	364	58.3	***	131		343	250	57.4	***	136	
Do not have a usual place of care for BC	343	297	72.5	***	182	+	188	87	95.7		265	
Using Tier 1 or 2 method pre-randomization	403	367	62.5	***	158	+	310	217	49.1	***	116	
Not using tier 1 or 2 method pre-randomization	339	339	71.2	***	140		234	156	94.0	*	263	
Delayed getting BC	221	534	92.8	***	108	++	150	222	129.4	*	318	
Did not delay BC	536	257	51.3	***	170		383	205	47.7	***	122	
Positive desire to have a baby	176	276	87.3	***	93		125	82	101.2		161	
Negative desire to have a baby	543	340	58.3	***	192		396	227	62.1	***	182	
More likely than not to meet career aspirations	530	368	54.9	***	149	++	399	194	59.9	***	187	
Less likely to meet career aspirations	226	259	85.1	***	164		134	147	92.4		158	
C. Exploratory												
Planning to get a LARC before appointment	77	827	304.1	***	824		55	351	339.1		943	
Not planning to get a LARC before appointment	681	246	33.9	***	97	+	504	158	30.5	***	100	

Notes: N denotes observations in the indicated subgroup, T the treatment effect, and Ste. the standard error of the treatment effect. C denotes the control group mean. The figure on the right plots the treatment effects with the 95% confidence intervals. ***, **, * indicate that the treatment effect is statistically significant at the 1, 5, and 10% level, respectively. ++ and + indicate that the 100% effect is statistically different from the 50% effect.

Appendix Table A5. Treatment Effect Heterogeneity by Attitudes, Relationship Characteristics, Health, and Life-Satisfaction on Index of Contraceptive Efficacy

	100% Voucher		50% Voucher		Std. Deviation Increase 95% CI
	T*X	Ste.	T*X	Ste.	
Overall effect on index of contraceptive efficacy	0.69	0.07 *** ++	0.43	0.07 ***	
A. Contraceptive attitudes					
Negative Attitudes about Contraception Index	-1.22	0.66 *	0.12	0.47	
Birth control is expensive	-0.48	0.39	0.19	0.27	
Difficult to find time to go to the doctor for contraception	-0.34	0.39	0.16	0.30	
Too much planning to have birth control	-0.63	0.47	0.25	0.32	
Birth control is a hassle	-1.17	0.45 *** +	0.07	0.30	
Birth control makes you feel sick	-0.25	0.39	-0.13	0.29	
Birth control interferes with sexual enjoyment	-0.23	0.41	-0.12	0.30	
A condom is a sign of mistrust	-0.43	0.41	0.14	0.29	
Very religious	-0.19	0.35	0.12	0.27	
B. Relationship quality					
Relationship seriousness index	-0.03	0.57	-0.05	0.44	
Lots of time with partner	0.05	0.45	0.09	0.34	
Exclusive relationship	0.39	0.52	-0.35	0.43	
Partner desire pregnancy	-0.11	0.25	0.00	0.18	
Experienced intimate partner violence	0.04	0.27	-0.20	0.18	
C. Life satisfaction					
Satisfied with life	-0.11	0.50	0.27	0.37	
General health	0.03	0.53	0.23	0.41	

Notes: T*X denotes the interaction term between the treatment and indicated covariate, and Ste. is the standard error for that interaction effect. The figure on the right plots the interaction effect with the 95% confidence intervals. ***, **, * indicate that the treatment effect is significantly different from zero at the 1, 5, and 10% levels, respectively. ++ and + indicate that the 100% effect is statistically different from the 50% effect at the 5 or 10% levels, respectively. The negative attitudes about contraception index is the average of all items under section A except for “very religious.” The relationship seriousness index is the average of all items in section B except for “experienced intimate partner violence.” The -1.22 interaction effect for the “negative attitudes about contraception index” says that an increase in more negative attitudes about contraception from 0 to 1 is associated with a -1.22 decrease in the treatment effect of the 100% voucher on contraceptive efficacy. Index subcomponents (variables without “index”) are asked on a Likert scale of 1-5 but rescaled to range between 0 to 1 for ease of interpretation. Higher values represent more agreement with the statement or condition. For instance, “birth control is expensive”=1 indicates strong agreement with the statement; “very religious”=0 indicates that the individual answered that she strongly disagreed with the statement that she is very religious.

Appendix B. Reweighting M-CARES Sample to Resemble the National Title X Population in 2018

Given the differences between the M-CARES study participants and the Title X population nationally (Table 1), the estimates based on our sample may not represent changes expected in the U.S. Unfortunately, we do not have a microdata sample for Title X patients, which means that we cannot use techniques like inverse propensity score reweighting. We, therefore, use entropy balancing to reweight the sample such that the age, race/ethnicity, and income characteristics of M-CARES participants match those in the national Title X population in the 2018 Health and Human Services (HHS) Annual Report (Fowler et al. 2019; Hainmueller 2011). We generate 95-percent confidence intervals by bootstrapping our entropy-balanced estimates using replacement. Identifying the 0.025 and 0.975 percentiles from the distribution of 1,000 estimates provides the 95-percent confidence interval (Efron and Tibshirani 1993).

Appendix Table B1 shows a balance table with the population targets from the 2018 Title X reports (column 1) as well as the sample characteristics applying the entropy weights (column 2). Importantly, the weights adjust the race/ethnicity, age, and income distributions, such that the reweighted sample matches each of the population targets. This exercise ensures that the M-CARES sample resembles the age, race, and income characteristics of the national Title X population (column 3), although it does not guarantee that unobserved Title X population characteristics are also balanced. The reweighted estimates for each primary outcome in the short and long run are indicated in Appendix Table B2.

Table B1. Comparison of 2018 Title Population, the M-CARES Sample, and the Reweighted M-CARES Sample

	(1) M-CARES Sample	(2) 2018 Title X Participants	(3) Reweighted M-CARES Sample
Age			
Age 18-19	0.105	0.135	0.135
Age 20-24	0.389	0.354	0.354
Age 25-29	0.318	0.304	0.304
Age 30-34	0.189	0.207	0.207
Race			
Non-Hispanic White	0.693	0.333	0.335
Non-Hispanic Black	0.114	0.195	0.194
Hispanic any race	0.109	0.340	0.339
Other	0.085	0.132	0.132
Income as % of FPL			
101-150%	0.459	0.447	0.447
151-200%	0.268	0.219	0.219
201-250%	0.132	0.106	0.106
251+%	0.141	0.228	0.228

Notes: Estimates of the 2018 Title X participants are derived from Fowler et al. (2019). The age distributions are the distribution of the ages of female Title X users between ages 18 and 34, calculated using Exhibit 4. Race distributions are for female Title X users of all ages, calculated using Exhibit 7. Income distributions are for all Title X users with income above 100% of FPL, calculated using Exhibit 15. See Table 1 for sample sizes.

Table B2. Numerical Estimates of the Reweighted Treatment Effects of Receiving a 50% or 100% Voucher on Contraceptive Efficacy in the Short and Long Run

	(1) Treatment effect, 100% voucher	CI	(2) Control mean	(3) Percent increase	(4) Treatment effect, 50% voucher	CI	(5) Control mean	(6) Percent increase
<i>A. Effects within the first 100 days</i>								
PPMI charges in dollars	292	(241.714, 339.788)	292	99.7%	161	(143.877, 253.241)	292	55.2%
Any birth control purchase	0.266	(.161, .295)	0.490	54.3%	0.161	(.103, .26)	0.525	30.6%
LARC insertion	0.156	(.111, .198)	0.045	344.0%	0.027	(.016, .114)	0.062	44.2%
1-method failure rate	0.256	(.159, .283)	0.453	56.5%	0.148	(.096, .242)	0.487	30.3%
Days of coverage	368	(256.84, 436.783)	154	239.4%	90	(95.052, 288.007)	174	51.6%
Index of contraceptive efficacy	0.742	(.512, .940)	-0.007	-	0.306	(.258, .652)	0.006	-
<i>B. Effects since time of enrollment</i>								
PPMI charges in dollars	239	(167.862, 302.614)	516	46.4%	59	(28.253, 207.392)	602	9.8%
Any birth control purchase	0.239	(.139, .277)	0.527	45.3%	0.127	(.088, .245)	0.565	22.5%
LARC insertion	0.142	(.085, .177)	0.076	185.4%	-0.003	(-.007, .103)	0.098	-2.7%
1-method failure rate	0.230	(.137, .265)	0.489	47.0%	0.114	(.082, .229)	0.526	21.7%
Days of coverage	324	(197.127, 394.301)	275	117.8%	24	(29.435, 264.148)	330	7.4%
Index of contraceptive efficacy	0.518	(.353, .597)	-0.005	-	0.129	(.124, .394)	0.008	-

Appendix C. Estimating the Implications of Scaling the M-CARES 100% Voucher for Every Title X Patient

The number of U.S. pregnancies in 2018 is not directly observed. Instead, we estimate the number using 2018 birth counts (Martin et al. 2019) and 2012 estimate of share of pregnancies ending in childbirth (Zolna and Lindberg 2012), which yields a total estimate of 5,924,550 pregnancies in 2018. Data for 2018 show that 3,791,712 births occurred in the U.S. (Martin et al. 2019). In 2017, the Guttmacher Institute estimated that around 862,320 abortions occurred in the U.S. (Guttmacher Institute 2019).

Reductions in Pregnancies

Using the entropy-balanced weighted estimate that the 100% voucher decreased expected 1-year, method failure rates by 0.256 (Appendix Table B2.A), we obtain a reduction in pregnancies of 357,689, or 6%, in the first year; using the long-run, reweighted estimate of the reduction in method failures of 0.230 (Appendix Table B2.B), we obtain a reduction in pregnancies of 321,361 in the second year, or 5.42%.

Reductions in Childbirth

In 2008, an estimated 64% of U.S. pregnancies resulted in a live birth (Ventura, Curtin, and Abma 2012; Zolna and Lindberg 2012). Other pregnancies ended in either miscarriage (17%) or abortion (18%). The distribution of pregnancy outcomes depends on many factors, such as women's access to care and desire to have a child. Given these factors, the share of pregnancies that end in childbirth will differ across populations, and the distribution of outcomes for the Title X population is likely to differ from the national population. We, therefore, estimate the share of pregnancies that result in childbirth for the Title X population directly using the 2017-19 NSFG. For every woman with a pregnancy that began between 2017 and 2019 and ended before the NSFG interview, the NSFG's pregnancy history identifies her contraceptive method at the time of conception and the outcome of the pregnancy (e.g., live birth, miscarriage, abortion)¹ as well as information on age, race, poverty status, and health insurance at the time of the interview. We then reweight the Title X population in terms of contraceptive method type, age, race/ethnicity, income distributions, and insurance status. The resulting pregnancy to birth conversion rate for Title X patients is 0.407. This number indicates that 40.7 out of every 100 pregnancies to Title X clients result in a live birth. This rate is lower than that for the non-Title X population, which is around 65 percent. Applying this number to the implied policy-induced reductions in pregnancies from the previous section, we obtain a decrease of 145,579 births ($0.407 \times 357,689$) in the first year, a reduction of 3.8% relative to 2018 births, and a decrease of 130,794 births ($0.407 \times 321,361$) in the second year, a reduction of 3.5% from 2018 births.

¹ We exclude pregnancies that did not end before the interview because the outcome is unknown.

Reductions in Abortion

We also estimate directly the share of policy-induced pregnancies that result in an abortion for the Title X population directly using the 2017-19 NSFG and reweight them as described in the section on childbirth. These estimates imply that around 21.7% of pregnancies result in abortion. Applying this number to the implied reductions in pregnancies from the previous section, we obtain a decrease of 77,629 abortions ($0.217 \times 357,689$) in the first year, a reduction of 9.0% relative to the 2017 number of abortions, and a decrease of 69,735 abortions ($0.217 \times 321,361$) in the second year, a reduction of 8.1% from to the 2017 number of abortions.

Costs of Providing a 100% Voucher to all Title X Patients

The M-CARES voucher expenditure rate allows us to compute the expected cost of providing a 100% Voucher to every uninsured, Title X patient with out-of-pocket costs—that is, making every contraceptive up to the cost of the lowest cost LARC free. Appendix Table C1 shows that the take up of vouchers implies that the expected cost per participant is around \$166.70. The policy would, therefore, cost around \$232,890,221 for the 1,397,223 Title X patients with out-of-pocket costs.

Appendix Table C1. Expected Costs per Title X Patient of Scaling the M-CARES 100% Voucher

<u>Income as Share of Federal Poverty Line (FPL)</u>	<u>Distribution in Title X Population Reports</u>	<u>Voucher amount</u>	<u>% of Voucher used in M- CARES</u>	<u>Expected voucher cost/recipient</u>
≤ 100%	0.447	--		
101-150%	0.219	\$223	0.343	\$34.22
151-200%	0.105	\$446	0.365	\$35.69
201-250%	0.228	\$669	0.415	\$29.18
≥ 251%	0.447	\$892	0.332	\$67.59
Expected 100% voucher cost per recipient				\$166.70

Costs to Public Insurance for Unplanned Births Prevented by the 100% Voucher

According to the Healthcare Cost and Utilization Project (HCUP), each unplanned birth resulting from an unplanned pregnancy is expected to cost Medicaid around \$20,717. Applying this number to the implied policy-induced reductions in live births from the previous section, we obtain a decrease of \$3,015,969,648 in the first year of the policy ($145,579 \times 20,717$) and \$2,709,660,231 in the second year of the policy ($130,794 \times 20,717$).

Appendix D. Approximating Reductions in the Demand for Children due to COVID-19

To approximate changes in demand, we calculate the expected reduction in births for Title X patients due to the recession following the method used by Kearney and Levine (2020). Their calculation assumes, based on prior estimates, that a 1 pp increase in the unemployment rate translates into a 1% decrease in birth rates due to reduced demand. To implement this calculation we estimated (1) the typical birthrate for Title X clients and (2) the percentage point (pp) increase in the unemployment rate for the Title X population due to COVID-19.

Estimating the Birthrate for the Title X Population

Birth records do not indicate whether a woman received her reproductive health services at Title X, so we estimate the birth rate for the Title X population by reweighting the NSFG to reflect the characteristics of the full Title X population using data from the HHS Title X 2018 Annual Report. We use entropy balancing to reweight NSFG observations so that they match the population characteristics of the Title X population in terms of contraceptive method type, age, race/ethnicity, income distributions, and insurance status (see Table 1). We specifically include contraceptive method type in the reweighting because we want to estimate the birthrate in the Title X population, which uses contraceptives differently than the population overall. Using the NSFG's pregnancy history series, we construct a variable to identify women's contraceptive method at the time of conception if they gave birth in 2018. For women with multiple births in 2018 we use the contraceptive method from their most recent pregnancy. For women without a birth in 2018, we use contraceptive method as of the January of the year before they were interviewed. Age, race, poverty status, and insurance status are all as reported at the time of the interview. Appendix Table D1 (next page) shows the results of this reweighting.

We focus on the 2018 birth rate, the most recent that we can calculate using the NSFG and the birth rate at the beginning of the M-CARE study. To do so, we limit our sample to observations from 2019 and identify all women who report a pregnancy that ended in a live birth in 2018. The entropy-balanced share of the 2019 observations reporting a live birth in 2018 gives us the 2018 birth rate. We estimate the Title X birthrate to be 51.9 births per 1,000 women.

Appendix Table D1. Balance for NSFG Birthrate Reweighting

	Population targets from HHS Title X 2018 Report	National estimates from 2017-2019 NSFG	Reweighted estimates from 2017-2019 NSFG
NSFG birth rate		53.7	51.9
Sterile	0.028	0.143	0.028
LARC	0.171	0.120	0.171
Birth control pills	0.251	0.149	0.251
Condoms	0.162	0.101	0.162
Other hormonal	0.179	0.034	0.179
Other non-hormonal	0.010	0.067	0.010
No method	0.174	0.344	0.174
withdrawal	0.025	0.042	0.025
Less than 100% FPL	0.667	0.180	0.667
101-150% FPL	0.149	0.127	0.149
151-200% FPL	0.073	0.094	0.073
201-250% FPL	0.035	0.080	0.035
251+% FPL	0.076	0.519	0.076
Non-Hispanic White	0.333	0.581	0.333
Non-Hispanic Black	0.195	0.163	0.195
Hispanic any race	0.340	0.173	0.340
Other/Not Reported	0.132	0.083	0.132
Age less than 20	0.175	0.129	0.175
Age 20-29	0.465	0.278	0.465
Age 30+	0.360	0.593	0.360
Insured	0.583	0.899	0.583
Uninsured	0.417	0.101	0.417

Notes: Population targets come from Exhibits 4, 7, 15, 16, and 18 in the HHS Title X 2018 Annual Report (Fowler et al 2019).

Estimating the Title X Unemployment Change from COVID

We estimate the change in the unemployment rate for Title X clients due to COVID as $-1 * \text{the change in the employment rate for Title X clients between March and October 2020}$, which assumes that the share of the population not in the labor force was constant over this period. We estimate the baseline employment rate for the Title X population by reweighting the March 2020 Current Population Survey (ASEC) to reflect the characteristics of the full Title X population using data from the HHS Title X 2018 Annual Report in terms of age, race/ethnicity, income distributions, and insurance status. Using this weight, we can calculate the employment rate for a population that is similar to the Title X population. Appendix Table D2 (next page) shows the balanced results of this reweighting.

To calculate the change in the employment rate due to COVID-19, we use data from Chetty et al (Nov 2020) and the Opportunity Insights Economic Tracker (www.tracktherecovery.org) on percent changes in employment rates over the year by income. They estimate that as of October 2020, the employment rate for individuals earning less than \$27,00 a year was 20% lower than it had been as of January 1, 2020. We multiple our estimate of the baseline Title X employment rate by a 20% decrease to get the pp reduction in employment for the Title X population due to COVID-19. This also gives us the pp increase in the unemployment rate.

Appendix Table D2. Balance for Title X Employment Rate Reweighting

	Population targets from HHS Title X 2018 Report	National estimates from 2020 CPS ASEC	Reweighted estimates from 2020 CPS ASEC
Less than 100% FPL	0.667	0.115	0.667
100-149% FPL	0.149	0.082	0.149
150+% FPL	0.184	0.804	0.185
Non-Hispanic White	0.333	0.596	0.333
Non-Hispanic Black	0.195	0.129	0.195
Hispanic any race	0.340	0.183	0.340
Other/Not Reported	0.132	0.093	0.132
Age less than 20	0.175	0.239	0.175
Age 20-29	0.465	0.132	0.465
Age 30+	0.360	0.629	0.360
Insured	0.583	0.919	0.583
Uninsured	0.417	0.081	0.417

Notes: Population targets come from Exhibits 4, 7, 15, and 16 in the HHS Title X 2018 Annual Report (Fowler et al 2019).

Calculating the Reduction in Births to Title X Clients due to the COVID-19 Recession

We estimate that the pre-COVID employment rate for the Title X population was 39.5%. A 20% reduction from that baseline implies that the employment rate for the Title X population fell by 7.9 pp. Since we assume that all declines in the employment rate are increases to the unemployment rate, the unemployment rate for the Title X population increased by approximately 8 pp due to COVID-19. Using Kearney and Levine’s procedure where a 1 pp increase in the unemployment rate increases births by 1%, this implies a 7.9% decrease in births for the Title X population. The typical number of births to Title X clients in a given year is 178,874, estimated by multiplying the number of female Title X users in 2018 (3,446,504) by the estimated birth rate for Title X clients of 51.9 births per 1,000 women. A 7.9% reduction from the baseline 178,874 births implies that we expect about 14,131 fewer births to Title X patients as a result of the COVID-19 pandemic.

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