Online Appendix

The Missing Baby Bust: The Consequences of COVID-19 Shutdowns for Contraceptive Use, Pregnancy, Abortion, and Childbirth among Low-Income Women

October 22, 2021

Appendix A. Additional Figures and Tables

Appendix Figure A1. M-CARES Enrollment and Analytic Sample

(August 20th, 2018 – March 13, 2020)

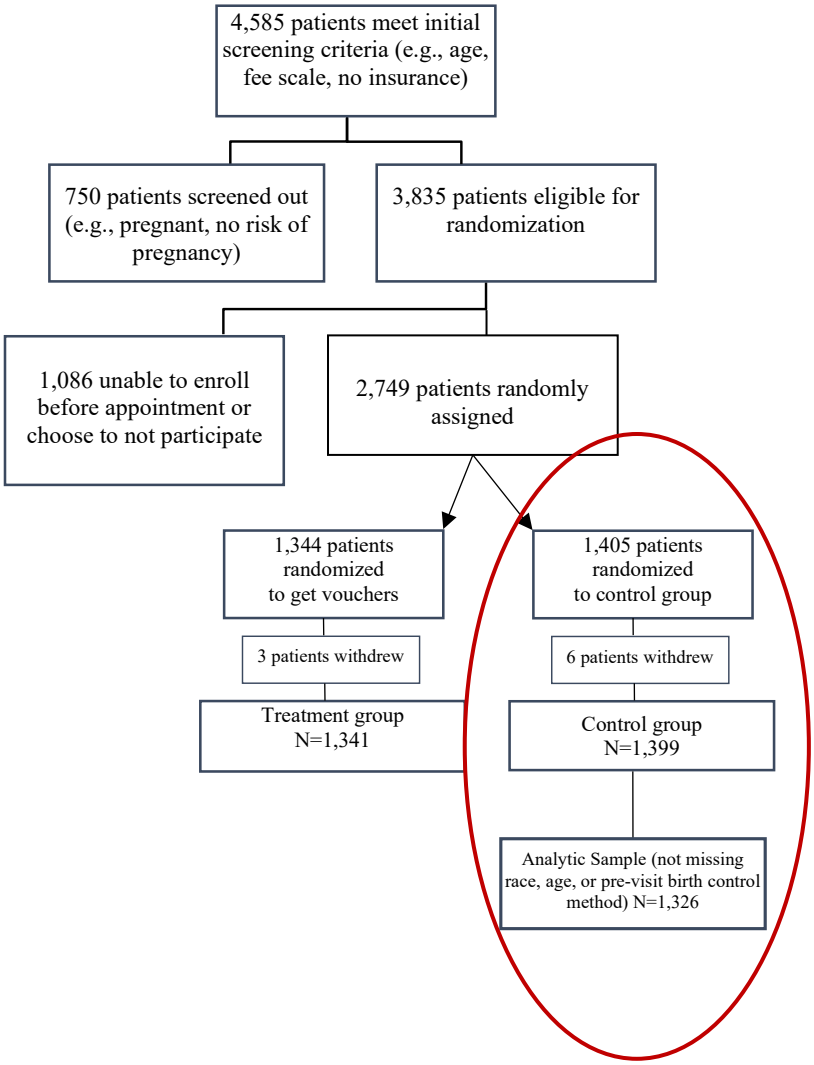

Table A1. Comparison of Women in Michigan to Women in United States

	Michigan Women 18-35 years old		U.S. Women 18-35 years old	
	Mean	SD	Mean	SD
White (non-Hispanic)	0.653	0.476	0.496	0.500
Black (non-Hispanic)	0.201	0.401	0.170	0.376
Hispanic any race	0.068	0.252	0.240	0.427
Other (non-Hispanic)	0.077	0.267	0.094	0.292
Children under 5 in household	0.252	0.434	0.239	0.427
Married	0.235	0.424	0.246	0.431
Divorced, separated, widowed	0.059	0.235	0.070	0.255
Never married/single	0.706	0.456	0.683	0.465
Less than HS	0.099	0.299	0.103	0.304
High school	0.283	0.45	0.273	0.445
Some college[1]	0.408	0.491	0.374	0.484
BA or more	0.210	0.408	0.250	0.433
1%-100% FPL	0.296	0.457	0.265	0.442
101-150% FPL	0.148	0.355	0.141	0.348
151-200% FPL	0.149	0.357	0.154	0.361
201-250% FPL	0.133	0.340	0.131	0.337
>/= 251% FPL	0.273	0.446	0.310	0.462
Health insurance	0.903	0.295	0.828	0.377
Welfare income $0	0.978	0.148	0.974	0.160
Welfare income $10-$1,000	0.010	0.099	0.009	0.096
Welfare income >=$1,100	0.012	0.111	0.017	0.129

Notes: 2019 American Community Survey (ACS). Sample is women aged 18-35 with family income <= $80,000. Data are weighted using ACS weights.[1]Some college includes <1 year, >1 year but no degree, and associate's degree. Estimates for the U.S. exclude Michigan.

Table A2. Changes in Method Use at a Typical Title X Visit, Unweighted Frequencies

	Most Effective Method Post-Visit and within 100 days of Enrollment[1]												
Most Effective Birth Control Pre-Visit Method (CDC failure rate, %)[2]	Implant	Vasectomy	IUD	Shot	Pill	Ring	Patch	Diaphragm	Condom	Withdrawal	Rhythm	No Method Billed	Total
Implant (0.02%)	46	0	1	1	6	3	0	0	0	0	0	3	60
Vasectomy (0.15%)	0	5	0	0	0	0	0	0	0	0	0	0	5
IUD (0.20%)	0	0	112	1	9	0	0	1	0	0	0	0	123
Shot (6%)	0	0	1	104	5	1	0	0	0	0	0	1	112
Pill (9%)	5	0	15	4	374	5	0	0	0	0	0	1	404
Ring (9%)	0	0	1	0	2	28	0	0	0	0	0	1	32
Patch (9%)	0	0	0	0	2	1	2	0	0	0	0	0	5
Condom (18%)	8	0	14	27	57	10	0	2	147	0	0	3	268
Withdrawal (24%)	0	0	1	1	8	0	0	0	0	11	0	1	22
Rhythm (24%)	1	0	0	0	0	0	0	0	0	0	1	0	2
No Method[3] (85%)	2	0	11	36	65	9	0	0	0	0	0	170	293
Total	62	5	156	174	528	57	2	3	147	11	1	180	1,326

Share method use in post period based on their pre-visit method	Implant	Vasectomy	IUD	Shot	Pill	Ring	Patch	Diaphragm	Condom	Withdrawal	Rhythm	No Method Billed	Cumulative
Switched to more effective	N/A	0.00	0.00	0.01	0.06	0.09	0.60	N/A	0.44	0.45	0.50	0.42	0.21
Stayed on same method	0.82	1.00	0.91	0.94	0.93	0.91	0.40	N/A	0.56	0.55	0.50	0.58	0.76
Switched to less effective	0.18	0.00	0.09	0.05	0.01	0.00	0.00	N/A	0.00	0.00	N/A	N/A	0.02

Notes: Cells contain the unweighted frequencies of individuals remaining on their pre-visit birth control or transitioning to new methods. [1] Post enrollment birth control methods uses data from the PPMI billing records. [2] Number of women experiencing an unintended pregnancy within the first year of typical use (Trussell 2011). [3] No reported method includes abstinence, Plan B, abortion, miscarriage, and no method reported.

Table A3. Likelihood of Method Transitions at a Typical Title X Visit, Unweighted Percentages

	Most Effective Method Post-Visit and within 100 days of Enrollment[1]												
Most Effective Birth Control Pre-Visit Method (CDC failure rate, %)[2]	Implant	Vasectomy	IUD	Shot	Pill	Ring	Patch	Diaphragm	Condom	Withdrawal	Rhythm	No Method Billed	Total
Implant (0.02%)	0.77	0.00	0.02	0.02	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.05	1.00
Vasectomy (0.15%)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
IUD (0.20%)	0.00	0.00	0.91	0.01	0.07	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00
Shot (6%)	0.00	0.00	0.01	0.93	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.00
Pill (9%)	0.01	0.00	0.04	0.01	0.93	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Ring (9%)	0.00	0.00	0.03	0.00	0.06	0.88	0.00	0.00	0.00	0.00	0.00	0.03	1.00
Patch (9%)	0.00	0.00	0.00	0.00	0.40	0.20	0.40	0.00	0.00	0.00	0.00	0.00	1.00
Condom (18%)	0.03	0.00	0.05	0.10	0.21	0.04	0.00	0.01	0.55	0.00	0.00	0.01	1.00
Withdrawal (24%)	0.00	0.00	0.05	0.05	0.36	0.00	0.00	0.00	0.00	0.50	0.00	0.05	1.00
Rhythm (24%)	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	1.00
No Method[3] (85%)	0.01	0.00	0.04	0.12	0.22	0.03	0.00	0.00	0.00	0.00	0.00	0.58	1.00
Total	0.05	0.00	0.12	0.13	0.40	0.04	0.00	0.00	0.11	0.01	0.00	0.14	1.00

Share method use in post period based on their pre-visit method	Implant	Vasectomy	IUD	Shot	Pill	Ring	Patch	Diaphragm	Condom	Withdrawal	Rhythm	No Method Billed	Total
Switched to more effective	N/A	0.00	0.00	0.01	0.06	0.09	0.60	N/A	0.44	0.45	0.50	0.42	0.21
Stayed on same method	0.82	1.00	0.91	0.94	0.93	0.91	0.40	N/A	0.56	0.55	0.50	0.58	0.76
Switched to less effective	0.18	0.00	0.09	0.05	0.01	0.00	0.00	N/A	0.00	0.00	N/A	N/A	0.02

Notes: Cells contain the unweighted percentages of individuals remaining on their pre-visit birth control or transitioning to new methods. [1] Post enrollment birth control methods uses data from the PPMI billing records. [2] Percent of women experiencing an unintended pregnancy within the first year of typical use (Trussell 2011). [3] No reported method includes abstinence, Plan B, abortion, miscarriage, and no method reported.

A4. Changes in Method Use at a Typical Title X Visit, Weighted Frequencies

	Most Effective Method Post-Visit and within 100 days of Enrollment[1]												
Most Effective Birth Control Method Pre-Visit (failure rate in percent)[2]	Implant	Vasectomy	IUD	Shot	Pill	Ring	Patch	Diaphragm	Condom	Withdrawal	Rhythm	No Method Billed	Total
Implant (0.02%)	17	0	1	17	1	0	0	0	0	0	0	3	39
Vasectomy (0.15%)	0	2	0	0	0	0	0	0	0	0	0	0	2
IUD (0.20%)	0	0	50	1	1	0	0	0	0	0	0	0	52
Shot (6%)	0	0	2	383	2	1	0	0	0	0	0	0	388
Pill (9%)	4	0	77	0	315	4	0	0	0	0	0	0	399
Ring (9%)	0	0	0	0	0	15	0	0	0	0	0	0	15
Patch (9%)	0	0	0	0	12	0	22	0	0	0	0	0	34
Condom (18%)	3	0	8	17	22	1	0	0	70	0	0	2	124
Withdrawal (24%)	0	0	0	1	1	0	0	0	0	1	0	0	3
Rhythm (24%)	0	0	0	0	0	0	0	0	0	0	0	0	0
No Method[3] (85%)	16	0	6	17	42	23	0	0	0	0	0	167	271
Total	39	2	144	438	395	43	22	0	70	1	0	173	1,326

Share method use in post period based on their pre-visit method	Implant	Vasectomy	IUD	Shot	Pill	Ring	Patch	Diaphragm	Condom	Withdrawal	Rhythm	No Method Billed	Total
Switched to more effective	N/A	0.000	0.000	0.004	0.202	0.007	0.351	N/A	0.412	0.828	0.901	0.381	0.190
Stayed on same method	0.506	1.000	0.960	0.988	0.789	0.993	0.649	N/A	0.588	0.172	0.099	0.619	0.789
Switched to less effective	0.494	0.000	0.040	0.008	0.009	0.000	0.000	N/A	0.000	0.000	N/A	N/A	0.021

Notes: Cells contain the weighted frequencies of individuals remaining on their pre-visit birth control or transitioning to new methods. [1] Post enrollment birth control methods uses data from the PPMI billing records. [2] Number of women experiencing an unintended pregnancy within the first year of typical use (Trussell 2011). [3] No reported method includes abstinence, Plan B, abortion, miscarriage, and no method reported.

A5. Changes in Contraceptive Efficacy, Expected Pregnancies, and Births by Subgroup, Unweighted Estimates

	Avg efficacy before visit	Avg efficacy after visit	Change in avg efficacy	Number of female Title X patients	New pregnancies if Title X health centers close	New births if Title X health centers close
Age 18-19	0.67 (0.6, 0.74)	0.83 (0.78, 0.88)	0.16 (0.07, 0.24)	329,004	52,641	25,215
Age 20-24	0.69 (0.66, 0.72)	0.79 (0.76, 0.82)	0.1 (0.06, 0.14)	862,640	86,264	41,320
Age 25-29	0.72 (0.69, 0.76)	0.82 (0.79, 0.84)	0.09 (0.05, 0.14)	740,003	66,600	31,902
Age 30-34	0.71 (0.66, 0.76)	0.78 (0.74, 0.82)	0.07 (0.01, 0.13)	505,688	35,398	16,956
Non-Hispanic White	0.73 (0.71, 0.75)	0.83 (0.81, 0.84)	0.1 (0.07, 0.13)	1,148,732	114,873	55,024
Non-Hispanic Black	0.63 (0.57, 0.69)	0.74 (0.68, 0.79)	0.1 (0.02, 0.18)	670,618	67,062	32,123
Hispanic any race	0.69 (0.62, 0.76)	0.79 (0.74, 0.85)	0.11 (0.02, 0.19)	1,171,981	128,918	61,752
Other/Not Reported	0.61 (0.53, 0.69)	0.71 (0.64, 0.78)	0.1 (0, 0.21)	455,173	45,517	21,803
Less than 100% FPL	0.61 (0.53, 0.7)	0.75 (0.68, 0.82)	0.13 (0.03, 0.24)	2,211,998	287,560	137,741
101-150% FPL	0.69 (0.65, 0.72)	0.82 (0.79, 0.84)	0.13 (0.09, 0.17)	492,455	64,019	30,665
151-200% FPL	0.71 (0.67, 0.75)	0.8 (0.77, 0.83)	0.09 (0.04, 0.14)	241,269	21,714	10,401
201-250% FPL	0.74 (0.69, 0.8)	0.8 (0.75, 0.85)	0.06 (-0.01, 0.13)	116,589	6,995	3,351
251+% FPL	0.75 (0.7, 0.79)	0.8 (0.75, 0.84)	0.05 (-0.01, 0.11)	251,611	12,581	6,026
Insured	0.71 (0.64, 0.78)	0.85 (0.8, 0.9)	0.14 (0.05, 0.22)	1,998,661	279,813	134,030
Uninsured	0.7 (0.68, 0.72)	0.8 (0.78, 0.81)	0.09 (0.07, 0.12)	1,374,698	123,723	59,263
Children	0.66 (0.59, 0.72)	0.79 (0.74, 0.84)	0.13 (0.05, 0.22)			
No children	0.72 (0.69, 0.74)	0.81 (0.79, 0.83)	0.09 (0.06, 0.12)			

Notes: Sample includes women 18-34 recruited by M-CARES who were randomly assigned to the control group. Observations missing race, age, income, or pre-visit method use are excluded from the analysis. Expected pregnancies are obtained by multiplying the population by the change in average efficacy. Expected births are obtained by multiplying the expected pregnancies by 0.479, the share of pregnancies to Title X patients ending in a live birth. The number of female Title X patients by subpopulation come from Fowler et al. (2019). The number of female Title X clients by income and insurance category are taken by multiplying the client counts overall (both male and female) from Fowler et al. (2019) by 87%, the overall share of Title X clients that are female.

A6. Changes in Contraceptive Efficacy, Expected Pregnancies, and Births by Subgroup, Weighted Estimates

	Avg efficacy before visit	Avg efficacy after visit	Change in avg efficacy	Number of female Title X patients	New pregnancies if Title X health centers close	New births if Title X health centers close
Age 18-19	0.64	0.87	0.24	329,004	78,961	37,822
	(0.43, 0.84)	(0.77, 0.93)	(0.03, 0.46)			
Age 20-24	0.76	0.81	0.04	862,640	34,506	16,528
	(0.63, 0.85)	(0.7, 0.89)	(0.02, 0.11)			
Age 25-29	0.69	0.81	0.12	740,003	88,800	42,535
	(0.49, 0.82)	(0.69, 0.91)	(0.05, 0.26)			
Age 30-34	0.77	0.8	0.03	505,688	15,171	7,267
	(0.53, 0.87)	(0.6, 0.9)	(0.01, 0.13)			
Non-Hispanic White	0.81	0.88	0.07	1,148,732	80,411	38,517
	(0.69, 0.86)	(0.8, 0.91)	(0.04, 0.12)			
Non-Hispanic Black	0.83	0.89	0.07	670,618	46,943	22,486
	(0.58, 0.89)	(0.79, 0.93)	(0.02, 0.24)			
Hispanic any race	0.62	0.69	0.06	1,171,981	70,319	33,683
	(0.43, 0.81)	(0.51, 0.86)	(0.01, 0.19)			
Other/Not Reported	0.53	0.76	0.23	455,173	104,690	50,146
	(0.34, 0.73)	(0.59, 0.88)	(0.05, 0.43)			
Less than 100% FPL	0.74	0.8	0.06	2,211,998	132,720	63,573
	(0.6, 0.82)	(0.69, 0.87)	(0.03, 0.14)			
101-150% FPL	0.72	0.85	0.12	492,455	59,095	28,306
	(0.62, 0.81)	(0.77, 0.9)	(0.07, 0.21)			
151-200% FPL	0.7	0.85	0.15	241,269	36,190	17,335
	(0.51, 0.8)	(0.73, 0.91)	(0.07, 0.31)			
201-250% FPL	0.49	0.52	0.03	116,589	3,498	1,675
	(0.23, 0.87)	(0.24, 0.9)	(0.01, 0.09)			
251+% FPL	0.75	0.88	0.13	251,611	32,709	15,668
	(0.51, 0.89)	(0.82, 0.92)	(-0.01, 0.4)			
Insured	0.84	0.9	0.06	1,998,661	119,920	57,442
	(0.73, 0.88)	(0.85, 0.93)	(0.03, 0.16)			
Uninsured	0.59	0.7	0.11	1,374,698	151,217	72,433
	(0.48, 0.7)	(0.6, 0.81)	(0.06, 0.2)			
No children	0.52	0.83	0.31			
	(0.35, 0.71)	(0.68, 0.91)	(0.11, 0.48)			
Children	0.76	0.82	0.06			
	(0.66, 0.82)	(0.75, 0.88)	(0.04, 0.13)			

Notes: Sample includes women 18-34 recruited by M-CARES who were randomly assigned to the control group. Observations missing race, age, income, or pre-visit method use are excluded from the analysis. Confidence intervals are estimated using a bootstrap with 1,000 iterations. Expected pregnancies are obtained by multiplying the population by the change in average efficacy. Expected births are obtained by multiplying the expected pregnancies by 0.479, the share of pregnancies to Title X patients ending in a live birth. The number of female Title X patients by subpopulation come from Fowler et al. (2019). The number of female Title X clients by income and insurance category are taken by multiplying the client counts overall (both male and female) from Fowler et al. (2019) by 87%, the overall share of Title X clients that are female.

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, 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 to balance the sample. We, therefore, use entropy balancing to reweight the sample such that the age, race/ethnicity, insurance, 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 (1,000 replications). 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).

Table 1 shows a balance table with the population targets from the 2018 Title X reports (column 3) as well as the sample characteristics applying the entropy weights (column 4). Importantly, the weights increase the importance of observations of Latina women and Black women 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, although it does not guarantee that unobserved Title X population characteristics are also balanced.

Appendix C. Estimating Pregnancy Outcomes for the Title X Population

We estimate the share of pregnancies that result in childbirth for the Title X population using the 2017-19 NSFG and adjustments for misreporting. For every woman with a pregnancy that began at least 10 months before the NSFG interview and no earlier than 2015, 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. For women with multiple completed pregnancies in this period we use the contraceptive method from their most recent pregnancy. For women without a completed pregnancy during this period, we use contraceptive method as of the January of the year before they were interviewed. We then reweight the NSFG to match the Title X population in terms of contraceptive method type, age, race/ethnicity, income distributions, and insurance status. Appendix Table C1 shows balance in characteristics after this reweighting. Before adjusting for the underreporting of abortion and miscarriages, the resulting pregnancy to birth conversion rate for Title X patients is 0.766, which is shown in Appendix Table C2 (next page, column 2). This number indicates that 76.6 out of every 100 reported pregnancies to Title X clients result in a live birth. This rate is slightly lower than that for the population overall (column 1), which is around 77.2 percent. Because the NSFG respondents only report about 40 percent of their abortions (Lindberg et al. 2020), we inflate the share of abortions by 1/0.40. In addition, it is well documented that around thirty percent of pregnancies to the population result in miscarriages (Linnakaari et al. 2019), so we inflate the number of miscarriages to account for this by doubling the number reported. These adjusted estimates indicate that for the Title X sample, 47.9 percent of pregnancies resulted in a live birth, 25.5 percent resulted in an abortion, and 26.6 in a miscarriage (which is slightly lower than the 30 percent because we have a younger sample).

Appendix Table C1. Balance in Characteristics after Reweighting

	Population targets from HHS Title X 2018 Report	2017-2019 NSFG	Reweighted 2017-2019 NSFG
Sterile	0.028	0.149	0.028
LARC	0.171	0.087	0.171
Birth control pills	0.251	0.139	0.251
Condoms	0.162	0.097	0.162
Other hormonal	0.179	0.028	0.179
Other non-hormonal	0.010	0.057	0.010
No method	0.174	0.403	0.174
Withdrawal	0.025	0.040	0.025
Less than 100% FPL	0.667	0.220	0.667
101-150% FPL	0.149	0.126	0.149
151-200% FPL	0.073	0.104	0.073
201-250% FPL	0.035	0.08	0.035
251+% FPL	0.076	0.469	0.076
Non-Hispanic White	0.333	0.575	0.333
Non-Hispanic Black	0.195	0.148	0.195
Hispanic any race	0.340	0.208	0.340
Other/Not Reported	0.132	0.069	0.132
Age less than 20	0.175	0.131	0.175
Age 20-29	0.465	0.294	0.465
Age 30+	0.360	0.575	0.360
Insured	0.583	0.879	0.583
Uninsured	0.417	0.121	0.417

Notes: Population targets come from Exhibits 4, 7, 15, 16, and 18 in the HHS Title X 2018 Annual Report from Fowler et al. (2019). LARC includes implant and IUD. Condoms refer to male condoms. Other hormonal methods include the shot, patch, and ring. Other non-hormonal methods include vasectomy, female condoms, NFP, sponge, diaphragm, and spermicide. No method includes no reported method and abstinence.

Appendix Table C2. Share of pregnancies ending in live births

	Original NSFG weight	Reweighted to match Title X sample	Reweighted + adjusted for underreporting of abortion and miscarriage
Share of pregnancies			
…Ending in live births	0.772	0.766	0.479
…Ending in miscarriage	0.135	0.133	0.266
…Ending in abortion	0.094	0.102	0.255

Notes: Sample is respondents in the 2017-2019 NFSG who had a pregnancy that began at least 10 months before the NSFG interview and no earlier than 2015.

Appendix D. Estimating 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 (2020a). Although this methodology is for the entire U.S. population, this is the best approximation available for our narrower population. Their calculation assumes, based on prior estimates, that a 1 percentage point increase in the unemployment rate translates into a 1 percent 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 increase in the unemployment rate for the Title X population due to COVID-19.

Estimating the Birthrate for the Title X Population

Birth records to 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. 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 shows the balanced 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.

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 * 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 shows the balance in characteristics after 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.

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 7.9 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 14,131 fewer births to Title X patients as a result of the COVID-19 pandemic. Finally, we follow Kearney and Levine and inflate this estimate by 15 percent to account for uncertainty and anxiety due to the pandemic. With this further adjustment, our final estimate of the reduction in childbearing due to demand factors rises to 16,251 fewer births. Appendix Table D3 shows the steps of this calculation.

Appendix Table D1. Balance in Characteristics after Reweighting

	Population targets from HHS Title X 2018 Report	National estimates from 2017-2019 NSFG	Reweighted estimates from 2017-2019 NSFG
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). LARC includes implant and IUD. Condoms refer to male condoms. Other hormonal methods include the shot, patch, and ring. Other non-hormonal methods include vasectomy, female condoms, NFP, sponge, diaphragm, and spermicide. No method includes no reported method and

abstinence. Estimates from the 2017-2019 NSFG are run on respondents interviewed in 2019, the only year for which we have complete information on 2018 births.

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).

Appendix Table D3. Calculating Changes in the Demand for Children

Description of Item	Source	National Estimate	Michigan Estimate
Pre-COVID employment rate for Title X population	March 2020 CPS reweighted to match Title X 2018 client characteristics in terms of age, race/ethnicity, income, and insurance status	39.5	
Percent decline in employment for low wage workers from COVID	Estimate taken from Chetty et al (Nov 2020) and the Opportunity Insights Economic Tracker (tracktherecovery.org)	20	
Estimated percentage point decline in employment for Title X population	Baseline employment rate * percent decline (39.5 * 0.20)	7.9	
Estimated percentage point increase in unemployment for Title X population	Assuming share not in labor force remains constant, the percentage point decline in the employment rate equals the percentage point increase in unemployment rate, since 100 = unemployment rate + employment rate + share not in labor force	7.9	
Estimated percent reduction in births	From Kearney and Levine (2020): an X percentage point increase in the unemployment rate corresponds to an X percent decrease in births	7.9	
Estimated birthrate for Title X population	The 2018 birthrate of women in the 2019 NSFG, reweighted to match Title X 2018 client characteristics in terms of age, race/ethnicity, income, contraceptive method, and insurance status	51.9	
Number of women in Title X	Title X 2018 Annual Report	3,446,504	54,981
Estimated births in Title X population pre-COVID	Number of women in Title X * Title X baseline birthrate	178,874	2,854
Estimated reduction in births in Title X population due to unemployment	Baseline births to Title X women * percent reduction due to COVID	14,131	225
Estimated reduction in births in Title X population due to COVID unemployment, uncertainty, and anxiety	Estimated reduction in births in Title X population due to unemployment * 1.15 for 15% uncertainty effect	16,251	259