

2022 Evaluation, MS Medicaid Population Health Demonstration Project

Center for Community Research and Evaluation
University of Memphis
December 14, 2022

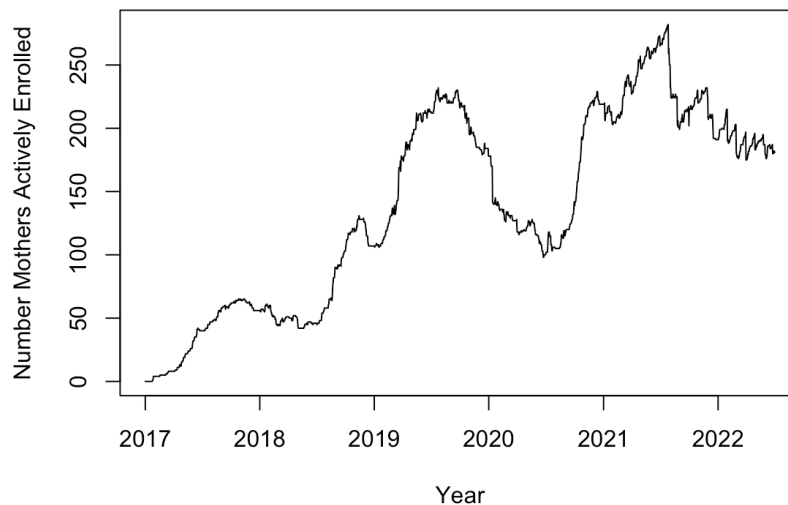
Per request of Delta Health Alliance, the Center for Community Research and Evaluation conducted an evaluation of certain components of the Mississippi Medicaid Population Health Demonstration Project to support its annual reporting to the state. The Project consists of two programs, the Healthy Pregnancy Program and Prediabetes Program, evaluated in turn. This evaluation consists of a descriptive analysis of enrollment and program activity patterns and calculates outcomes relating to key maternal and population outcomes. Due to the termination of the Cerner contract in 2021, we do not report updated clinical findings for the Prediabetes Program, and refer the reader to our previous evaluation. With the exception of public, county-level outcomes data for preterm birth and diabetes diagnoses, listed in the Population Measures section, we do not expect to receive additional data.

Healthy Pregnancy Program

As of December 14, 2022, a total of 1,377 mothers¹ have been enrolled in the Healthy Pregnancy Program, which terminated services in late July 2022. The total number of enrollments is 1,420. This includes mothers who enrolled more than once due to multiple pregnancies or, rarely, returning to the program after prolonged disengagement.² The number of new enrollments initiated by year is tabulated below. We also report caseload through June 2022.

2017	2018	2019	2020	2021	2022
87	153	332	290	397	161

Active Caseload, Medicaid Healthy Pregnancy Program



¹ The term “mother” is intended to include pregnancy.

² Enrollment data is sourced from the program roster file. For technical reasons, usually due to accidental dismissal later corrected, there were rare cases in which a woman had more than one enrollment with the same start date; in these cases, the duplicate erroneous enrollments were dropped.

Program activities for enrolled participants of the Healthy Pregnancy Program are tabulated below.³

	Home visits	Video conferences	Phone calls	Hospital/office visit	Education	Total
2017	454	0	269	6	21	750
2018	676	0	276	2	26	980
2019	2,015	0	43	12	43	2,113
2020	995	366	280	0	43	1,684
2021	2,022	122	542	37	40	2,763
2022	945	15	107	8	1	1,076
Total	7,107	503	1,517	65	174	9,366

To provide an indicator of the amount of substantive intervention a typical participant receives, the total number of home visits and video conferences per year is divided by the daily average of the active caseload for each year. The results are tabulated below.

	Total # Home Visits/Video Conferences	Active Caseload, Daily Average	Home Visits/Video Conferences per Person
2017	454	35.2	12.9
2018	676	72.3	9.3
2019	2,015	186.8	10.8
2020	1,361	143.0	9.5
2021	2,564	230.1	11.1
2022	1,052	179.7	10.0 ⁴

Maternal outcomes are evaluated using self-report data provided by program participants. Outcomes are collected on assessment tools which vary over the course of the intervention. The tools (data as of December 14, 2022) are combined together with overlapping data removed. We calculate the incidence of preterm birth (<37 weeks gestation), low birthweight (<88 ounces) and very low birthweight (<54 ounces). Program rates are reported below. We also include the benchmark relating to the state rates of each measure for Black women. We also conduct a binomial test (z-test) to determine whether there is a statistically identifiable difference between the program rate and the benchmark rate and report the p-value. While not a rigorous test as program participants were not randomly selected from the population, this is likely to be a conservative test if program participants are more likely than the average Black woman to be at-risk for adverse health outcomes.⁵ The statistical analysis reveals a statistically significant difference ($p < .05$) in Very Low Birthweight compared to benchmark (1.7% vs 3.4%), but no statistically significant differences for preterm birth or low birthweight.

³ Source: Visit/Encounter file (2017-2020Q1); Visit/Encounter PVR file (2020Q2-present); Community Outreach file (2019-present). Counts services for enrolled participants only (excludes community outreach for non-enrolled participants and recruitment events). 2021-22 data for phone calls includes 114 visits coded as followup/welfare checks in 2021, and 34 in 2022. 110 phone calls prior to 2019 which occur on the same day as another substantive activity are excluded.

⁴ In calculating caseload, we assume that individuals not formally withdrawn from enrollment in ETO did so on July 31, 2022. Multiplier of 12/7 applied on per-person ratio to adjust for the shortened year.

⁵ Program participants are likely to have lower access to prenatal healthcare due to rurality. Also, the incidence of multiple birth in this sample exceeds the national average for Black women (4.9% sample; 4.2% Black women nationally). However, there could be selection bias in that women who enroll are likely more motivated to take affirmative actions to prevent adverse health outcomes than a typical woman. National multiple birth rate from CDC National Vital Statistics Reports, Vol 70.2, March 23, 2021, Table 24, p.47.

	Preterm Birth	LBW	VLBW
All Participants	15.9%	16.6%	1.7%
Singleton Births Only (No Twins, Triplets)	13.1%	13.6%	1.3%
Rate Among MS Births to Black Women, 2017-2021⁶	17.3%	16.9%	3.4%
P-value, z-test⁷	0.12	0.44	0.00498

Rates are reported by year below:

Maternal outcomes by year, all births

	Preterm Birth Rate	Low Birthweight Rate	Very Low Birthweight Rate
2017-18	14.5%	18.2%	0.0%
2019	19.9%	19.9%	1.9%
2020	16.4%	13.5%	1.6%
2021	13.5%	14.2%	2.3%
2022	13.5%	19.3%	1.2%

Maternal outcomes by year, singleton births only

	Preterm Birth Rate	Low Birthweight Rate	Very Low Birthweight Rate
2017-18	13.5%	16.7%	0.0%
2019	16.1%	14.5%	1.1%
2020	12.2%	11.8%	1.7%
2021	10.8%	11.3%	2.0%
2022	13.7%	17.3%	1.2%

Rates are reported by quarter below.

Preterm Birth Rate

Quarter	Overall			Singletons (no twins, triplets)		
	Numerator	Denominator	Rate	Numerator	Denominator	Rate
Overall	164	1,033	15.9%	129	982	13.1%
2017 (first 3 quarters)	6	26	23.1%	6	26	23.1%
2017 (4th quarter)	2	21	9.5%	2	21	9.5%
2018 (1st quarter)	2	16	12.5%	0	14	0.0%
2018 (2nd quarter)	1	9	11.1%	1	9	11.1%
2018 (3rd quarter)	3	23	13.0%	3	23	13.0%
2018 (4th quarter)	7	50	14.0%	7	48	14.6%
2019 (1st quarter)	11	44	25.0%	4	37	10.8%
2019 (2nd quarter)	20	72	27.8%	20	72	27.8%
2019 (3rd quarter)	10	87	11.5%	8	83	9.6%
2019 (4th quarter)	13	68	19.1%	9	62	14.5%
2020 (1st quarter)	9	51	17.6%	5	47	10.6%
2020 (2nd Quarter)	7	31	22.6%	1	23	4.3%
2020 (3rd Quarter)	6	36	16.7%	6	36	16.7%
2020 (4th Quarter)	11	83	13.3%	11	83	13.3%
2021 (1st Quarter)	10	77	13.0%	8	73	11.0%
2021 (2nd Quarter)	10	64	15.6%	6	60	10.0%
2021 (3rd Quarter)	12	89	13.5%	10	85	11.8%
2021 (4th Quarter)	10	82	12.2%	8	78	10.3%

⁶ Mississippi Statistically Automated Health Resource System, Mississippi State Department of Health.

⁷ Program incidence compared to state rate (binomial test).

2022 (1st Quarter)	8	57	14.0%	8	57	14.0%
2022 (2nd Quarter)	4	41	9.8%	4	39	10.3%
2022 (3rd Quarter) ⁸	2	6	33.3%	2	6	33.3%

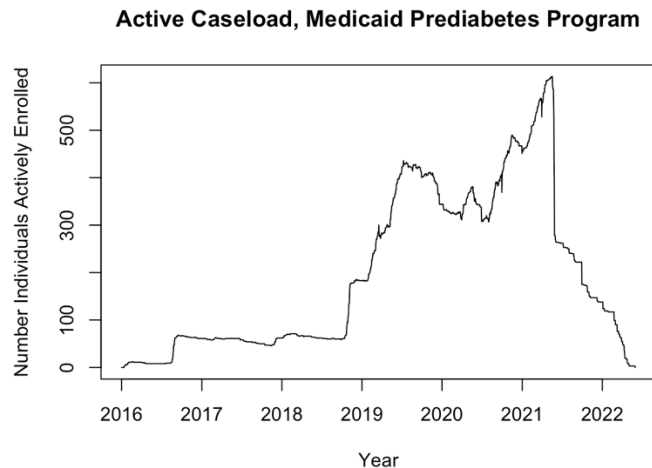
Low Birthweight Rate & Very Low Birthweight Rate

Quarter	LBW Rate - Overall			LBW Rate - Excluding Twins, Triplets			VLBW Rate (# per qtr.)	VLBW, excluding twins and triplets
	Numerator	Denominator	Rate	Numerator	Denominator	Rate		
Overall	130	781	16.6%	101	742	13.6%	1.7%	1.3%
2017 (first 3 qtrs.)	1	14	7.1%	1	14	7.1%	0	0
2017 (4th quarter)	1	16	6.3%	1	16	6.3%	0	0
2018 (1st quarter)	2	9	22.2%	0	7	0.0%	0	0
2018 (2nd quarter)	1	7	14.3%	1	7	14.3%	0	0
2018 (3rd quarter)	7	22	31.8%	7	22	31.8%	0	0
2018 (4th quarter)	8	42	19.0%	8	42	19.0%	0	0
2019 (1st quarter)	7	34	20.6%	0	27	0.0%	0	0
2019 (2nd quarter)	11	54	20.4%	11	54	20.4%	2	2
2019 (3rd quarter)	10	60	16.7%	10	58	17.2%	0	0
2019 (4th quarter)	12	53	22.6%	6	47	12.8%	2	0
2020 (1st quarter)	7	32	21.9%	6	29	20.7%	1	1
2020 (2nd quarter)	1	8	12.5%	1	8	12.5%	0	0
2020 (3rd quarter)	0	20	0.0%	0	20	0.0%	0	0
2020 (4th quarter)	9	66	13.6%	7	62	11.3%	1	1
2021 (1st quarter)	10	55	18.2%	4	48	8.3%	1	1
2021 (2 nd quarter)	10	56	17.9%	8	54	14.8%	3	2
2021 (3 rd quarter)	9	81	11.1%	8	78	10.3%	2	2
2021 (4th Quarter)	8	69	11.6%	8	68	11.8%	0	0
2022 (1st Quarter)	7	42	16.7%	7	42	16.7%	0	0
2022 (2nd Quarter)	8	36	22.2%	6	34	17.6%	1	1
2022 (3rd Quarter)	1	5	20.0%	1	5	20.0%	0	0

⁸ Includes 3 records with records with dates in the fourth quarter of 2022, which are likely typos.

Prediabetes Program

- A total of 1,218 individuals have been enrolled in the Prediabetes Program.
- The total number of enrollments is 1,366. This includes individuals invited to re-enroll in the program, as well as individuals returning to the program after prolonged disengagement and dismissal.⁹
- Enrollment ended in May 2021, and program services ended one year later, on May 31, 2022. Daily active caseload is visualized below.



Program activity is summarized below. Program activity is aggregated from several sources over the course of the intervention, with duplicate data removed.¹⁰ According to the data, only phone call and in-person education occurred in 2022.

	2016	2017	2018	2019	2020	2021	2022	Total
Home visits, in-person	10	115	175	954	1,000	860	0	3,114
Televisits	0	0	0	0	572	133	0	705
Phone calls	735	656	600	2,478	3,383	3,351	341	11,544
Education, in-person, participants	32	38	37	370	286	341	41	1,145
Tele-education	0	0	0	0	57	21	0	78
Office visits	12	45	32	27	10	0	0	126
Total activity	789	854	844	3,829	5,308	4,619	382	16,625
Mailers	0	0	37	316	5,111	78	0	5,542
Community outreach, non-enrolled	764 ¹¹			278	158	41	0	1,241

To provide an indicator of the amount of substantive intervention a typical participant receives, the total number of home visits and televisits per year is divided by the daily average of the active caseload for each year. The results are tabulated below.

⁹ Sourced from program roster; accidental dismissal rows removed.

¹⁰ Excludes failed attempts, administrative calls, exit letters/phone calls, and miscellaneous categories. Assumes one participant can receive only one activity in each category per day. Phone calls dropped if another substantive activity occurs for the participant on the day. From April 1, 2020 to June 1, 2020, we assume that 30% of home visits are televisits; this is documented directly after. Education includes CDSMP, DEEP, Health Chats, nutrition classes, grocery store tours (enrolled participants only), and misc. community outreach (enrolled participants only).

¹¹ Includes Healthy Pregnancy program.

	Total # Home Visits/Televisits	Active Caseload, Daily Average	Home Visits/Televisits per Person
2016-17	125	42.4	2.9
2018	175	83.9	2.1
2019	954	345.4	2.8
2020	1,572	373.3	4.2
2021	993	353.9	2.8
2022	0	67.7	0.0

Our ability to update previous estimates regarding the effectiveness of the intervention was significantly impaired in 2021 due to the loss of funding for the Project. Due to the termination of Delta Health Alliance’s contract with Cerner, evaluators have been unable to use data sourced from Cerner’s HealtheRegistries. We are unable to evaluate changes in costs of Medicaid claims, as well as measures heavily sourced from claims such as diabetes onset, death, or Medicaid enrollment status. Our ability to assess changes in health outcomes was also affected, as Cerner was previously responsible for aggregating health outcomes from disparate EHR systems. Last year, we were able to execute a “second best” plan to update our health measure metrics by combining legacy Cerner evaluation extracts with EHR data made available by Delta Health Alliance for clinics with an ongoing health records relationship with the Alliance in 2021.¹² We are unable to update this information for 2022 because the clinical partners, with the exception of Leland Medical Clinic, have transitioned to other electronic health record systems. DHA and CCRE do not have access to them. Therefore, for the most up-to-date reporting on clinical outcomes, including outcomes, detailed information on enrollment and the randomization process used for the Prediabetes Program, we refer the reader to our 2021 evaluation posted at <https://www.memphis.edu/ccre/msdeltamedicaid/>.

Population Measures

Below, we report key population health indicators related to the two interventions.

Maternal Outcomes for Black Residents in Ten-County Delta Service Area, 2011-2021.

Source: MSTAHRs. Infant mortality rate per 1,000 births; all other measures per 100 births.

Counties: Bolivar, Coahoma, Holmes, Leflore, Panola, Sunflower, Tunica, Warren, Washington, Yazoo.

	Very Low Birthweight	Low Birthweight	Preterm Birth	Inadequate Prenatal Care	Smoking During Pregnancy	Infant Mortality
2011	3.2	16.3	22.6	5.5	6.8	11.0
2012	2.6	15.6	21.2	5.7	6.3	
2013	2.9	16.3	15.6	10.6	6.8	
2014	3.2	15.1	13.8	9.6	6.2	
2015	2.8	15.3	15.2	9.1	5.5	
2016	3.4	15.7	16.4	9.8	6.4	10.6
2017	3.2	15.0	15.5	9.2	5.3	
2018	3.1	16.4	16.9	10.6	5.7	
2019	2.9	17.9	18.4	12.5	5.7	
2020	2.7	15.7	16.8	11.5	5.0	
2021	3.0	17.5	17.5	10.5	4.2	

¹² Includes Leland Medical Clinic, Mallory Community Health Center, Aaron E. Henry Community Health Services, Cummings Health Care Center, and the Office of Dr. Andrea Smith.

Maternal Outcomes for Black Residents in Mississippi, 2011-2021.

Source: MSTAHS. Infant mortality rate per 1,000 births; all other measures per 100 births.

	Very Low Birthweight	Low Birthweight	Preterm Birth	Inadequate Prenatal Care	Smoking During Pregnancy	Infant Mortality
2011	3.2	15.8	20.4	5.8	6.6	12.5
2012	3.2	16.2	20.6	6.1	6.0	
2013	3.4	16.2	16.2	10.0	6.8	
2014	3.2	15.6	15.3	9.1	6.5	
2015	3.5	16.5	16.1	9.1	6.4	
2016	3.5	15.9	16.6	8.9	6.6	11.9
2017	3.4	16.0	16.3	8.5	5.5	
2018	3.5	17.0	17.3	9.9	5.5	
2019	3.4	17.3	17.8	10.1	5.3	
2020	3.2	16.5	17.0	9.5	5.2	
2021	3.3	17.7	18.1	9.1	4.4	

Newly Diagnosed Diabetes Cases, Service Area and Mississippi, 2015-2019.

Source: CDC Diabetes Surveillance System, rate per 1,000. County rates age-adjusted; service area and state rates are equal average of county rates, weighted by crude population, age 20 and above. Population sourced from U.S. Census Bureau, 5-year estimate, 2014-18, American Community Survey, table S0101 (Age and Sex). Counties: Bolivar, Coahoma, Holmes, Leflore, Panola, Sunflower, Tunica, Warren, Washington, Yazoo.

	2015	2016	2017	2018	2019
Ten-County Delta Service Area	14.9	16.0	14.6	14.4	12.9
State of Mississippi	12.7	13.1	11.9	11.9	11.2

To assess program goals, we determine whether a 5% reduction in preterm birth or diabetes occurred between the year before intervention (2016 for preterm birth; 2015 for diabetes) and the most recent year, among African-Americans in the ten-county service area. Such a reduction would correspond to a population preterm birth rate of 15.5 or less, and a population newly diagnosed diabetes rate of 14.1 or less. The most recent preterm birth rate is 17.5 and the most recent newly diagnosed diabetes rate is 12.9. While the preterm birth rate remains above the 5% reduction benchmark, the newly diagnosed diabetes rate is lower the benchmark – 14% lower than the 2015 value.