Virginia's Title XXI Section 1115 Demonstration:

FAMIS Moms and FAMIS *Select*

Demonstration No. 21-W-00058/3

Year 1 Annual Report

July 1, 2019 through June 30, 2020

Virginia Department of Medical Assistance Services
December 2020

Background

Virginia's Title XXI Children's Health Insurance Program (CHIP) covers children with family income from 143 to 200 percent of the federal poverty level (FPL) under a separate child health plan known as the Family Access to Medical Insurance Security (FAMIS) Plan. Virginia's Title XXI Section 1115 Demonstration has two components. First, it expands Title XXI coverage to uninsured pregnant women with family income up to 200 percent FPL who are not eligible for Medicaid, through a program known as FAMIS Moms. Second, it uses Title XXI funds to support a health insurance premium assistance program known as FAMIS Select. Children must first be found eligible and enroll in FAMIS before electing to receive a subsidy for coverage through FAMIS Select.

The Department of Medical Assistance Services (DMAS) administers Virginia's FAMIS Moms and FAMIS Select demonstration. The Centers for Medicare and Medicaid Services (CMS) approved the original waiver on June 30, 2005, and DMAS began a phased implementation of the FAMIS Moms and FAMIS Select programs on August 1, 2005. The demonstration was most recently approved for a ten-year extension for the period October 25, 2019, through June 30, 2029.

The goals of Virginia's Title XXI Section 1115 Demonstration are as follows:

For FAMIS Moms:

- Facilitate access to prenatal, obstetric, and postpartum care for a vulnerable population that does not otherwise qualify for public insurance;
- Improve selected birth outcomes of FAMIS Moms participants and their newborns;
- Facilitate access to recommended pediatric care for newborns of FAMIS Moms participants.

For FAMIS Select*:*

- Facilitate access to affordable private and employer-sponsored health insurance for low-income families through premium assistance;
- Ensure that access to and use of health care services available to children participating in FAMIS Select is comparable to that of children participating in FAMIS;
- Assure the aggregate cost-effectiveness of the FAMIS Select program.

Revised demonstration objectives proposed by DMAS in the draft evaluation design submitted to CMS on June 18, 2020 are to (1) facilitate access to prenatal, obstetric, and postpartum care for FAMIS Moms participants; (2) improve selected birth outcomes of FAMIS Moms participants and their newborns; (3) facilitate access to affordable private and employer-sponsored health insurance for low-income families through premium assistance; and (4) monitor and ensure member satisfaction with the FAMIS Select program.

Operational Updates

Legislative Activities

During the reporting period of July 1, 2019 through June 30, 2020, two amendments to the state budget affecting the FAMIS Moms program were adopted by the Virginia General Assembly. The first of these amendments directed DMAS to seek federal authority to extend coverage for pregnant women between 138% and 205% of the FPL to one year postpartum. An additional amendment directed DMAS to seek federal authority to offer medically necessary treatment for substance use disorder (SUD) in an institution for mental diseases (IMD) for FAMIS Moms enrollees, equivalent to such benefits offered to pregnant women under the Medicaid state plan and Virginia's Addiction and Recovery Treatment Services (ARTS) 1115 SUD demonstration.

On March 12, 2020, Governor Ralph Northam issued Executive Order No. 51, declaring a state of emergency in Virginia due to the novel coronavirus (COVID-19). The Governor subsequently amended the state budget and suspended all new discretionary spending by un-allotting funding for many items, including the new provisions affecting FAMIS Moms. The General Assembly passed the budget with the Governor's amendments. In August of 2020, the General Assembly reconvened for a Special Session, during which a revised budget bill was passed. In this budget, signed by Governor Northam on November 18, 2020, funds were re-allotted to extend FAMIS Moms coverage to 12 months postpartum, with an effective date of April 1, 2021, or upon federal approval of the change.[1]

Having secured state funding and authority, DMAS commenced planning and development of an 1115 waiver amendment to extend FAMIS Moms coverage. We anticipate submitting the application to amend the FAMIS Moms and FAMIS Select 1115 demonstration to CMS in early 2021. DMAS will consult closely with CMS as we develop the amendment application and complete all required steps of the amendment process as outlined in STCs 6 and 7.

Regulatory Updates

The most recent state regulatory action regarding the demonstration programs was the adoption of updates pursuant to periodic review of the FAMIS and FAMIS Moms regulations, effective June 26, 2019.[2] Prior to that, permanent regulations extending access to FAMIS Moms for state employees who are otherwise eligible became effective in June of 2016.

Since March of 2015, FAMIS Moms participants have been able to access dental services through the *Smiles For Children* program; permanent regulations became effective at the end of July 2016.

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[1] Chapter 56 of the 2020 Acts of Assembly, Item 313 AAAA. https://budget.lis.virginia.gov/get/budget/4283/HB5005/

[2] Virginia Register of Regulations, Volume 35, Issue 20, effective June 26, 2019.

Outreach and Communications Activities

The Outreach and Consumer Communications (OCC) team within the Office of Communications, Legislation and Administration (OCLA) is responsible for the cost-effective promotion of FAMIS, FAMIS Moms, FAMIS Select, and the Medicaid programs for children and pregnant women. The onset of the COVID-19 public health emergency in March greatly affected DMAS' operations, and staff acted quickly to adapt outreach campaigns to accommodate social distancing guidelines through strategies such as expanding online presence. During the reporting period, outreach activities included:

- Sponsorship of community trainings through *SignUpNow* in numerous localities across the state, and of online training modules to promote FAMIS, FAMIS Moms, and FAMIS Select;
- Distribution of FAMIS Moms materials at events, conferences, presentations, and meetings with materials available in both English and Spanish, transitioning to primarily electronic distribution after March 2020 due to COVID-19 restrictions;
- Maintenance of the FAMIS Moms and FAMIS Select pages on the Cover Virginia website at https://coverva.org/famismoms/ and https://coverva.org/famisselect/. The website is available for translation in 48 languages;
- Launch of CubreVirginia.org, the new Spanish-language website, in November 2019. CubreVirginia.org includes Spanish-language FAMIS Moms and FAMIS Select pages (https://cubrevirginia.org/famismoms/ and https://cubrevirginia.org/famisselect/);
- Promotion of the FAMIS Moms and FAMIS Select programs on the FAMIS and Cover Virginia Facebook pages;
- Continued promotion of the *Staying Healthy* section of the CoverVA and Cubre Virginia websites (https://coverva.org/stayinghealthy/pregnantwomen/). This section of the websites serves as a resource for enrolled families to promote utilization of preventive care services. The site features information for parents and parents-to-be on prenatal care, well-child checkups, prevention, immunizations, safety, nutrition, developmental milestones, parenting, dental care, and more. It contains health-related links and resources for parents and parents-to-be, including a page dedicated to prenatal care information and resources.

The following documents explaining the FAMIS Select program continue to be available to interested families:

- The FAMIS Select brochure in both English and Spanish;
- The FAMIS Select Decision Aid that assists parents in determining which program (FAMIS or FAMIS Select) is the right option for their family.

Finally, continuing a partnership with the Virginia Department of Business Assistance (DBA), an electronic ad for FAMIS Select was placed on the daily Virginia Business eNews during the months of February through July 2020.

Enrollment, Managed Care Delivery, and Operations Updates

FAMIS MOMS

During the reporting year, applications for program enrollment continued to be processed by the Central Processing Unit and local departments of social services. Initially, enrollees access services on a fee-for-service basis until enrolled in a managed care plan. Approximately 94 percent of FAMIS Moms members are enrolled in managed care. Health care services to FAMIS Moms are delivered primarily through the six managed care organizations (MCOs) contracted by DMAS to provide benefits through the Medallion 4.0 managed care program.

DMAS operates the Medallion mandatory managed care program through a waiver under the authority of section 1915(b) of the Social Security Act. In December 2018, DMAS completed the phased rollout of the Medallion 4.0 managed care program. Medallion 4.0 builds on the strengths and experience of the twenty-year Medallion program and is closely aligned with the new Commonwealth Coordinated Care (CCC) Plus program. Together these two programs streamline policies and processes related to value-based purchasing, data integrity, and other areas.

The MCO contracts were modified in 2016 to better describe expectations for assisting with management of pregnancies, especially those identified as high risk. Staff in DMAS' Health Care Services division reviewed the maternity program descriptions, policies and procedures, and annual reports submitted by each contracted MCO for compliance with these clarified contract requirements, and provided feedback on opportunities for improvement.

FAMIS Select

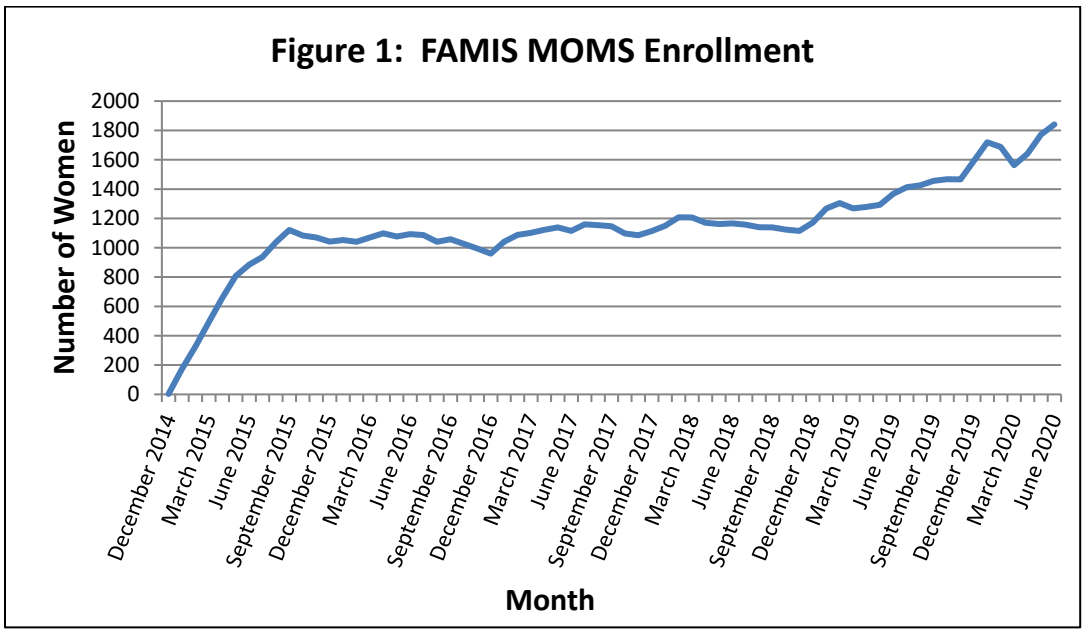
The 2016 revised worksheet for families interested in FAMIS Select remains in use. The worksheet is designed to assist prospective FAMIS Select applicants in comparing their benefits and projected expenses under FAMIS to their private or employer-sponsored insurance. This tool is not required, and the information it reflects is not collected at application. An online application for FAMIS Select is also available, and periodic mailings to FAMIS enrollees inform them of their option to participate in FAMIS Select.

Participation in FAMIS MOMS

Enrollment in FAMIS Moms began in August 2005. The number of pregnant women enrolled increased to 1,203 on October 1, 2008, and then remained relatively level during the final two years of the initial Demonstration period (Years 1–5). Enrollment increased during the first Demonstration extension period (Years 6–8) to a high of 1,670 in December 2012. In June 2013, 1,616 women were enrolled.

Participation in FAMIS Moms was stable up to the point when enrollment was stopped in January 2014. During the period of January 1, 2014 through November 30, 2014, DMAS phased out the FAMIS Moms program because the Virginia General

Assembly adopted budget language directing DMAS to eliminate the program when health insurance coverage became available through the federally facilitated marketplace (FFM). DMAS reinstated enrollment in FAMIS Moms in December of 2014. Figure 1 shows the trend since enrollment was reinstated.



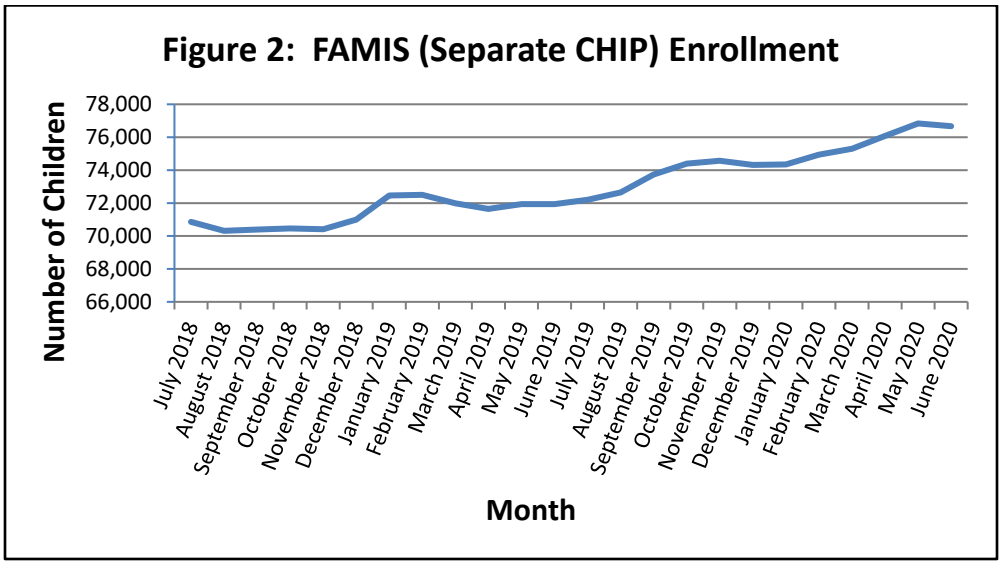
Source: DMAS Enrollment Files

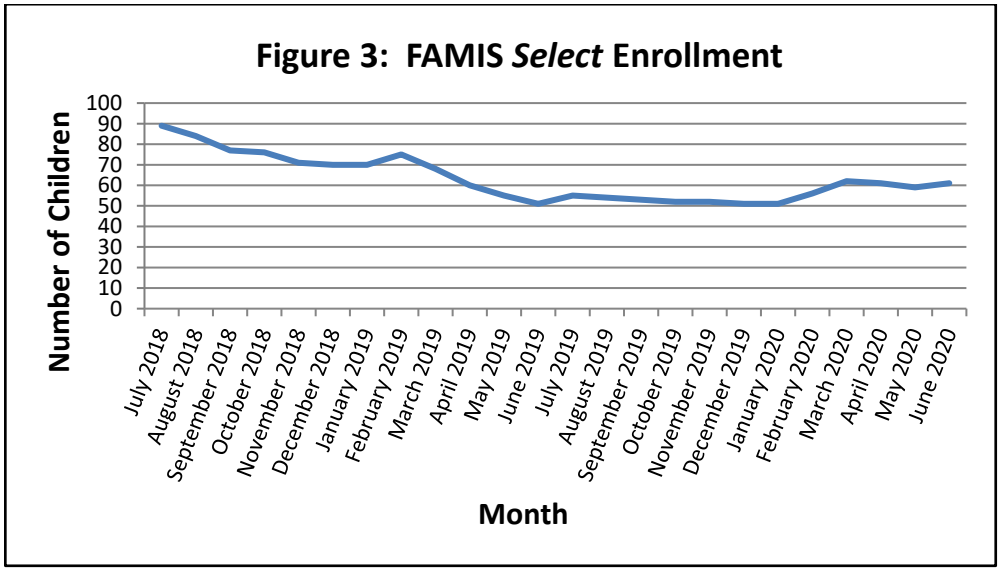
Since enrollment was reinstated, the number of women participating increased steadily and stabilized until October 2016. In October of 2016, DMAS was unable to receive transfers from the Federally Facilitated Marketplace (FFM). The issue was resolved in early 2017 and the numbers increased and stabilized once again. In 2018, CMS approved Medicaid and CHIP state plan amendments (#VA-18-0011, VA-18-0015, and VA-18-0016) to authorize Virginia's transition to a determination state, and Virginia began accepting Medicaid and CHIP eligibility determinations made by the FFM.

Enrollment has grown over the past year, particularly since the onset of the COVID-19 public health emergency in March. Monthly enrollment as of June 1, 2020 was 1,841. Average monthly enrollment for SFY 2020 (Demonstration Year 1) was 1,587, up 30.2% from SFY 2019. The steady demand for coverage through FAMIS Moms and the program's ability to rebound from challenges and continue to attract applicants demonstrates a clear need for this coverage option and underscores the value perceived by providers and community partners who refer women to the program.

Participation in FAMIS Select

A total of 98 children were enrolled in FAMIS Select in August 2005, the first month of the program. Enrollment reached a high of 480 children in March 2009. Figures 2 and 3 show the trend in FAMIS and FAMIS Select enrollment over the past two reporting years. Although FAMIS enrollment has steadily increased during this time, enrollment in FAMIS Select continued to decline. As of June 2020, only 61 children were enrolled in FAMIS Select statewide.





Source: DMAS Enrollment Files

Declining enrollment in FAMIS Select is likely due in large part to changes in employer-sponsored health insurance (ESHI) options. According to the State Health Access Data Assistance Center (SHADAC), there are three main factors in determining the scope of ESHI coverage: (1) the employee must work in a firm that offers ESHI; (2) the worker must be eligible for ESHI coverage based on the employer's criteria; and (3) the worker must "take up" the option.

SHADAC analysis of data from the Medical Expenditures Panel Survey (MEPS) – Insurance Component, accessed via the SHADAC website in December 2020, indicates that fewer Virginia employees are eligible for and taking up ESHI.[3] In addition, the employee share and employee premium/out of pocket amounts for family coverage have

[3] State Health Access Data Assistance Center (SHADAC), State Health Compare, http://statehealthcompare.shadac.org/

steadily increased both nationally and in Virginia.[4] These trends have likely contributed to declining interest in the FAMIS Select program.

Percent of Offer, Eligibility, and Take-Up of ESHI Among Virginia Workers					
	2012/2013	**2013/2014**	**2014/2015**	**2015/2016**	**2016/2017**
Offered ESHI	84.8%	85.4%	85.7%	86.9%	84.5%
Eligible for ESHI	77.0%	78.0%	77%	76.9%	74.2%
Taking up ESHI	74%	73.6%	75.6%	69.3%	71.4%

The cost of ESHI is central to an employer's decision of whether to offer it, and to a worker's decision of whether to participate in an ESHI plan. Over the course of Virginia's CHIP 1115 Demonstration, annual insurance premiums for employer-sponsored family coverage in the Commonwealth increased from an average of $10,367 in 2005 to $19,865 in 2019. While employers often cover a large share of these premium costs, the share paid by employees has been increasing. Between 2005 and 2019, the employee's share of the cost of employer-sponsored family coverage increased from 26.5 percent to 32.0 percent.

In Virginia in 2019, the average family plan premium for a private sector worker getting ESHI was $1,655 per month, compared to $565 for individual ESHI coverage. Of these costs, on average 32.0 percent of the family plan premium was the employee's responsibility, while under an individual plan a smaller share of cost, 23.8 percent, was passed to the employee.

Issues, Concerns, and Accomplishments

FAMIS MOMS

FAMIS Moms enrollment continues to grow during the COVID-19 pandemic, demonstrating the importance of the FAMIS Moms program as a key component of Virginia's health care safety net. Since the onset of the public health emergency, DMAS has worked closely with the Virginia Department of Social Services (VDSS) to ensure that enrollment and renewal processes are consistent with guidance issued by CMS. Specifically, CMS has clarified that after the end of postpartum period of coverage, the FAMIS Moms population is not subject to the continuation of coverage provision of the Families First Coronavirus Response Act (FFCRA). Based upon CMS guidance, eligibility is redetermined for FAMIS Moms individuals who have reached the end of postpartum coverage. DMAS is working with VDSS to ensure that FAMIS Moms members who are not eligible for other Medicaid or CHIP coverage receive appropriate referral to the Marketplace.

As described above, DMAS has been directed by the Virginia General Assembly and the Governor to seek approval from the federal government for a waiver amendment

[4] State Health Access Data Assistance Center (SHADAC), "State-Level Trends in Employer-Sponsored Health Insurance (ESI), 2013-2017, Virginia Fact Sheet," available at https://shadac.org/sites/default/files/state_pdf/VA_Oct18.pdf

to extend coverage for FAMIS Moms to 12 months postpartum. We are preparing a waiver amendment application for formal submission to CMS in early 2021. We will work closely with CMS as we develop the application, including ensuring advance review of public notice and comment processes.

FAMIS Select

Enrollment in FAMIS Select does not require a cost-versus-benefit comparison of FAMIS with the individual applicant's private or employer-sponsored insurance. Currently, DMAS does not request or receive information about FAMIS Select participants' private or employer-sponsored health insurance benefits, coverage, or cost-sharing. At this time, DMAS also does not gather complete information regarding household members who may receive incidental coverage under the private or employer-sponsored plan. In addition, DMAS has no method in place to identify instances where an individual may have access to lower cost and/or better coverage through a parent or guardian's employer or private plan. Access to and affordability of employer-sponsored health insurance continues to decline; as a result, FAMIS Select participation has shown a declining trend.

DMAS is currently working with CMS to develop the revised evaluation plan for FAMIS Select, which will include periodic interviews with participating families to gather qualitative data and feedback to help improve the program.

Performance Metrics

Birth Outcomes: FAMIS MOMS

The most recent data on birth outcomes available at this time is preliminary data from calendar year 2018, reported in detail in the *2018-19 Prenatal Care and Birth Outcomes Focused Study*, completed in April 2020 by Health Services Advisory Group (HSAG). The next annual study, which will cover calendar year 2019 data, is underway and is scheduled for publication in early 2021.

DMAS contracted with HSAG to evaluate the quality of prenatal care provided to women enrolled in the Title XIX and XXI programs serving pregnant women. The *2018-19 Prenatal Care and Birth Outcomes Focused Study* evaluated FAMIS Moms on several measures, summarized here:

- **Adequacy of prenatal care** -- The HSAG study found that 77.5% of FAMIS Moms participants in the study population giving birth in 2018 received early and adequate prenatal care. Among the Medicaid pregnant women study population, the rate was 72.7%; and among the study population overall, 72.3%.

- **Birth weight** -- The HSAG study found that low birth weight (<2,500 grams) affected 7.4% of infants in the FAMIS Moms study population, as compared to 8.6% in the Medicaid pregnant women study group, and 9.1% in the study population overall.

- **Preterm births** -- Preterm births (< 37 weeks completed gestation) occurred in 7.7% of the FAMIS Moms study population according to the HSAG study, compared to 8.8% of the Medicaid pregnant women study population, and 9.4% of the study population overall.

Women who enter prenatal care late or who deliver prematurely are at higher risk for delivering an infant with low birth weight. The data demonstrate that, on all three measures, birth outcomes for women enrolled in FAMIS Moms for a substantial length of time during their pregnancy were better than for women enrolled in Medicaid or in the study population overall.

The national benchmarks identified for Birth Outcomes Study—which we will cite here since the evaluation plan benchmarks are still being developed—are as follows: Births with early and adequate prenatal care (Healthy People 2020 goal) – 77.6%; low birth weight – 6.6% and preterm births – 8.2% (National Vital Statistics System [NVSS] final data for 2018). Compared to these benchmarks, the FAMIS Moms population's outcomes were comparable for Early and adequate prenatal care (0.1 percentage point lower). The FAMIS Moms population's rate of low birth weight births was higher than the NVSS average by 0.8 percentage point; on rates of preterm births, the FAMIS Moms population's rates compared favorably to the NVSS average, at 0.5 percentage point lower.

The full *2018-19 Prenatal Care and Birth Outcomes Focused Study* is submitted as an attachment to this annual report.

Cost-Benefit of FAMIS Select

As required in STC 22 and consistent with 2105(c)(3) of the Social Security Act, DMAS monitors FAMIS Select program expenditures to ensure cost effectiveness. Specifically, DMAS compares the agency's cost to subsidize the purchase of employer-sponsored insurance to the amount of expenditures, including administrative expenditures, that the state would have made to provide comparable coverage to the targeted low-income child or family involved under the state child health plan, FAMIS.

Despite declining participation, FAMIS Select continues to be a cost-effective alternative. The table below presents the state fiscal year 2020 analysis of FAMIS Select expenses and offsetting savings based on FAMIS expenses. The average per enrollee, per month cost under FAMIS was $184.33. The maximum monthly FAMIS Select premium subsidy was $100.00 per enrollee, while the average subsidy per enrollee was $97.14. Factoring in administrative expenses, the average monthly cost associated with a FAMIS Select enrollee was $103.49. This resulted in a savings per FAMIS Select enrollee of $80.84, which translates to an annual estimated savings of $45,494.

DMAS Cost Analysis of the FAMIS Select program (State Fiscal Year 2020)	
Program Expense Categories	**Costs**
Premium Subsidies	$54,991
Administration	$3,595
Total	**$58,586**
Cost Effectiveness Comparison	
Average per Enrollee per Month Cost for FAMIS	$184.33
Maximum FAMIS Select Premium Assistance Subsidy Per Enrollee	$100.00
Actual Average Monthly Premium Subsidy Per Enrollee	$97.14
Actual Average Monthly Cost for FAMIS Select Enrollee with administrative and other costs	$103.49
Savings Per FAMIS Select Enrollee	**$80.84**
Estimated Average Annual Savings	***$45,594***

DMAS is currently working with CMS to develop the revised evaluation plan for FAMIS Select, which will include additional qualitative data gathered through periodic interviews with participating families. In future semi-annual reports, we will report on this data and describe how we plan to use this feedback to improve the program.

Budget and Expenditures

The following table summarizes financial information for the Demonstration for this reporting period. Costs represent actual expenditures during the demonstration year, as required by STC 29(c). Additionally, an updated budget neutrality worksheet is included as an attachment to this report.

COST PROJECTIONS OF DEMONSTRATION (CHIP SECTION 1115)	SFY 2019	SFY 2020
Benefit Costs for Demonstration Population #1 (FAMIS Select)		
Insurance Payments	$61,687	$54,991
Per member/per month rate @ # of eligibles	$87.87 @59 avg elig/mo	$97.14 @47 avg elig/mo
Total Benefit Costs for Waiver Population #1	***$61,687***	***$54,991***
Benefit Costs for Demonstration Population #2 (FAMIS MOMS)		
Managed care	$12,029,334	$19,609,790
Per member/per month rate @ # of eligibles	$902.29 @1,111	$1,095 @1,492
Fee for Service	$2,560,090	$2,823,117
Total Benefit Costs for Waiver Population #2	***$14,589,424***	***$22,432,907***
Total Benefit Costs	***$14,651,111***	***$22,487,898***
Total Administration Costs	***$785,645***	***$1,263,048***
Federal Title XXI Share	**$13,584,345**	**$19,367,709**
State Share	**$1,852,411**	**$4,383,237**
TOTAL COSTS OF DEMONSTRATION	***$15,436,756***	***$23,750,946***

Evaluation Update

DMAS submitted a revised draft evaluation plan, as required by the Special Terms and Conditions (STCs) for the demonstration renewal period, on June 18, 2020. The Centers for Medicare and Medicaid Services (CMS) provided feedback on November 20, 2020. Based on CMS' feedback, DMAS is currently revising the evaluation plan and will submit a new draft within the 60-day timeframe required by the STCs.

DMAS is submitting this monitoring report for year 1 of the demonstration period based upon the performance metrics proposed in the draft evaluation plan in progress. Future reports will incorporate the performance metrics adopted in the final evaluation plan once agreed upon by CMS and Virginia.

Conclusion

FAMIS Moms and FAMIS Select continue to help meet health care coverage needs in Virginia by providing options that would otherwise not exist for two vulnerable populations: pregnant women and children in low-income families not eligible for Medicaid. Although serving comparatively small numbers, these programs are an important part of the health care safety net for residents of the Commonwealth. DMAS looks forward to building on these established programs as we work with CMS in the months and years ahead to introduce innovations with the goal of improving the lives of our FAMIS Moms and FAMIS Select enrollees.

HIFA Demonstration Waiver Budget Template for States Using CHIP Funds -

VIRGINIA FFY 2021-2029	FFY 2019	FFY2020	FFY2021	FFY2022	FFY2023	FFY2024	FFY2025	FFY2026	FFY2027	FFY2028	FFY2029
State's Allotment	$378,405,500	$399,647,474	$411,636,898	$423,986,005	$436,705,585	$449,806,753	$463,300,955	$477,199,984	$491,515,984	$506,261,463	$521,449,307
Funds Carried Over From Prior Year(s)	$32,659,106	$31,626,476	$36,705,377	$110,716,128	$187,468,099	$265,225,515	$330,030,688	$371,858,713	$389,348,981	$377,317,277	$327,254,685
SUBTOTAL (Allotment + Funds Carried Over)	$411,064,606	$431,273,950	$448,342,275	$534,702,133	$624,173,685	$715,032,268	$793,331,643	$849,058,698	$880,864,964	$883,578,741	$848,703,992
Reallocated Funds (Redistributed or Retained that are Currently Available)											
TOTAL (Subtotal + Reallocated funds)	$411,064,606	$431,273,950	$448,342,275	$534,702,133	$624,173,685	$715,032,268	$793,331,643	$849,058,698	$880,864,964	$883,578,741	$848,703,992
State's Enhanced FMAP Rate	88.00%	79.76%	67.17%	65.00%	65.00%	65.00%	65.00%	65.00%	65.00%	65.00%	65.00%
COST PROJECTIONS OF APPROVED SCHIP PLAN											
Benefit Costs											
Managed care	$310,173,408	$363,569,690	$366,989,805	$387,602,282	$394,698,836	$431,379,838	$483,480,395	$536,090,915	$593,725,499	$660,440,799	$732,801,437
per member/per month rate @ # of eligibles	$191.63 @ 133,257 avg elig/mo	$188.78 @ 144,795 avg elig/mo	$203.02 @ 150,638avg elig/mo	$210.67 @ 153,321 avg elig/mo	$212.61 @ 154,701 avg elig/mo	$227.28 @ 158,168 avg elig/mo	$249.15 @ 161,710 avg elig/mo	$270.21 @ 165,332 avg elig/mo	$292.70 @ 169,034 avg elig/mo	$318.46 @ 172,820 avg elig/mo	$345.62 @ 176,690 avg elig/mo
Fee for Service	$82,333,817	$77,225,361	$77,401,175	$81,397,662	$85,028,604	$78,060,350	$71,274,686	$64,331,529	$57,906,119	$52,605,190	$47,663,384
Total Benefit Costs	**$392,507,225**	**$440,795,051**	**$444,390,980**	**$468,999,944**	**$479,727,440**	**$509,440,188**	**$554,755,080**	**$600,422,444**	**$651,631,618**	**$713,045,989**	**$780,464,821**
Net Benefit Costs	**392,507,225**	**440,795,051**	**444,390,980**	**468,999,944**	**479,727,440**	**509,440,188**	**554,755,080**	**600,422,444**	**651,631,618**	**713,045,989**	**780,464,821**
Administration Costs											
Personnel	$3,163,931	$2,758,460	$2,822,841	$3,037,786	$3,170,771	$3,264,021	$3,368,337	$3,484,008	$3,594,759	$3,711,322	$3,832,091
General administration	$421,596	$610,961	$625,221	$672,828	$702,283	$722,936	$746,041	$771,660	$796,190	$822,007	$848,756
Contractors/Brokers (e.g., enrollment contractors)	$16,239,385	$19,216,084	$19,664,576	$21,161,936	$22,088,343	$22,737,943	$23,464,633	$24,270,423	$25,041,940	$25,853,945	$26,695,252
Claims Processing	$1,349,365	$5,997,124	$6,137,094	$6,604,403	$6,893,524	$7,096,257	$7,323,049	$7,574,527	$7,815,309	$8,068,727	$8,331,289
Outreach/marketing costs	$585,016	$498,877	$510,521	$549,394	$573,445	$590,310	$609,176	$630,095	$650,125	$671,206	$693,047
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Administration Costs	**$21,759,294**	**$29,081,507**	**$29,760,252**	**$32,026,348**	**$33,428,367**	**$34,411,467**	**$35,511,235**	**$36,730,712**	**$37,898,322**	**$39,127,206**	**$40,400,434**
10% Administrative Cap	$43,611,914	$48,977,228	$49,376,776	$52,111,105	$53,303,049	$56,604,465	$61,639,453	$66,713,605	$72,403,513	$79,227,332	$86,718,313
Federal Title XXI Share	$364,554,536	$374,750,048	$318,487,382	$325,667,090	$333,551,274	$353,503,575	$383,673,105	$414,149,552	$448,194,461	$488,912,577	$533,562,416
State Share	$49,711,982	$95,126,509	$155,663,849	$175,359,202	$179,604,532	$190,348,079	$206,593,210	$223,003,605	$241,335,479	$263,260,618	$287,302,839
TOTAL COSTS OF APPROVED SCHIP PLAN	**$414,266,519**	**$469,876,558**	**$474,151,232**	**$501,026,292**	**$513,155,807**	**$543,851,654**	**$590,266,315**	**$637,153,156**	**$689,529,940**	**$752,173,195**	**$820,865,255**

COST PROJECTIONS OF HIFA DEMONSTRATION PROPOSAL											
Benefit Costs for Demonstration Population #1 (pregnant women < 200% FPL)											
Insurance payments											
Managed care	$13,333,221	$20,515,655	$25,214,880	$29,364,716	$30,218,932	$31,139,338	$32,087,778	$33,065,105	$34,072,200	$35,109,969	$36,179,346
per member/per month rate @ # of eligibles	$932.91 @ 1191 avg elig/mo	$1084.11 @ 1577 avg elig/mo	$1698.91 @1237 avg elig/mo	$2045.76@1196 elig/mo	$2106.18 @1196 avg elig/mo	$2,169.69 @1196 avg elig/mo	$2,235.77 @ 1196 avg elig/mo	$2,303.87 @1196 avg elig/mo	$2,374.04 @ 1196 avg elig/mo	$2,446.35 @ 1196 avg elig/mo	$2,520.86 @ 1196 avg elig/mo
Fee for Service	$2,863,191	$2,813,502	$2,170,543	$2,579,498	$2,554,407	$2,598,626	$2,666,132	$2,720,854	$2,772,681	$2,830,118	$2,891,153
Total Benefit Costs for Waiver Population #1	**$16,196,412**	**$23,329,157**	**$26,532,841**	**$30,873,662**	**$37,143,787**	**$45,913,504**	**$54,408,865**	**$65,125,006**	**$78,494,796**	**$94,652,589**	**$113,420,426**
Benefit Costs for Demonstration Population #2 (children in premium assistance)											
Insurance payments	$58,149	$55,574	$50,017	$45,015	$40,513	$40,513	$40,513	$40,513	$40,513	$40,513	$40,513
Managed care											
per member/per month rate @ # of eligibles	$95.01 @ 51 avg elig/mo	$100.90 @ 46 avg elig/mo	$100.90 @ 41 avg elig/mo	$100.90 @ 37 avg elig/mo	$100.90 @ 33 avg elig/mo	$100.90 @ 33 avg elig/mo	$100.90 @ 33 avg elig/mo	$100.90 @ 33 avg elig/mo	$100.90 @ 33 avg elig/mo	$100.90 @ 33 avg elig/mo	$100.90 @ 33 avg elig/mo
Fee for Service	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Benefit Costs for Waiver Population #2	**$58,149**	**$55,574**	**$50,017**	**$45,015**	**$40,513**	**$40,513**	**$40,513**	**$40,513**	**$40,513**	**$40,513**	**$40,513**
Total Benefit Costs	**$16,254,561**	**$23,384,731**	**$26,582,858**	**$30,918,677**	**$37,184,300**	**$45,954,017**	**$54,449,378**	**$65,165,519**	**$78,535,309**	**$94,693,102**	**$113,460,939**
(Offsetting beneficiary cost sharing payments) * Premium Payments will be net of cost sharing											
Net Benefit Costs	**$16,254,561**	**$23,384,731**	**$26,582,858**	**$30,918,677**	**$37,184,300**	**$45,954,017**	**$54,449,378**	**$65,165,519**	**$78,535,309**	**$94,693,102**	**$113,460,939**
Administration Costs											
Personnel	$62,471	$138,914	$181,184	$214,484	$179,067	$186,313	$185,507	$176,451	$175,514	$172,059	$167,792
General administration	$13,837	$30,768	$40,130	$47,505	$39,661	$41,266	$41,087	$39,082	$38,874	$38,109	$37,164
Contractors/Brokers (e.g., enrollment contractors)	$435,190	$967,709	$1,262,174	$1,494,149	$1,247,425	$1,297,899	$1,292,284	$1,229,202	$1,222,673	$1,198,606	$1,168,876
Claims Processing	$135,818	$302,011	$393,910	$466,307	$389,307	$405,060	$403,307	$383,620	$381,583	$374,071	$364,793
Outreach/marketing costs	$11,298	$25,123	$32,768	$38,790	$32,385	$33,695	$33,550	$31,912	$31,742	$31,118	$30,346
Other (specify)											
Total Administration Costs	**$658,613**	**$1,464,526**	**$1,910,166**	**$2,261,237**	**$1,887,846**	**$2,504,453**	**$3,704,198**	**$4,927,043**	**$6,623,499**	**$9,016,865**	**$12,337,682**
10% Administrative Cap	$1,625,456	$2,338,473	$2,658,286	$3,091,868	$3,718,430	$4,595,402	$5,444,938	$6,516,552	$7,853,531	$9,469,310	$11,346,094
Federal Title XXI Share	$14,883,593	$19,818,525	$19,138,765	$21,566,944	$25,396,895	$31,498,005	$37,799,825	$45,560,165	$55,353,226	$67,411,478	$81,769,104
State Share	$2,029,581	$5,030,732	$9,354,260	$11,612,970	$13,675,251	$16,960,464	$20,353,752	$24,532,397	$29,805,583	$36,298,488	$44,029,517
TOTAL COSTS FOR DEMONSTRATION	**$16,913,174**	**$24,849,257**	**$28,493,024**	**$33,179,914**	**$39,072,146**	**$48,458,469**	**$58,153,577**	**$70,092,562**	**$85,158,809**	**$103,709,966**	**$125,798,621**

TOTAL PROGRAM COSTS (State Plan + Demonstration	**$431,179,693**	**$494,725,814**	**$502,644,256**	**$534,206,206**	**$552,227,953**	**$592,310,124**	**$648,419,892**	**$707,245,718**	**$774,688,749**	**$855,883,162**	**$946,663,876**
Total Federal Title XXI Funding Currently Available (Allotme	$411,064,606	$431,273,950	$448,342,275	$534,702,133	$624,173,685	$715,032,268	$793,331,643	$849,058,698	$880,864,964	$883,578,741	$848,703,992
Total Federal Title XXI Program Costs (State Plan + Demor	$379,438,130	$394,568,573	$337,626,147	$347,234,034	$358,948,169	$385,001,580	$421,472,930	$459,709,717	$503,547,687	$556,324,055	$615,331,520
Unused Title XXI Funds Expiring (Allotment or Reallocated)											
Remaining Title XXI Funds to be Carried Over (Equals Avai	$31,626,476	$36,705,377	$110,716,128	$187,468,099	$265,225,515	$330,030,688	$371,858,713	$389,348,981	$377,317,277	$327,254,685	$233,372,473

Commonwealth of Virginia
Department of Medical Assistance Services

2018–19 Birth Outcomes Focused Study

April 2020

HSAG HEALTH SERVICES ADVISORY GROUP

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Table of Contents

1. Executive Summary

As a continued optional external quality review (EQR) task under the Centers for Medicare & Medicaid Services (CMS) Medicaid guidelines,[1-1] the Commonwealth of Virginia Department of Medical Assistance Services (DMAS) contracted with Health Services Advisory Group, Inc. (HSAG), to conduct a focused study in contract year 2018–2019 providing quantitative information about prenatal care and associated birth outcomes among women with births paid by Title XIX or Title XXI, which include the Medicaid, Family Access to Medical Insurance Security (FAMIS), and FAMIS MOMS programs. The Contract Year 2018–2019 Task F.1 Birth Outcomes Focused Study addressed the following questions:

- *To what extent do women with births paid by Medicaid receive early and adequate prenatal care?*
- *What clinical outcomes are associated with Medicaid-paid births?*

Methodology and Study Indicators

The study used deterministic and probabilistic data linking to match eligible Virginia Medicaid or FAMIS MOMS members with birth registry records to identify births paid by Virginia Medicaid during calendar year (CY) 2018.[1-2] Medicaid member claims and encounter data files were used with birth registry data fields for matching members from each of the data linkage processes. All probabilistically or deterministically linked birth registry records were included in the eligible focused study population.

The eligible population consisted of all live births during CY 2018 that were paid by Virginia Medicaid, regardless of whether the births occurred in Virginia. The birth registry contained records of live births; other pregnancy outcomes were excluded from this study.

Additionally, births among Virginia Medicaid or FAMIS MOMS members were assigned to one of three Medicaid program categories based on the mother's program at the time of delivery:

- The Medicaid for Pregnant Women program uses Title XIX (Medicaid State Plan) funding to serve pregnant women with incomes up to 133 percent of the federal poverty level (FPL).
- The FAMIS MOMS program uses Title XXI (Children's Health Insurance Program [CHIP] Demonstration Waiver) funding to serve pregnant women with incomes up to 200 percent of the FPL and provides benefits similar to Medicaid through the duration of pregnancy and for 60 days postpartum.

[1-1] Department of Health and Human Services, Centers for Medicare & Medicaid Services. *EQR Protocol 8: Conducting Focused Studies of Health Care Quality: A Voluntary Protocol for External Quality Review (EQR).* Version 2.0. September 2012. Available at: https://www.medicaid.gov/medicaid/quality-of-care/downloads/eqr-protocol-8.pdf. Accessed on: August 28, 2019.

[1-2] Results for CY 2016 and CY 2017, as applicable, are taken from previously published reports and included in the current study for trending purposes.

- The "Other Medicaid"[1-3] programs include births paid by Medicaid that do not fall within the FAMIS MOMS or the Medicaid for Pregnant Women categories.

To aid in reporting for DMAS' waiver evaluation, births covered by the FAMIS MOMS program were further classified into the following strata based on the timing and length of the mother's enrollment prior to delivery:

- Study Population: women covered by FAMIS MOMS on the date of delivery with continuous enrollment in any Medicaid program for a minimum of 61 days prior to, and including, the date of delivery.
- Comparison Group: women covered by FAMIS MOMS on the date of delivery with continuous enrollment of 60 days or less in any Medicaid program prior to the date of delivery.

Four study indicators were used to assess the study questions among singleton, live births among Virginia Medicaid or FAMIS MOMS members during the CY 2018 measurement period:

- Percentage of births with early and adequate prenatal care—The percentage of births with an Adequacy of Prenatal Care Utilization (APNCU) Index (i.e., the Kotelchuck Index) score greater than or equal to 80 percent (i.e., births scoring in the "Adequate" or "Adequate Plus" categories).
- Percentage of births by gestational estimate—The percentage of births by gestational estimate category, with a focus on births before 37 completed weeks of gestation.
- Percentage of newborns with low birth weight—The percentage of newborns in each of two low birth weight categories (i.e., births at less than 1,500 grams, and births between 1,500 and 2,499 grams).
- Percentage of women with early elective deliveries[1-4]—The percentage of women following an elective vaginal delivery or elective cesarean delivery at ≥ 37 completed weeks of gestation and < 39 completed weeks of gestation.

Results for each study indicator were calculated for all singleton births occurring during CY 2018. For comparison, CY 2018 national data available from the Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), National Vital Statistics System (NVSS)[1-5] were used as benchmarks for selected study indicators.

[1-3] The "Other Medicaid" category includes births paid by Medicaid that do not fall within the FAMIS MOMS or the Medicaid for Pregnant Women programs (i.e., the pregnancy aid categories). Births among the Other Medicaid programs may also include women with Medicaid coverage for emergency services only.

[1-4] This measure aligns with the Elective Delivery measure from the Perinatal Care measure set, published by the Joint Commission. Information available at: https://manual.jointcommission.org/releases/TJC2018B1/MIF0166.html. Accessed on: Aug 28, 2019.

[1-5] Martin JA, Hamilton BE, Osterman MJK, et al. Births: Final Data for 2018. National Vital Statistics Reports. 2019; 68(13). Hyattsville, MD: National Center for Health Statistics. 2019. Available at: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_13-508.pdf. Accessed on: Jan 21, 2020.

Findings

Table 1-1 presents the overall number of births among Virginia Medicaid or FAMIS MOMS recipients paid by Title XIX or Title XXI during each measurement period, as well as the number and percentage of multiple gestation and singleton births.

Table 1-1—Overall Virginia Medicaid and FAMIS MOMS Births, CY 2016–2018

Overall Births	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
Total Births	32,419	100.0	31,708	100.0	35,002	100.0
Multiple Gestation Births	*578*	*1.8*	*566*	*1.8*	*1,276*	*3.6*
Singleton Births	*31,841*	*98.2*	*31,142*	*98.2*	*33,726*	*96.4*

While HSAG identified an increased number of CY 2018 births over the prior years, this change may be partially attributable to variations over time in the level of manual review required for each year's probabilistically linked birth records. Additionally, multiple gestation pregnancies are associated with different patterns of clinical care, and subsequent study findings are limited to singleton births.

Births in each measurement period were stratified into three Medicaid programs and two Medicaid delivery systems. Each measurement period also included births in which Medicaid benefits were limited to coverage of emergency services only. Table 1-2 presents the overall number and percentage of singleton births for each of these stratifications.

Table 1-2—Singleton Births by Medicaid Program, Medicaid Delivery System, and Emergency Only Service Benefits, CY 2016–CY 2018*

Overall Births	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
Singleton Births	31,841	100.0	31,142	100.0	33,726	100.0
Medicaid Program						
FAMIS MOMS	1,549	4.9	1,621	5.2	1,771	5.3
Medicaid for Pregnant Women	24,312	76.4	23,618	75.8	25,860	76.7
Other Medicaid	5,980	18.8	5,903	19.0	6,095	18.1
Medicaid Delivery System						
Fee-for-Service (FFS)	8,160	25.6	7,887	25.3	9,714	28.8
Managed Care	23,681	74.4	23,255	74.7	24,012	71.2
Births Covered by Emergency Only Benefits						
Emergency Only Benefits	1,116	3.5	971	3.1	2,409	7.1

* Due to rounding, the percentages in each column may not sum to 100 percent.

Detailed information on maternal demographic characteristics by Medicaid program and service delivery system are presented in Appendix A, and detailed study indicator findings by maternal demographic characteristics are presented in Appendix B.

Table 1-3 presents the study indicator results by measurement period, as well as whether each indicator's results were statistically significantly different between CY 2016 and CY 2018.

Table 1-3—Overall Study Indicator Findings Among Singleton Births, CY 2016–CY 2018

Study Indicator	CY 2018 National Benchmark*	CY 2016		CY 2017		CY 2018		Statistically Significant Difference (Yes/No)
		n	%	n	%	n	%	
Births with Early and Adequate Prenatal Care	77.6%	22,760	73.3	21,853	72.4	22,853	72.3	Yes
Births with Inadequate Prenatal Care	*N/A*	*5,130*	*16.5*	*5,211*	*17.3*	*5,368*	*17.0*	*Yes*
Preterm Births (< 37 Weeks of Gestation)	8.2%	3,005	9.4	2,892	9.3	3,168	9.4	No
Newborns with Low Birth Weight (<2,500g)	6.6%	2,808	8.8	2,773	8.9	3,084	9.1	No
Early Elective Deliveries	N/A	—	—	—	—	4,475	13.3	N/A

* The national benchmark for *Births with Early and Adequate Prenatal Care* is the Healthy People 2020 goal, excluding the 2019 update. The national benchmarks for *Preterm Births* and *Newborns with Low Birth Weight* were identified from NVSS final data for 2018. National benchmarks are not available for comparison for *Early Elective Deliveries*.

To facilitate DMAS' program evaluation efforts, Table 1-4 presents the CY 2018 study indicator results for the FAMIS MOMS program, stratified into a study population and comparison group based on the length of continuous enrollment prior to a woman's delivery. The table also indicates whether each indicator's results were statistically significantly different between the study population (i.e., continuously enrolled for ≥ 61 days prior to delivery) and the comparison group (i.e., continuously enrolled for ≤ 60 days prior to delivery).

Table 1-4—FAMIS MOMS Study Indicator Findings Among CY 2018 Singleton Births by Study Population and Comparison Group

Study Indicator	CY 2018 National Benchmark*	Comparison Group		Study Population		Statistically Significant Difference (Yes/No)
		n	%	n	%	
Births with Early and Adequate Prenatal Care	77.6%	121	66.5	1,191	78.9	Yes
Births with Inadequate Prenatal Care	*N/A*	*35*	*19.2*	*193*	*12.8*	*Yes*

Study Indicator	CY 2018 National Benchmark*	Comparison Group		Study Population		Statistically Significant Difference (Yes/No)
		n	%	n	%	
Preterm Births (< 37 Weeks of Gestation)	8.2%	23	12.1	113	7.1	Yes
Newborns with Low Birth Weight (<2,500g)	6.6%	20	10.5	111	7.0	No
Early Elective Deliveries	N/A	22	11.6	217	13.7	No

* The national benchmark for *Births with Early and Adequate Prenatal Care* is the Healthy People 2020 goal, excluding the 2019 update. The national benchmarks for *Preterm Births* and *Newborns with Low Birth Weight* were identified from NVSS final data for 2018. National benchmarks are not available for comparison for *Early Elective Deliveries*.

Conclusions and Recommendations

Conclusions

This study considered four quantitative indicators related to prenatal care and associated birth outcomes among births paid by Virginia Medicaid, and three indicators can be trended over time. Between the CY 2016 and CY 2018 measurement periods, study indicators related to prenatal care, preterm birth, and low birthweight showed a lack of improvement in results for Virginia Medicaid members. Specifically, overall results for the *Births with Early and Adequate Prenatal Care* indicator decreased across the measurement periods, while *Preterm Births* indicator results were stable and *Newborns with Low Birth Weight (<2,500g)* indicator results decreased (i.e., the rate of singleton infants born weighing less than 2,500g increased over time).

DMAS' implementation of the Medallion 4.0 program between August 2018 and December 2018 for Medicaid managed care organizations (MCOs) provided an opportunity for DMAS and the MCOs to reassess existing quality improvement strategies related to peripartum care and resulting clinical maternal and neonatal outcomes. However, births during the CY 2018 study period may have occurred prior to the Medallion 4.0 transition or during the transition period while maternal and child health initiatives were implemented. Due to the timing of the Medallion 4.0 transition, none of the CY 2018 births would have been covered under the Medallion 4.0 program during the entire prenatal period. For example, a woman giving birth on December 31, 2018, would have conceived during April 2018 and ideally initiated prenatal no later than June 2018, two months prior to the earliest date of the phased Medallion 4.0 transition.

However, the CY 2018 study results offer a baseline for future evaluations of birth outcomes under the Medallion 4.0 program. Across the three study indicators with comparable national benchmarks, results for singleton births to women in the managed care program outperformed results for women in the FFS program. However, each of these indicators failed to progress toward national benchmarks between the

CY 2016 and CY 2018 measurement periods. Additionally, the CY 2018 *Early Elective Deliveries* results showed a higher percentage of such deliveries among women in managed care, compared to women in FFS. Additionally, CY 2018 study indicator results varied substantially by geography (i.e., by Medallion 4.0 region), both overall and within the Medicaid program groups. Such findings support the need to assess beneficiaries' access to care, with consideration of local quality improvement initiatives and perinatal services within each region.

The FAMIS MOMS program continued to outperform other Medicaid programs, though it is important to note that women enrolled in FAMIS MOMS have different Medicaid eligibility limits compared to other pregnant women (i.e., FAMIS MOMS covers women with incomes up to 200 percent of the FPL). However, it is beyond the scope of the current study to assess the degree to which study indicator results for women in FAMIS MOMS differ from study indicator results among women in other Medicaid programs on the basis of income-based eligibility requirements. Though limited in number, births to women enrolled in FAMIS MOMS, especially those with continuous enrollment greater than 61 days prior to delivery, had the highest rate of early and adequate prenatal care, and the lowest rates of preterm birth or low birthweight. While these rates remained stable or slightly decreased over time, the promising results from this program suggest that it could offer a valuable starting point for assessing beneficiaries' satisfaction with care and underlying social determinants of health (SDoH) that may distinguish these women from other Medicaid beneficiaries.

Study Limitations

Study findings and conclusions may be affected by limitations related to the study design and source data. As such, caveats include, but are not limited to, the following:

- Study indicator and stratification results may be influenced by the accuracy and timeliness of the birth registry data and administrative Medicaid eligibility, enrollment, and demographic data used for calculations.
  - Additionally, three study indicators rely on gestational estimate data from the birth registry. Reliability of these data, especially due to data collection practice variations in individual healthcare facilities, may have a disproportionate influence on regional study indicator results.[1-6]
- National NVSS data for CY 2018 are presented for comparison to Virginia Medicaid results for selected study indicators. Use caution when comparing study results to national benchmarks, as the benchmarks were derived from birth records covered by all payor types and may not mirror birth outcomes among women with births paid by Title XIX or Title XXI.
- The probabilistic data linkage process allows for manual data reviews to confirm or negate a potential match. The degree of manual review for each measurement period may result in annual differences in the number of birth certificates matched to enrollment data. Affected birth records tend to include

[1-6] Dietz PM, Bombard JM, Hutchings YL, et. al. Validation of obstetric estimate of gestational age on US birth certificates. AM J Obstet Gynecol. Apr 2014; 2010(4): 335.e1-335.e5. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4560346/. Accessed on: Nov 22, 2019.

women without Social Security numbers (SSNs) and with differences in the names listed in the Medicaid and birth registry systems (e.g., names that are hyphenated and/or difficult to spell).

- The Commonwealth of Virginia allows presumptive eligibility for pregnant women to receive outpatient services, including prenatal care. However, DMAS does not cover inpatient care under the assumption that a woman will qualify for Title XIX or Title XXI benefits. The Virginia Department of Social Services (VDSS), the agency responsible for determining Medicaid eligibility in Virginia, allows 10 days to process a Medicaid application from a pregnant woman; 45 days is allowed for processing if the pregnant woman applies for additional services beyond Medicaid (e.g., supplemental nutrition assistance). As such, a pregnant woman new to Medicaid may have up to a 45-day waiting period before being eligible to have inpatient services covered by Title XIX or Title XXI benefits. Women's understanding of Medicaid benefits and the timing of coverage may result in delayed initiation or continuation of prenatal care.
  - As many pregnant women new to Medicaid may not be covered by Title XIX or Title XXI benefits until their second or third trimester, use caution when interpreting study findings. Due to the multifactorial nature of birth outcomes and the need for pre-pregnancy interventions, a single delivery system or Medicaid program may not have had adequate time to contact new Medicaid beneficiaries and subsequently impact birth outcomes.
- Due to differing methodologies and data sources, study findings are not comparable to Healthcare Effectiveness Data and Information Set (HEDIS®)[1-7] indicator results assessing timely prenatal care. Specifically, the HEDIS indicator for assessing timely prenatal care does not follow a CY measurement period and requires the woman to be continuously enrolled with the health plan for 43 days prior to delivery through 56 days after delivery.
- Study findings were associated with births occurring during CY 2018. While selected DMAS initiatives may have been effective during the measurement period, study births occurred during the transition between the Medallion 3.0 and the Medallion 4.0 managed care programs and may have been affected by changes to the MCOs and regional definitions. For example, DMAS expanded comprehensive Medicaid coverage beginning January 1, 2019, to include individuals ages 19 through 64 years with income at or below 138 percent of the FPL, including individuals who had not been previously eligible for Medicaid. This expansion may contribute to improved perinatal care, as women in the expansion population will be enrolled in Medicaid prior to pregnancy, allowing for early prenatal care initiation and management of health concerns after the postpartum period without regard to healthcare coverage.

Recommendations

HSAG collaborated with DMAS to ensure that this study contributes to existing quality improvement data needs while informing current and future maternal and child health initiatives. As such, HSAG offers the following recommendations, based on the findings detailed in this report:

[1-7] HEDIS® is a registered trademark of the National Committee for Quality Assurance (NCQA).

- While the current focused study offers detailed quantitative information on prenatal care and selected birth outcomes among Medicaid beneficiaries, DMAS should consider conducting focus groups among current and former Medicaid beneficiaries to obtain a patient-level perspective on barriers to care among pregnant and postpartum women.
  - Such focus groups may build on listening sessions held in fall 2019 by the Virginia Secretary of Health and Human Resources (SHHR) and provide a structured mechanism for collecting qualitative information on Virginians' prenatal and postpartum experiences of care.
- DMAS has directed its EQRO to conduct a secret shopper survey to assess the degree to which prenatal care providers are meeting appointment timeliness standards for MCOs, and this study will illuminate potential gaps in MCOs' prenatal care provider networks. To address another aspect of access to peripartum care, DMAS should consider adding supplemental survey questions to existing Consumer Assessment of Healthcare Providers and Systems®[1-8] (CAHPS®) surveys to address beneficiaries' experience of, and satisfaction with, prenatal and postpartum care.
- The current focused study allows DMAS to address metrics that rely on birth registry data, though such data offer limited information related to SDoH. If feasible, DMAS may consider augmenting future birth outcomes focused studies with electronic health record (EHR) data that would allow for a comprehensive assessment of pregnant and postpartum women across their past and current medical and social history.
- Individual hospitals may have protocols prohibiting the use of elective inductions prior to 39 completed weeks of gestation, and DMAS may consider implementing this type of "hard-stop" policy at the State level, in alignment with the American Public Health Association's (APHA's) recommended actions to reduce early elective deliveries.[1-9]
  - A "hard-stop" policy denies deliveries scheduled before 39 weeks of completed gestation without formal documentation of medical necessity.

DMAS' Input on Prior Focused Study Recommendations

In addition to the recommendations noted above, DMAS provided the following detailed feedback to HSAG regarding quality improvement actions and initiatives related to the 2017–18 Birth Outcomes Focused Study.

The 2017–18 Birth Outcomes Focused Study was published in March 2019 and the newly implemented Medallion 4.0 program had seven months of operational experience. Medallion 4.0 serves infants, children, adolescents, pregnant women, caretaker adults, and newly eligible adults under the Medicaid expansion program. Benefit coverage includes prenatal and postpartum care; vaccinations; well-child visits; sick visits; acute care; pharmacy; addiction recovery and treatment services; and behavioral health

[1-8] CAHPS® is a registered trademark of the Agency for Healthcare Research and Quality (AHRQ).
[1-9] Reducing Non Medically Indicated Elective Inductions of Labor (Policy Number 20141, Dated Nov 18, 2014). American Public Health Association. Available at: https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2015/01/23/09/03/reducing-non-medically-indicated-elective-inductions-of-labor. Accessed on: Jan 13, 2020.

services, including community mental health rehabilitation services. Prior to January 1, 2019, however, women eligible for Medicaid due to pregnancy may have only been eligible to receive healthcare coverage through their 60th day after delivery.

Past and Current Activities

DMAS maintains a dedicated Maternal and Child Health Unit that focuses on issues related to pregnancy across managed care and FFS delivery systems in addition to the following specific activities:

- Beginning January 1, 2019, more adults living in Virginia were able to access quality, low-cost, health insurance through Virginia Medicaid (i.e., "Medicaid Expansion"). The new adult coverage group includes individuals ages 19 through 64 years with income at or below 138 percent of the FPL, including individuals who have not been previously eligible for Medicaid. Individuals in the new adult coverage group have comprehensive healthcare coverage, with services provided through existing Medicaid programs. Most eligible individuals are enrolled in managed care, in either the Medallion 4.0 program or the Commonwealth Care Plus (CCC Plus) program. As a result of Medicaid Expansion, more women will be eligible to enroll in Medicaid prior to pregnancy, ensuring coverage for early prenatal care initiation and management of health concerns after the postpartum period.
- In June 2019, Virginia Governor Ralph Northam announced his commitment to reduce racial disparities in maternal mortality by 2025. In the press release from the Office of the Governor, Governor Northam stated, "this is a worthy goal that is perfectly within reach, and I am directing leaders in my administration and in the healthcare and human services community to develop strategies to get us there by 2025."[1-10]
- In July 2019, to meet Governor Northam's goals to support health equity, DMAS announced the Healthy Birthday Virginia initiative to ensure mothers and babies celebrate the first birthday together.[1-11] DMAS, in the early stages of this initiative, began drafting documentation that will provide analysis, categorical actions required to achieve the metrics, and factors for success.
  - The Healthy Birthday Virginia initiative will add new services, providers, community partners and resources; require state and local infrastructure modifications; and tackle challenging issues, such as exploring ways to increase training for healthcare professionals regarding implicit bias and cultural competency. The initiative will continue DMAS' collaborative work with partners to find ways to improve the efficiency and effectiveness of strategies, policies, and procedures to positively impact maternity care for DMAS beneficiaries.

[1-10] Commonwealth of Virginia, Office of the Governor. "Governor Northam Announces Goal to Eliminate Racial Disparity in Virginia Maternal Mortality Rate by 2025." Available at: https://www.governor.virginia.gov/newsroom/all-releases/2019/june/headline-840941-en.html. Accessed on: Dec 20, 2019.

[1-11] Commonwealth of Virginia, Department of Medical Assistance Services. "Virginia Medicaid Announces Strategies to End Maternal and Infant Mortality Among Members." Available at: https://www.dmas.virginia.gov/files/links/3961/Press%20Release%20for%20Healthy%20Birthday%20Virginia%20(07.01.2019).pdf. Accessed on: Dec 20, 2019.

- In April 2019, Virginia was selected as one of eight U.S. states to participate in the National Academy for State Health Policy (NASHP) Maternal and Child Health Policy Innovation Program (MCH PIP) policy academy that will help to identify, promote, and advance innovative, state-level policy initiatives to improve access to care for Medicaid-eligible pregnant and parenting women with or at risk of substance use disorder (SUD) through health care delivery system transformation.[1-12]
- DMAS partnered with the Virginia Department of Health (VDH) to participate during Year III (2018–2019) of the CDC's 6|18 project, with a focus on smoking cessation.
- Virginia is a recipient of the CMS SUPPORT [Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment] Act grant fund to perform a comprehensive analysis of the current capacity, barriers, and gaps in the SUD treatment network, focusing on pregnant women and parenting moms.
- DMAS is developing a data dashboard to track metrics related to the health of pregnant women. Key elements highlighted on the dashboard are scheduled to include SUD diagnosis, mental health screening by MCOs, and counts of pregnant women enrolled in Medicaid by trimester of pregnancy.
- DMAS and the VDSS have developed an automatic monthly process to allow new mothers to receive Medicaid coverage without a gap in coverage following their 60-day postpartum period.
- Under the Medallion 4.0 managed care program, DMAS evaluates monthly deliverables from the MCOs and monitors maternal health performance measures.
- To understand and hear from Virginians, the SHHR scheduled 10 listening sessions across the Commonwealth. The purpose of these sessions was to raise awareness among local healthcare and service providers about SHHR's work and to hear about the lived experiences of women and families across Virginia.
- DMAS is collaborating with VDH and the Virginia Hospital and Healthcare Association to engage in quality improvement and community engagement initiatives for identified hospitals with poor maternal health outcomes and racial disparities.
- DMAS participates in various maternal health initiatives in partnership with state partners to address policy innovation in areas including maternal mental health, coordinated care efforts for substance exposed infants and their families, substance use screening and intervention, and family planning access.

Upcoming Initiatives

DMAS will continue efforts to identify improvements to the efficiency and effectiveness of strategies, policies, and procedures that positively impact maternity care for DMAS beneficiaries. A multi-divisional team at DMAS was tasked with the goal of developing and implementing low-barrier, rapid-

[1-12] National Academy for State Health Policy. "New Eight-State Policy Academy Advances Access to Care for Pregnant/Parenting Women with SUD." Available at: https://nashp.org/new-eight-state-policy-academy-advances-access-to-care-for-pregnant-parenting-women-with-sud/. Accessed on: Dec 20, 2019.

cycle strategies to increase enrollment and/or maximize access to maternal care for women eligible for Medicaid or FAMIS MOMS. Future initiatives include the following:

- The SHHR, along with the State agencies, will develop a five-year strategic plan to ensure healthy pregnancies and alleviate adverse experiences for all women through collaborative efforts to reduce maternal and infant deaths.
- DMAS will develop strategies around eligibility and enrollment, the healthcare delivery system, and data/reporting.
- DMAS will partner with VDSS to develop policy and system changes that streamline Medicaid eligibility processes.
- DMAS will focus on developing a streamlined managed care enrollment process and make the care accessible for all pregnant and parenting members.
- The Governor's proposed budget requested that DMAS implement a home visiting benefit effective July 1, 2021, for pregnant and postpartum women at risk of poor health outcomes. Prior to implementation, DMAS will engage all relevant stakeholders in the development of the benefit and gaining the necessary federal approvals. The Governor also requested that DMAS extend postpartum coverage for FAMIS MOMS from 60 days to 12 months. Currently, women up to 205 percent of the FPL are eligible for coverage during their pregnancy and up to 60 days postpartum from the delivery date on file.
- The Governor requested that the SHHR convene a workgroup to review and make recommendations regarding the State regulation of doulas and establishing a community doula benefit for pregnant women covered by Medicaid.

2. Overview and Methodology

As an EQR task under the CMS Medicaid guidelines,[2-1] the Commonwealth of Virginia DMAS contracted with HSAG to conduct a focused study in contract year 2018–2019 to provide quantitative information about prenatal care and associated birth outcomes among women with births paid by Title XIX or Title XXI, which include the Medicaid, FAMIS, and FAMIS MOMS programs. The 2018–2019 Task F.1 Birth Outcomes Focused Study addressed the following questions:

- *To what extent do women with births paid by Medicaid receive early and adequate prenatal care?*
- *What clinical outcomes are associated with Medicaid-paid births?*

Methodology

The study included all singleton births among Virginia Medicaid or FAMIS MOMS members paid by Title XIX or Title XXI during CY 2018. Results for CY 2016 and CY 2017 were taken from a previously published report and included in the current study for trending purposes.

From Medicaid member, claims, and encounter data provided by DMAS, HSAG assembled a list of members eligible for the focused study. This list was submitted to DMAS for linkage to the VDH birth registry. Members eligible for the data linkage included Virginia Medicaid members with a live birth paid by Title XIX or Title XXI during the measurement period, regardless of whether the birth occurred in Virginia.[2-2] Deterministic and probabilistic data linkage methods were used by DMAS to match HSAG's list of potential study members to birth registry records.[2-3] DMAS returned a data file to HSAG containing the information from HSAG's original member list and selected birth registry data fields for matched members from both data linkage processes.

All probabilistically or deterministically linked birth registry records were included in the overall eligible population for this focused study. Variations in demographic indicators over time may be attributed to

[2-1] Department of Health and Human Services, Centers for Medicare & Medicaid Services. *EQR Protocol 8: Conducting Focused Studies of Health Care Quality: A Voluntary Protocol for External Quality Review (EQR).* Version 2.0. September 2012. Available at: https://www.medicaid.gov/medicaid/quality-of-care/downloads/eqr-protocol-8.pdf. Accessed on: Aug 28, 2019.

[2-2] The Virginia birth registry contains records of live births; other pregnancy outcomes are not included in this study.

[2-3] The deterministic data linkage sought to match potential study members with birth registry records using only the maternal SSN. The probabilistic data linkage used the Link Plus software program to probabilistically match study members with birth registry records using the following maternal information: last name, first name, SSN, residential street address, city of residence, and five-digit residential ZIP Code.

probabilistic data linkage considerations in each measurement period, in addition to changes in the demographics of women with births paid by Virginia Medicaid.[2-4]

The eligible population was further classified by Medicaid program and service delivery system as follows:

- The Medicaid for Pregnant Women program uses Title XIX (Medicaid State Plan) funding to serve pregnant women with incomes up to 133 percent of the FPL.
- The FAMIS MOMS program uses Title XXI (CHIP Demonstration Waiver) funding to serve pregnant women with incomes up to 200 percent of the FPL. FAMIS MOMS provides benefits similar to Medicaid through the duration of pregnancy and for 60 days postpartum.
- The Other Medicaid category includes births paid by Medicaid that do not fall within the FAMIS MOMS or the Medicaid for Pregnant Women categories.

While the term "Medicaid" is used throughout the report, this term refers to all programs included in the Birth Outcomes Focused Study regardless of funding source (i.e., Title XIX or Title XXI).

Births to women enrolled in the FAMIS MOMS program at delivery were further categorized into a study population and a comparison group depending on the timing and length of enrollment. The study population included women covered by FAMIS MOMS on the date of delivery and continuously enrolled in any Medicaid program for a minimum of 61 days prior to, and including, the date of delivery. The comparison group consisted of women covered by FAMIS MOMS on the date of delivery with continuous enrollment of 60 days or less in any Medicaid program prior to the date of delivery.

National data for CY 2018 available from NVSS were used to identify national averages for selected study indicators for comparison to Virginia Medicaid results.[2-5] The NVSS obtains data from State birth registries and includes all births, but because individual states' birth registries may not collect payment information, NVSS data do not report birth statistics by payor.

[2-4] HSAG provided standard instructions for probabilistically linking data during each study period. However, different individuals from DMAS and VDH conducted the probabilistic linkages for the 2017–18 and 2018–19 studies, resulting in a variable percentage of probable birth record linkages that were manually reviewed for each measurement period. As a result, the 2017–18 measurement periods (i.e., births occurring in CY 2016 and CY 2017) have fewer probabilistically linked records that may have been confirmed through manual review. Affected birth records tend to include women without SSNs and with differences in the names listed in the Medicaid and birth registry systems (e.g., hyphenated and/or difficult to spell names).

[2-5] Martin JA, Hamilton BE, Osterman MJK, et al. Births: Final Data for 2018. National Vital Statistics Reports. 2019; 68(13). Hyattsville, MD: National Center for Health Statistics. 2019. Available at: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_13-508.pdf. Accessed on: Jan 24, 2020.

Study Indicators

The following subsections define the four indicators used to assess the study questions among singleton, live births paid by Virginia Medicaid during the measurement period, as well as provide brief background information in support of each indicator as a birth outcome.

The percentage of births with an APNCU Index (i.e., the Kotelchuck Index) score in the "Adequate" or "Adequate Plus" categories.

Early and Adequate Prenatal Care

The adequacy of prenatal care received during pregnancy has been associated with lower incidence of poor birth outcomes, such as preterm delivery and low-birth-weight births.[2-6] Moreover, women who do not receive adequate prenatal care during pregnancy risk complications that may not be appropriately managed or go completely undetected, resulting in the possibility of adverse outcomes for the mother and baby.[2-7] The APNCU Index (i.e., the Kotelchuck Index) uses birth certificate information to assess prenatal care in relation to two separate and distinct components. The first component measures initiation of care using the month that prenatal care began. The second component measures adequacy of received services measured by the number of prenatal visits. The two components are combined into a single prenatal care utilization composite score. Higher composite scores on the APNCU Index are assigned to women who initiate prenatal care early in pregnancy and complete at least 80 percent of the visits expected based on the time frame, adjusted for gestational age at prenatal care initiation and the infant's gestational age at delivery.[2-8] Table 2-1 shows the composite score categories and criteria defining each category.

Table 2-1—APNCU Index Criteria for Adequacy of Prenatal Care Visits

APNCU Index Category	Number of Prenatal Care Visits
Missing Information	Information on the number of prenatal care visits is unavailable
Inadequate Prenatal Care	Less than 50% of expected visits
Intermediate Prenatal Care	50% to 79% of expected visits

[2-6] Krueger PM, Scholl TO. Adequacy of prenatal care and pregnancy outcome. *The Journal of the American Osteopathic Association*. 2000; 100(8):485–492.

[2-7] U.S. Department of Health and Human Services, Health Resources and Services Administration. Prenatal—First Trimester Care Access. Rockville, MD: U.S. Department of Health and Human Services. Available at: https://www.hrsa.gov/sites/default/files/quality/toolbox/pdfs/prenatalfirsttrimestercareaccess.pdf. Accessed on: Nov 26, 2019.

[2-8] Kotelchuck M. An evaluation of the Kessner Adequacy of Prenatal Care Index and a proposed Adequacy of Prenatal Care Utilization Index. *American Journal of Public Health*. 1994; 84(9):1414–1420.

APNCU Index Category	Number of Prenatal Care Visits
Adequate Prenatal Care	80% to 109% of expected visits
Adequate Plus Prenatal Care	110% or more of expected visits

In 2003, a revised version of the nationally standard birth certificate was released, which captured prenatal care information, including the month prenatal care was initiated and the number of visits up to delivery. Virginia implemented the 2003 Revised Standard Certificate of Live Birth in 2012, and national benchmarks for assessing adequacy of prenatal care were established for those states that initiated consistent reporting of this information.[2-9] Healthy People 2020 published a national baseline in which 70.5 percent of women received early and adequate prenatal care during 2007,[2-10] with an initial goal of 77.6 percent and a 2019 revised goal of 83.2 percent of women with early and adequate prenatal care by 2020.[2-11] To align with the CY 2018 measurement period, DMAS opted to compare study indicator findings to the Healthy People 2020 goal of 77.6 percent. Note that this goal is assessed nationally using NVSS data that do not consistently report birth statistics by payor.

Preterm Births[2-12]

The percentage of births occurring before 37 completed weeks of gestation.

In 2018, preterm delivery affected approximately one of every 10 infants born in the United States. Preterm delivery (births prior to 37 weeks of gestation) is a leading cause of infant mortality, and 17 percent of U.S. infant deaths in 2017 were attributable to causes related to preterm birth and low birth weight (LBW). Infants born prematurely are also at higher risk for persistent and life-long health issues, such as developmental disabilities, cerebral palsy, respiratory problems, hearing and vision problems, and feeding issues. Furthermore, preterm births can result in emotional and financial burdens for families.[2-13]

[2-9] PeriStats [Internet]. White Plains, NY: March of Dimes Perinatal Data Center. Available at: https://www.marchofdimes.org/peristats/popup.aspx?width=50%&height=40%&s=calc&reg=&top=&id=23. Accessed on: Nov 26, 2019.

[2-10] The baseline rate was based on CY 2007 data from the 22 states that consistently reported prenatal care adequacy on the 2003 standard birth certificate.

[2-11] Healthy People 2020 [Internet]. Washington, DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Available at: http://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health/objectives. Accessed on: Nov 26, 2019.

[2-12] Newborns' estimated gestational age for this indicator is based on the Clinical Estimate of Gestation (CEG) provided on the birth certificate. Birth certificate records with missing CEG values were classified as "unknown gestational age" or excluded from analysis based on number of identified cases.

[2-13] Division of Reproductive Health, Centers for Disease Control and Prevention. Preterm Birth. Atlanta, GA: Centers for Disease Control and Prevention. Available at: https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pretermbirth.htm. Accessed on: Nov 26, 2019.

Although this topic has been studied extensively, the underlying causes of preterm births are not completely understood. The causes of preterm birth are multifactorial and include genetic, social, and environmental circumstances, as well as multiple gestations (twins, triplets, etc.), which have increased due to the increasing prevalence of assisted reproductive technology.[2-14] Some studies have found that among multiparous women, regardless of demographic factors and excluding multiple gestation births, a previous preterm birth has been found as the most influential risk factor for a woman to have a subsequent preterm birth.[2-15]

Although demographic and genetic factors associated with preterm delivery cannot be completely mitigated through clinical intervention, preconception care (i.e., care prior to the start of a pregnancy) and prenatal care may provide clinicians opportunities to monitor and address potential causes of preterm delivery.[2-16]

Birth Weight

The percentage of newborns weighing less than 2,500 grams at birth.

Infants born weighing less than 2,500 grams (5 pounds, 8 ounces) are considered LBW infants and, compared to normal weight infants, may be at a higher risk for health problems. Common health complications that LBW infants may experience include underdeveloped lungs and respiratory problems, an inability to maintain body temperature, difficulty feeding and gaining weight, and infection. Additionally, these LBW infants may experience long-term issues, such as delayed motor and social development and learning disabilities, and they may have a higher risk of health conditions, such as diabetes and high blood pressure, later in life.[2-17] LBW affects approximately one in 12 babies born in the United States.[2-18]

Infants weighing less than 1,500 grams (3 pounds, 5 ounces) are considered to be very low birth weight (VLBW) infants and have a greater risk for multiple health problems, including cerebral palsy, developmental delay, intellectual disability, visual and hearing impairments, chronic lung disease,

[2-14] Dunietz GL, Holzman C, McKane P, et al. Assisted reproductive technology and the risk of preterm birth among primiparas. Fertility and Sterility. 2015; 103(4):974-979.e1.

[2-15] Stubblefield PG, Coonrod DV, Reddy UM, et al. The clinical content of preconception care: Reproductive history. *American Journal of Obstetrics and Gynecology*. 2008; 10.048(suppl):S373–S383.

[2-16] Goldenberg RL, Culhane JF, Iams JD, et al. Epidemiology and causes of preterm birth. The Lancet. 2009; 371(9606):75–84.

[2-17] National Center for Environmental Health, Environmental Health Tracking Branch. Centers for Disease Control and Prevention. Reproductive and Birth Outcomes. Atlanta, GA: Centers for Disease Control and Prevention. Available at: https://ephtracking.cdc.gov/showRbLBWGrowthRetardationEnv. Accessed on: Nov 26, 2019.

[2-18] March of Dimes. Low birthweight. White Plains, NY: March of Dimes. Available at: http://www.marchofdimes.org/baby/low-birthweight.aspx. Accessed on: Nov 26, 2019.

neurological problems, and sudden infant death syndrome (SIDS).[2-19] Nearly all infants born with VLBW will need specialized care in a neonatal intensive care unit (NICU) until they are healthy enough to be released. NICU care is associated with a financial burden; although VLBW births account for approximately 1.5 percent of all live births in the United States, these births represent 30 percent of newborn healthcare costs and are among the most expensive of all patients.[2-20]

Early Elective Deliveries[2-21]

The percentage of women with an elective vaginal delivery or elective cesarean delivery at ≥ 37 completed weeks of gestation and < 39 completed weeks of gestation.

A 2007 survey of almost 20,000 births throughout the United States revealed that 5 percent of all births were electively delivered prior to 39 weeks of gestation, in violation of American College of Obstetricians and Gynecologists (ACOG) and American Academy of Pediatrics (AAP) guidelines.[2-22] Early elective deliveries often lead to infants being born too early, increasing the risk of LBW, feeding problems, lower brain mass, and respiratory distress syndrome (RDS).

Women and their healthcare providers should assess all risks associated with allowing a pregnancy to continue until labor begins, only opting for a delivery prior to 39 completed weeks of gestation when medically necessary.[2-23] In addition to the risks to the infant, early elective deliveries are associated with an increased risk of maternal postpartum depression, increased hospital costs, and maternal complications associated with cesarean delivery.[2-24]

[2-19] McCallie KR, Lee HC, Mayer O, et al. Improved outcomes with a standardized feeding protocol for very low birth weight infants. *Journal of Perinatology*. 2011; 31:S61–S67.
[2-20] Johnson TJ, Patel AL, Jegier B, et al. The cost of morbidities in very low birth weight infants. *The Journal of Pediatrics*. 2013; 162(2):243–49.
[2-21] This measure was aligned to the Elective Delivery measure from the Perinatal Care measure set, published by the Joint Commission. Available at: https://manual.jointcommission.org/releases/TJC2018B1/MIF0166.html. Accessed on: Aug 28, 2019.
[2-22] Joint Commission National Quality Measures (v2018B1). Measure Set: Perinatal Care. Available at: https://manual.jointcommission.org/releases/TJC2018B1/MIF0166.html. Accessed on: Jan 2, 2020.
[2-23] National Institute for Health Care Management. Born Too Early: Improving Maternal & Child Health by Reducing Early Elective Deliveries. March 2014. Available at: https://www.nihcm.org/pdf/Early_Elective_Delivery_Prevention_Brief_2014.pdf. Accessed on: Jan 2, 2020.
[2-24] Maslow AS and Sweeney AL. Elective Induction of Labor as a Risk Factor for Cesarean Delivery Among Low-Risk Women at Term. Obstetrics & Gynecology. 2000; 95:917-922.

Study Indicator Results

Study indicator results were limited to singleton births, defined using the Plurality field in the birth registry data. Since multiple gestation births are subject to different clinical guidelines, results for multiple births are limited to introductory findings and the analytic dataset supplied to DMAS.

Results for each study indicator were calculated among demographic categories for the CY 2018 measurement period. HSAG used Chi-square tests to assess statistically significant differences between the CY 2018 study population and comparison group for each indicator within the FAMIS MOMS program. In addition, Chi-square tests were used to determine if statistically significant differences were observed between overall CY 2016 to CY 2018 study indicator results.

3. Findings

Table 3-1 presents the overall number of births among Virginia Medicaid or FAMIS MOMS recipients paid by Title XIX or Title XXI during each measurement period, as well as the number and percentage of multiple gestation and singleton births.

Table 3-1—Overall Virginia Medicaid and FAMIS MOMS Births, CY 2016–2018

Overall Births	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
Total Births	32,419	100.0	31,708	100.0	35,002	100.0
Multiple Gestation Births	*578*	*1.8*	*566*	*1.8*	*1,276*	*3.6*
Singleton Births	*31,841*	*98.2*	*31,142*	*98.2*	*33,726*	*96.4*

While HSAG identified an increased number of CY 2018 births over the prior years, this change may be partially attributable to variations over time in the level of manual review required for each year's probabilistically linked birth records. Additionally, multiple gestation pregnancies are associated with different patterns of clinical care, and subsequent study findings are limited to singleton births. While HSAG identified the multiple gestation births in analytic data, these births were excluded from study indicator calculations for each measurement period.

Table 3-2 presents the overall number of singleton births among Virginia Medicaid or FAMIS MOMS recipients paid by Title XIX or Title XXI during each measurement period from CY 2016 through CY 2018, as well as the number and percentage of births by key stratifications. Singleton births include a limited number of births for which Medicaid coverage was limited to emergency services only.

Table 3-2—Singleton Births by Medicaid Program, Medicaid Delivery System, and Emergency Only Service Benefits, CY 2016–CY 2018*

Overall Births	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
Singleton Births	31,841	100.0	31,142	100.0	33,726	100.0
Medicaid Program						
FAMIS MOMS	1,549	4.9	1,621	5.2	1,771	5.3
Medicaid for Pregnant Women	24,312	76.4	23,618	75.8	25,860	76.7
Other Medicaid	5,980	18.8	5,903	19.0	6,095	18.1
Medicaid Delivery System						
Fee-for-Service (FFS)	8,160	25.6	7,887	25.3	9,714	28.8

Overall Births	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
Managed Care	23,681	74.4	23,255	74.7	24,012	71.2
Births Covered by Emergency Only Benefits						
Emergency Only Benefits	1,116	3.5	971	3.1	2,409	7.1

* Due to rounding, the percentages in each column may not sum to 100 percent.

Detailed information on maternal demographic characteristics by Medicaid program and service delivery system are presented in Appendix A.

Study Indicator Findings by Selected Demographic Characteristics

Overall, a larger percentage of White, Non-Hispanic women received early and adequate prenatal care compared to women of other races/ethnicities, though the study indicator result was still lower than the revised Healthy People 2020 goal. For Hispanic women of any race, rates of both preterm births and low birthweight infants were lower than the national benchmarks, despite having the largest percentage of women with inadequate prenatal care. Consistent with national birth data, study indicator results showed poor outcomes for Black, Non-Hispanic women, with lower rates of early and adequate prenatal care, and higher rates of early elective deliveries, preterm births, and low birthweight infants compared to women of other races/ethnicities. Table 3-3 presents the study indicator results by race/ethnicity within each measurement period.

Table 3-3—Overall Study Indicator Findings Among Singleton Births by Race/Ethnicity, CY 2016–CY 2018

Study Indicator	CY 2018 National Benchmark*	CY 2016		CY 2017		CY 2018	
		n	%	n	%	n	%
White, Non-Hispanic							
Births with Early and Adequate Prenatal Care	77.6%	10,042	75.9	9,572	75.6	9,665	75.3
Births with Inadequate Prenatal Care	*N/A*	*1,981*	*15.0*	*1,938*	*15.3*	*1,942*	*15.1*
Preterm Births (<37 Weeks Gestation)	8.2%	1,169	8.5	1,109	8.4	1,167	8.3
Newborns with Low Birth Weight (<2,500g)	6.6%	993	7.2	962	7.3	1,079	7.7
Early Elective Deliveries	N/A	-	-	-	-	1,748	12.4
Black, Non-Hispanic							
Births with Early and Adequate Prenatal Care	77.6%	8,509	72.0	8,231	70.4	8,375	71.0
Births with Inadequate Prenatal Care	*N/A*	*2,009*	*17.0*	*2,098*	*18.0*	*2,079*	*17.6*
Preterm Births (<37 Weeks Gestation)	8.2%	1,360	11.4	1,340	11.3	1,421	11.5

Study Indicator	CY 2018 National Benchmark*	CY 2016		CY 2017		CY 2018	
		n	%	n	%	n	%
Newborns with Low Birth Weight (<2,500g)	6.6%	1,436	12.0	1,436	12.1	1,521	12.3
Early Elective Deliveries	N/A	-	-	-	-	1,786	14.5
Hispanic, Any Race							
Births with Early and Adequate Prenatal Care	77.6%	2,688	69.4	2,484	67.3	3,707	68.4
Births with Inadequate Prenatal Care	*N/A*	*727*	*18.8*	*776*	*21.0*	*1,065*	*19.7*
Preterm Births (<37 Weeks Gestation)	8.2%	328	8.4	295	7.8	446	7.8
Newborns with Low Birth Weight (<2,500g)	6.6%	228	5.8	238	6.3	350	6.1
Early Elective Deliveries	N/A	-	-	-	-	738	13.0
Other/Unknown							
Births with Early and Adequate Prenatal Care	77.6%	1,521	71.2	1,566	72.7	1,106	71.6
Births with Inadequate Prenatal Care	*N/A*	*413*	*19.3*	*399*	*18.5*	*282*	*18.3*
Preterm Births (<37 Weeks Gestation)	8.2%	148	6.9	148	6.7	134	8.3
Newborns with Low Birth Weight (<2,500g)	6.6%	151	7.0	137	6.2	134	8.3
Early Elective Deliveries	N/A	-	-	-	-	203	12.6

* The national benchmark for *Births with Early and Adequate Prenatal Care* is the Healthy People 2020 goal, excluding the 2019 update. The national benchmarks for *Preterm Births* and *Newborns with Low Birth Weight* were identified from NVSS final data for 2018. National benchmarks are not available for comparison for *Early Elective Deliveries*.

Birth outcomes may be influenced by a woman's prior pregnancy experiences and knowledge, and 29.6 percent (n=9,970) of women had no prior pregnancies (i.e., primigravida) reflected in their birth registry data. The percentage of primigravida women showed expected variations by age; women younger than 24 years were more likely to have had no prior pregnancies compared to women 25 years and older. Primigravidity varied minimally by race/ethnicity, ranging from 28.2 percent of women who were Hispanic, Any Race to 30.2 percent of women who were White, Non-Hispanic. Nominal variations in primigravidity by race/ethnicity may be associated with other maternal characteristics (e.g., age).

Maternal demographic characteristics for Virginia's CY 2018 singleton births were aligned with the maternal region of residence. As such, study indicator results varied by geographic region.[3-1] The Northern/Winchester region had the lowest rate of women with early and adequate prenatal care and the highest rate of women with inadequate prenatal care; however, women in this region had the lowest

[3-1] Geographic region boundaries changed between Medallion 3.0 and Medallion 4.0; for consistency, HSAG assigned each birth to the mother's region of residence using the Medallion 4.0 regions, regardless of whether the birth occurred before or after the Medallion program transition.

rates of preterm birth and low birthweight infants. Note that while the Southwest region had the second-highest rate of women receiving early and adequate prenatal care, 36.2 percent (n=709) of singleton births to women in this region were missing prenatal care data, suggesting a systematic data quality issue. Table 3-4 presents the CY 2018 study indicator results by maternal region of residence, using the Medallion 4.0 regions.

Table 3-4—Overall Study Indicator Findings Among CY 2018 Singleton Births by Medallion 4.0 Region of Maternal Residence*

Medallion 4.0 Region of Maternal Residence	Births with Early and Adequate Prenatal Care		Births with Inadequate Prenatal Care		Preterm Births (< 37 Weeks of Gestation)		Newborns with Low Birth Weight (<2,500g)		Early Elective Deliveries	
	n	%	n	%	n	%	n	%	n	%
Central	5,816	70.5	1,125	13.6	812	9.6	785	9.3	1,309	15.5
Charlottesville / Western	3,212	77.0	689	16.5	379	8.8	397	9.2	501	11.6
Northern / Winchester	5,305	68.8	1,677	21.7	640	7.8	592	7.2	994	12.1
Roanoke / Alleghany	1,892	72.7	421	16.2	252	8.7	242	8.3	348	12.0
Southwest	942	75.5	178	14.3	179	9.2	181	9.3	260	13.3
Tidewater	5,685	74.8	1,277	16.8	906	11.5	887	11.3	1,063	13.5
All Regions	**22,853**	**72.3**	**5,368**	**17.0**	**3,168**	**9.4**	**3,084**	**9.1**	**4,475**	**13.3**

* Totals in the All Regions row include singleton births with no region listed.

Detailed study indicator findings by maternal demographic characteristics, including maternal age at delivery, race/ethnicity, geographic region of residence, and citizenship status, are presented in Appendix B. HSAG also delivered an analytic dataset to DMAS containing beneficiary-level study indicator results and stratification categories to support ad hoc analyses and ongoing quality improvement initiatives.

Study Indicator Findings by Medicaid Characteristics

The current study indicator results are influenced by a woman's ability to access prenatal care, a fact affected by her enrollment. Additionally, women may have changed Medicaid delivery systems or MCOs while pregnant; analytic stratifications in this study reflect the Medicaid delivery system, MCO, and Medicaid program in which the woman was enrolled at the time of delivery. Most women with a CY 2018 singleton birth were continuously enrolled with DMAS for at least 180 days prior to delivery (71.6 percent, n=24,163), and only 11.0 percent (n=3,697) of women were enrolled with DMAS for 30 or fewer days prior to delivery.

Study Indicator Findings by Medicaid Delivery System

Study indicator results varied by Medicaid delivery system, and a larger percentage of women enrolled in managed care had early and adequate prenatal care compared to women receiving Medicaid on an FFS basis. However, *Births with Early and Adequate Prenatal Care* among women in managed care was the only indicator with a statistically significant decrease between CY 2016 and CY 2018. While indicator results for other groups did not compare favorably to national benchmarks, these indicator results remained stable over time. Additionally, women in managed care were more likely to have an early elective delivery than women in FFS. Table 3-5 presents the study indicator results by Medicaid delivery system within each measurement period.

Table 3-5—Overall Study Indicator Findings Among Singleton Births by Medicaid Delivery System, CY 2016–CY 2018

Study Indicator	CY 2018 National Benchmark*	CY 2016		CY 2017		CY 2018		Statistically Significant Difference (Yes/No)
		n	%	n	%	n	%	
Fee-for-Service								
Births with Early and Adequate Prenatal Care	77.6%	5,619	70.7	5,366	70.5	6,281	70.2	No
Births with Inadequate Prenatal Care	*N/A*	*1,452*	*18.3*	*1,449*	*19.1*	*1,644*	*18.4*	*No*
Preterm Births (<37 Weeks Gestation)	8.2%	849	10.4	810	10.3	978	10.1	No
Newborns with Low Birth Weight (<2,500g)	6.6%	747	9.2	726	9.2	903	9.3	No
Early Elective Deliveries	N/A	-	-	-	-	1,045	10.8	N/A
Managed Care								
Births with Early and Adequate Prenatal Care	77.6%	17,141	74.2	16,487	73.0	16,572	73.2	Yes
Births with Inadequate Prenatal Care	*N/A*	*3,678*	*15.9*	*3,762*	*16.7*	*3,724*	*16.4*	*No*
Preterm Births (<37 Weeks Gestation)	8.2%	2,156	9.1	2,082	9.0	2,190	9.1	No
Newborns with Low Birth Weight (<2,500g)	6.6%	2,061	8.7	2,047	8.8	2,181	9.1	No
Early Elective Deliveries	N/A	-	-	-	-	3,430	14.3	N/A

* The national benchmark for *Births with Early and Adequate Prenatal Care* is the Healthy People 2020 goal, excluding the 2019 update. The national benchmarks for *Preterm Births* and *Newborns with Low Birth Weight* were identified from NVSS final data for 2018. National benchmarks are not available for comparison for *Early Elective Deliveries*.

Due to the transition between the Medallion 3.0 and Medallion 4.0 programs during CY 2018, indicator results related to a woman's MCO at delivery were only available for CY 2018. Although Kaiser had a limited number of births, its indicator results for preterm births, LBW infants, and early elective deliveries were notably better than the other MCOs. However, Kaiser also had a dramatically higher rate of births with inadequate prenatal care, compared to the other MCOs and to FFS. Table 3-6 presents the study indicator results by Medicaid delivery system and MCO during CY 2018.

Table 3-6—CY 2018 Study Indicator Findings Among Singleton Births by Medicaid Delivery System and MCO

Medicaid Delivery System at Delivery*	Births with Early and Adequate Prenatal Care		Births with Inadequate Prenatal Care		Preterm Births (< 37 Weeks of Gestation)		Newborns with Low Birth Weight (<2,500g)		Early Elective Deliveries	
	n	%	n	%	n	%	n	%	n	%
Fee-for-Service	6,281	70.2	1,644	18.4	978	10.1	903	9.3	1,045	10.8
Managed Care	16,572	73.2	3,724	16.4	2,190	9.1	2,181	9.1	3,430	14.3
Aetna	*1,178*	*76.0*	*201*	*13.0*	*165*	*10.0*	*147*	*8.9*	*243*	*14.8*
Anthem	*6,178*	*72.9*	*1,402*	*16.5*	*806*	*9.1*	*787*	*8.9*	*1,292*	*14.6*
INTotal	*716*	*70.7*	*197*	*19.4*	*82*	*7.2*	*85*	*7.4*	*153*	*13.4*
*Kaiser**	*249*	*54.8*	*153*	*33.7*	*26*	*5.5*	*34*	*7.2*	*55*	*11.7*
Magellan	*204*	*66.0*	*69*	*22.3*	*23*	*7.0*	*25*	*7.6*	*44*	*13.4*
Optima	*4,012*	*75.3*	*801*	*15.0*	*533*	*9.6*	*531*	*9.5*	*836*	*15.0*
UHCCP	*328*	*67.5*	*91*	*18.7*	*49*	*9.7*	*41*	*8.1*	*69*	*13.7*
VA Premier	*3,707*	*73.8*	*810*	*16.1*	*506*	*9.2*	*531*	*9.6*	*738*	*13.4*
Total	**22,853**	**72.3**	**5,368**	**17.0**	**3,168**	**9.4**	**3,084**	**9.1**	**4,475**	**13.3**

* During the Medallion 4.0 transition, members enrolled with Kaiser moved to VA Premier, INTotal was phased out, and Magellan was active beginning in August 2018. As such, interpret study indicator findings for these MCOs with caution due to the partial measurement period for singleton births among women enrolled with these MCOs at delivery.

It is important to note that the MCO-level study indicator results should be considered in the context of the Medallion 4.0 transition and that prior years' data were not available for comparison. Specifically, INTotal was phased out during the transition, Kaiser's members were moved to VA Premier, and Magellan was active beginning in August 2018. As a result of these changes, current study results are limited to a woman's MCO at the time of delivery, without consideration for any other MCO(s) that may have been responsible for her prenatal care. However, these results offer a baseline from which to gauge the MCOs' performance under Medallion 4.0.

Over one-third of women enrolled in FFS at the time of delivery were continuously enrolled in any Medicaid program for 30 days or less at the time of delivery. Additionally, women enrolled in FFS at the time of delivery had high percentages of preterm births and low birthweight infants. Women in managed care were more likely to be continuously enrolled in any Medicaid program for at least 180 days prior to delivery (i.e., initial enrollment during the second trimester of pregnancy or earlier). While the women in managed care were more likely to have had early and adequate prenatal care and lower rates of preterm birth, they also had a higher percentage of early elective deliveries compared to women in FFS. Table 3-7 presents the distribution of CY 2018 singleton births by Medicaid delivery system, MCO, and length of the mother's continuous enrollment in any Medicaid program prior to delivery.

Table 3-7—CY 2018 Singleton Births by Medicaid Delivery System, MCO, and Length of Continuous Enrollment Prior to Delivery

Medicaid Delivery System at Delivery	≤ 30 Days		31–90 Days		91–180 Days		> 180 Days		Total	
	n	%	n	%	n	%	n	%	n	%
Fee-for-Service	3,658	37.7	1,213	12.5	1,167	12.0	3,676	37.8	**9,714**	**100.0**
Managed Care	39	0.2	684	2.8	2,802	11.7	20,487	85.3	**24,012**	**100.0**
Aetna	*2*	*0.1*	*71*	*4.3*	*209*	*12.7*	*1,364*	*82.9*	***1,646***	***100.0***
Anthem	*19*	*0.2*	*232*	*2.6*	*1,094*	*12.4*	*7,504*	*84.8*	***8,849***	***100.0***
INTotal	*2*	*0.2*	*51*	*4.5*	*163*	*14.3*	*926*	*81.1*	***1,142***	***100.0***
Kaiser	*1*	*0.2*	*30*	*6.4*	*115*	*24.5*	*324*	*68.9*	***470***	***100.0***
Magellan	-	-	*33*	*10.0*	*92*	*28.0*	*204*	*62.0*	***329***	***100.0***
Optima	*10*	*0.2*	*127*	*2.3*	*529*	*9.5*	*4,899*	*88.0*	***5,565***	***100.0***
UHCCP	-	-	*30*	*5.9*	*101*	*20.0*	*374*	*74.1*	***505***	***100.0***
VA Premier	*5*	*0.1*	*110*	*2.0*	*499*	*9.1*	*4,892*	*88.8*	***5,506***	***100.0***
Total	**3,697**	**11.0**	**1,897**	**5.6**	**3,969**	**11.8**	**24,163**	**71.6**	**33,726**	**100.0**

Birth registry data and the adequacy of prenatal care utilization metric consider the trimester in which a woman began her prenatal care, regardless of the payor for those services. As such, it is possible that a woman could begin prenatal care during her first trimester of pregnancy but only complete enrollment during the second or third trimester. Table 3-8 presents the distribution of CY 2018 singleton births by Medicaid delivery system, MCO, and the trimester of prenatal care initiation regardless of payor.

Table 3-8—CY 2018 Singleton Births by Medicaid Delivery System, MCO, and Trimester of Prenatal Care Initiation

Medicaid Delivery System at Delivery	First Trimester		Second Trimester		Third Trimester		No Prenatal Care		Unknown Trimester		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Fee-for-Service	6,549	67.4	1,829	18.8	583	6.0	352	3.6	401	4.1	**9,714**	**100.0**
Managed Care	16,910	70.4	4,658	19.4	1,101	4.6	315	1.3	1,028	4.3	**24,012**	**100.0**
Aetna	*1,230*	*74.7*	*261*	*15.9*	*59*	*3.6*	*18*	*1.1*	*78*	*4.7*	***1,646***	***100.0***
Anthem	*6,258*	*70.7*	*1,831*	*20.7*	*397*	*4.5*	*126*	*1.4*	*237*	*2.7*	***8,849***	***100.0***
INTotal	*719*	*63.0*	*232*	*20.3*	*63*	*5.5*	*13*	*1.1*	*115*	*10.1*	***1,142***	***100.0***
Kaiser	*235*	*50.0*	*149*	*31.7*	*76*	*16.2*	*4*	*0.9*	*6*	*1.3*	***470***	***100.0***
Magellan	*221*	*67.2*	*65*	*19.8*	*23*	*7.0*	*7*	*2.1*	*13*	*4.0*	***329***	***100.0***

Medicaid Delivery System at Delivery	First Trimester		Second Trimester		Third Trimester		No Prenatal Care		Unknown Trimester		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Optima	*4,119*	*74.0*	*992*	*17.8*	*224*	*4.0*	*89*	*1.6*	*141*	*2.5*	***5,565***	***100.0***
UHCCP	*355*	*70.3*	*103*	*20.4*	*28*	*5.5*	*4*	*0.8*	*15*	*3.0*	***505***	***100.0***
VA Premier	*3,773*	*68.5*	*1,025*	*18.6*	*231*	*4.2*	*54*	*1.0*	*423*	*7.7*	***5,506***	***100.0***
Total	**23,459**	**69.6**	**6,487**	**19.2**	**1,684**	**5.0**	**667**	**2.0**	**1,429**	**4.2**	**33,726**	**100.0**

Study Indicator Findings by Medicaid Program

Similar to the study indicator results by Medicaid delivery system, indicator results varied by Medicaid program at delivery. Indicator results were generally stable across the measurement periods, with only a statistically significant decrease in the percentage of singleton births with early and adequate prenatal care among women in the Medicaid for Pregnant Women program. While the FAMIS MOMS program covers a limited number of women, these women had higher percentages of singleton births with early and adequate prenatal care and lower percentages of preterm births and low birthweight infants compared to the Medicaid for Pregnant Women and Other Medicaid programs in all measurement periods. Table 3-9 presents the study indicator results by Medicaid program within each measurement period.

Table 3-9—Overall Study Indicator Findings Among Singleton Births by Medicaid Program, CY 2016–CY 2018

Study Indicator	CY 2018 National Benchmark*	CY 2016		CY 2017		CY 2018		Statistically Significant Difference (Yes/No)
		n	%	n	%	n	%	
FAMIS MOMS								
Births with Early and Adequate Prenatal Care	77.6%	1,192	79.2	1,233	78.3	1,312	77.5	No
Births with Inadequate Prenatal Care	*N/A*	*201*	*13.4*	*212*	*13.5*	*228*	*13.5*	*No*
Preterm Births (<37 Weeks Gestation)	8.2%	124	8.0	121	7.5	136	7.7	No
Newborns with Low Birth Weight (<2,500g)	6.6%	107	6.9	125	7.7	131	7.4	No
Early Elective Deliveries	N/A	-	-	-	-	239	13.5	N/A
Medicaid for Pregnant Women								
Births with Early and Adequate Prenatal Care	77.6%	17,465	73.7	16,681	72.9	17,656	72.7	Yes
Births with Inadequate Prenatal Care	*N/A*	*3,818*	*16.1*	*3,859*	*16.9*	*4,079*	*16.8*	*Yes*
Preterm Births (<37 Weeks Gestation)	8.2%	2,216	9.1	2,039	8.6	2,285	8.8	No
Newborns with Low Birth Weight (<2,500g)	6.6%	2,089	8.6	1,976	8.4	2,229	8.6	No

Study Indicator	CY 2018 National Benchmark*	CY 2016		CY 2017		CY 2018		Statistically Significant Difference (Yes/No)
		n	%	n	%	n	%	
Early Elective Deliveries	N/A	-	-	-	-	3,452	13.3	N/A
Other Medicaid								
Births with Early and Adequate Prenatal Care	77.6%	4,103	70.2	3,939	68.7	3,885	69.1	No
Births with Inadequate Prenatal Care	*N/A*	*1,111*	*19.0*	*1,140*	*19.9*	*1,061*	*18.9*	*No*
Preterm Births (<37 Weeks Gestation)	8.2%	665	11.1	732	12.4	747	12.3	No
Newborns with Low Birth Weight (<2,500g)	6.6%	612	10.2	672	11.4	724	11.9	Yes
Early Elective Deliveries	N/A	-	-	-	-	784	12.9	N/A

* The national benchmark for *Births with Early and Adequate Prenatal Care* is the Healthy People 2020 goal, excluding the 2019 update. The national benchmarks for *Preterm Births* and *Newborns with Low Birth Weight* were identified from NVSS final data for 2018. National benchmarks are not available for comparison for *Early Elective Deliveries*.

Study Indicator Results Among the FAMIS MOMS Program

The FAMIS MOMS program uses Title XXI (CHIP Demonstration Waiver) funding to serve pregnant women with incomes up to 200 percent of the FPL, and these women account for approximately 5 percent of singleton births in each measurement period. Table 3-10 presents the distribution of women enrolled in FAMIS MOMS at delivery by Medicaid delivery system and measurement period.

Table 3-10—Distribution of Singleton Births Among Women in FAMIS MOMS by Medicaid Delivery System, CY 2016–2018

Medicaid Delivery System at Delivery	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
Fee-for-Service	351	22.7	353	21.8	353	19.9
Managed Care	1,198	77.3	1,268	78.2	1,418	80.1
FAMIS MOMS Singleton Births	**1,549**	**100.0**	**1,621**	**100.0**	**1,771**	**100.0**

Table 3-11 presents the CY 2018 study indicator results for women enrolled in the FAMIS MOMS program at delivery by maternal region of residence, using the Medallion 4.0 regions. As selected regions have a limited number of singleton births, use caution when comparing study indicator findings between regions.

Table 3-11—CY 2018 Study Indicator Findings Among FAMIS MOMS Singleton Births by Medallion 4.0 Region of Maternal Residence*

Medallion 4.0 Region of Maternal Residence	Births with Early and Adequate Prenatal Care		Births with Inadequate Prenatal Care		Preterm Births (< 37 Weeks of Gestation)		Newborns with Low Birth Weight (<2,500g)		Early Elective Deliveries	
	n	%	n	%	n	%	n	%	n	%
Central	328	81.0	29	7.2	38	9.3	32	7.8	61	14.9
Charlottesville/Western	174	86.1	15	7.4	8	3.9	9	4.4	30	14.6
Northern/Winchester	398	68.6	129	22.2	37	6.2	38	6.3	79	13.2
Roanoke/Alleghany	83	81.4	10	9.8	6	5.3	7	6.2	16	14.2
Southwest	34	81.0	5	11.9	5	6.8	3	4.1	8	11.0
Tidewater	295	81.7	40	11.1	42	11.4	42	11.4	45	12.2
All Regions	**1,312**	**77.5**	**228**	**13.5**	**136**	**7.7**	**131**	**7.4**	**239**	**13.5**

* Interpret study indicator findings with caution due to the limited number of region-specific singleton births among women enrolled in FAMIS MOMS.

To aid DMAS' waiver evaluation, HSAG divided women enrolled in FAMIS MOMS at delivery into a study population and comparison group, based on women's length of continuous enrollment prior to delivery:

- The study population included women covered by FAMIS MOMS on the date of delivery and continuously enrolled in any Medicaid program for at least 61 days prior to, and including, the date of delivery. The CY 2018 study population included 1,581 women with singleton births.
- The comparison group consisted of women covered by FAMIS MOMS on the date of delivery with continuous enrollment of 60 days or less in any Medicaid program prior to the date of delivery. The CY 2018 comparison group included 190 women with singleton births.

Study and comparison groups were defined using different continuous enrollment criteria prior to CY 2018, and results cannot be trended over measurement periods. However, the CY 2018 study population outperformed the comparison group, with higher rates of early and adequate prenatal care and lower rates of preterm births and low birthweight infants. Table 3-12 presents the CY 2018 FAMIS MOMS study indicator results by study population and comparison group.

Table 3-12—FAMIS MOMS Study Indicator Findings Among CY 2018 Singleton Births by Study Population and Comparison Group

Study Indicator	CY 2018 National Benchmark*	Comparison Group		Study Population		Statistically Significant Difference (Yes/No)
		n	%	n	%	
Births with Early and Adequate Prenatal Care	77.6%	121	66.5	1,191	78.9	Yes
Births with Inadequate Prenatal Care	*N/A*	*35*	*19.2*	*193*	*12.8*	*Yes*
Preterm Births (< 37 Weeks of Gestation)	8.2%	23	12.1	113	7.1	Yes
Newborns with Low Birth Weight (<2,500g)	6.6%	20	10.5	111	7.0	No
Early Elective Deliveries	N/A	22	11.6	217	13.7	No

* The national benchmark for *Births with Early and Adequate Prenatal Care* is the Healthy People 2020 goal, excluding the 2019 update. The national benchmarks for *Preterm Births* and *Newborns with Low Birth Weight* were identified from NVSS final data for 2018. National benchmarks are not available for comparison for *Early Elective Deliveries*.

4. Conclusions and Recommendations

Conclusions

This study considered four quantitative indicators related to prenatal care and associated birth outcomes among births paid by Virginia Medicaid, and three indicators can be trended over time. Between the CY 2016 and CY 2018 measurement periods, study indicators related to prenatal care, preterm birth, and low birthweight showed a lack of improvement in results for Virginia Medicaid members. Specifically, overall results for the *Births with Early and Adequate Prenatal Care* indicator decreased across the measurement periods, while *Preterm Births* indicator results were stable and *Newborns With Low Birth Weight (<2,500g)* indicator results decreased (i.e., the rate of singleton infants born weighing less than 2,500g increased over time).

DMAS' implementation of the Medallion 4.0 program between August 2018 and December 2018 for MCOs provided an opportunity for DMAS and the MCOs to reassess existing quality improvement strategies related to peripartum care and resulting clinical maternal and neonatal outcomes. However, births during the CY 2018 study period may have occurred prior to the Medallion 4.0 transition, or during the transition period while maternal and child health initiatives were implemented. Due to the timing of the Medallion 4.0 transition, none of the CY 2018 births would have been covered under the Medallion 4.0 program during the entire prenatal period. For example, a woman giving birth on December 31, 2018, would have conceived during April 2018 and ideally initiated prenatal no later than June 2018, two months prior to the earliest date of the phased Medallion 4.0 transition.

However, the CY 2018 study results offer a baseline for future evaluations of birth outcomes under the Medallion 4.0 program. Across the three study indicators with comparable national benchmarks, results for singleton births to women in the managed care program outperformed results for women in the FFS program. However, each of these indicators failed to progress toward national benchmarks between the CY 2016 and CY 2018 measurement periods. Additionally, the CY 2018 *Early Elective Deliveries* results showed a higher percentage of such deliveries among women in managed care, compared to women in FFS.

Additionally, CY 2018 study indicator results varied substantially by geography (i.e., by Medallion 4.0 region), both overall and within the Medicaid program groups. Such findings support the need to assess beneficiaries' access to care, with consideration of local quality improvement initiatives and perinatal services within each region.

The FAMIS MOMS program continued to outperform other Medicaid programs, though it is important to note that women enrolled in FAMIS MOMS have different Medicaid eligibility limits compared to other pregnant women (i.e., FAMIS MOMS covers women with incomes up to 200 percent of the FPL). However, it is beyond the scope of the current study to assess the degree to which study indicator results for women in FAMIS MOMS differ from study indicator results among women in other Medicaid programs on the basis of income-based eligibility requirements. Though limited in number, births to women enrolled in FAMIS MOMS, especially those with continuous enrollment greater than 61 days

prior to delivery, had the highest rate of early and adequate prenatal care, and the lowest rates of preterm birth or low birthweight. While these rates remained stable or slightly decreased over time, the promising results from this program suggest that it could offer a valuable starting point for assessing beneficiaries' satisfaction with care and underlying SDoH that may distinguish these women from other Medicaid beneficiaries.

Study Limitations

Study findings and conclusions may be affected by limitations related to the study design and source data. As such, caveats include, but are not limited to, the following:

- Study indicator and stratification results may be influenced by the accuracy and timeliness of the birth registry data and administrative Medicaid eligibility, enrollment, and demographic data used for calculations.
  - Additionally, three study indicators rely on gestational estimate data from the birth registry. Reliability of these data, especially due to data collection practice variations in individual healthcare facilities, may have a disproportionate influence on regional study indicator results.[4-1]
- National NVSS data for CY 2018 are presented for comparison to Virginia Medicaid results for selected study indicators. Use caution when comparing study results to national benchmarks, as the benchmarks were derived from birth records covered by all payor types and may not mirror birth outcomes among women with births paid by Title XIX or Title XXI.
- The probabilistic data linkage process allows for manual data reviews to confirm or negate a potential match. The degree of manual review for each measurement period may result in annual differences in the number of birth certificates matched to enrollment data. Affected birth records tend to include women without SSNs and with differences in the names listed in the Medicaid and birth registry systems (e.g., names that are hyphenated and/or difficult to spell).
- The Commonwealth of Virginia allows presumptive eligibility for pregnant women to receive outpatient services, including prenatal care. However, DMAS does not cover inpatient care under the assumption that a woman will qualify for Title XIX or Title XXI benefits. The VDSS, the agency responsible for determining Medicaid eligibility in Virginia, allows 10 days to process a Medicaid application from a pregnant woman; 45 days is allowed for processing if the pregnant woman applies for additional services beyond Medicaid (e.g., supplemental nutrition assistance). As such, a pregnant woman new to Medicaid may have up to a 45-day waiting period before being eligible to have inpatient services covered by Title XIX or Title XXI benefits. Women's understanding of Medicaid benefits and the timing of coverage may result in delayed initiation or continuation of prenatal care.

[4-1] Dietz PM, Bombard JM, Hutchings YL, et. al. Validation of obstetric estimate of gestational age on US birth certificates. AM J Obstet Gynecol. Apr 2014; 2010(4): 335.e1-335.e5. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4560346/. Accessed on: Nov 22, 2019.

  - As many pregnant women new to Medicaid may not be covered by Title XIX or Title XXI benefits until their second or third trimester, use caution when interpreting study findings. Due to the multifactorial nature of birth outcomes and the need for pre-pregnancy interventions, a single delivery system or Medicaid program may not have had adequate time to contact new Medicaid beneficiaries and subsequently impact birth outcomes.
- Due to differing methodologies and data sources, study findings are not comparable to HEDIS indicator results assessing timely prenatal care. Specifically, the HEDIS indicator for assessing timely prenatal care does not follow a CY measurement period and requires the woman to be continuously enrolled with the health plan for 43 days prior to delivery through 56 days after delivery.
- Study findings were associated with births occurring during CY 2018. While selected DMAS initiatives may have been effective during the measurement period, study births occurred during the transition between the Medallion 3.0 and the Medallion 4.0 managed care programs and may have been affected by changes to the MCOs and regional definitions. For example, DMAS expanded comprehensive Medicaid coverage beginning January 1, 2019, to include individuals ages 19 through 64 years with income at or below 138 percent of the FPL, including individuals who had not been previously eligible for Medicaid. This expansion may contribute to improved perinatal care, as women in the expansion population will be enrolled in Medicaid prior to pregnancy, allowing for early prenatal care initiation and management of health concerns after the postpartum period without regard to healthcare coverage.

Recommendations

Based on the declining or stable performance among the three study indicators that could be trended across measurement periods, it is important to note that recommendations from the contract year 2017–2018 Birth Outcomes Focused Study may still be relevant. Additionally, DMAS' implementation of the Medallion 4.0 program between August 2018 and December 2018 for Medicaid MCOs provided the opportunity for DMAS and the MCOs to reassess existing quality improvement strategies related to peripartum care and birth outcomes. Therefore, HSAG offers the following recommendations to identify and address potential barriers to perinatal care:

- While the current focused study offers detailed quantitative information on prenatal care and selected birth outcomes among Medicaid beneficiaries, DMAS should consider conducting focus groups among current and former Medicaid beneficiaries to obtain a patient-level perspective on barriers to care among pregnant and postpartum women.
  - Such focus groups may build on listening sessions held in fall 2019 by the Virginia SHHR and provide a structured mechanism for collecting qualitative information on Virginians' prenatal and postpartum experiences of care.
- DMAS has directed its EQRO to conduct a secret shopper survey to assess the degree to which prenatal care providers are meeting appointment timeliness standards for MCOs, and this study will illuminate potential gaps in MCOs' prenatal care provider networks. To address another aspect of access to peripartum care, DMAS should consider adding supplemental survey questions to existing

CAHPS surveys to address beneficiaries' experience of, and satisfaction with, prenatal and postpartum care.

- The current focused study allows DMAS to address metrics that rely on birth registry data, though such data offer limited information related to SDoH. If feasible, DMAS may consider augmenting future birth outcomes focused studies with EHR data that would allow for a comprehensive assessment of pregnant and postpartum women across their past and current medical and social history.
- Individual hospitals may have protocols prohibiting the use of elective inductions prior to 39 completed weeks of gestation, and DMAS may consider implementing this type of "hard-stop" policy at the State level, in alignment with the APHA's recommended actions to reduce early elective deliveries.[4-2]
  - A "hard-stop" policy denies deliveries scheduled before 39 weeks of completed gestation without formal documentation of medical necessity.

DMAS' Input on Prior Focused Study Recommendations

In addition to the recommendations noted above, DMAS provided the following detailed feedback to HSAG regarding quality improvement actions and initiatives related to the 2017–18 Birth Outcomes Focused Study.

The 2017–18 Birth Outcomes Focused Study was published in March 2019, and the newly implemented Medallion 4.0 program had seven months of operational experience. Medallion 4.0 serves infants, children, adolescents, pregnant women, caretaker adults, and newly eligible adults under the Medicaid expansion program. Benefit coverage includes prenatal and postpartum care; vaccinations; well-child visits; sick visits; acute care; pharmacy; addiction recovery and treatment services; and behavioral health services, including community mental health rehabilitation services. Prior to January 1, 2019, however, women eligible for Medicaid due to pregnancy may have only been eligible to receive healthcare coverage through their 60th day after delivery.

Past and Current Activities

DMAS maintains a dedicated Maternal and Child Health Unit that focuses on issues related to pregnancy across managed care and FFS delivery systems in addition to the following specific activities:

- Beginning January 1, 2019, more adults living in Virginia were able to access quality, low-cost, health insurance through Virginia Medicaid (i.e., "Medicaid Expansion"). The new adult coverage

[4-2] Reducing Non Medically Indicated Elective Inductions of Labor (Policy Number 20141, Dated Nov 18, 2014). American Public Health Association. Available at: https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2015/01/23/09/03/reducing-non-medically-indicated-elective-inductions-of-labor. Accessed on: Jan 13, 2020.

group includes individuals ages 19 through 64 years with income at or below 138 percent of the FPL, including individuals who have not been previously eligible for Medicaid. Individuals in the new adult coverage group have comprehensive healthcare coverage, with services provided through existing Medicaid programs. Most eligible individuals are enrolled in managed care, in either the Medallion 4.0 program or the CCC Plus program. As a result of Medicaid Expansion, more women will be eligible to enroll in Medicaid prior to pregnancy, ensuring coverage for early prenatal care initiation and management of health concerns after the postpartum period.

- In June 2019, Virginia Governor Ralph Northam announced his commitment to reduce racial disparities in maternal mortality by 2025. In the press release from the Office of the Governor, Governor Northam stated, "this is a worthy goal that is perfectly within reach, and I am directing leaders in my administration and in the healthcare and human services community to develop strategies to get us there by 2025."[4-3]
- In July 2019, to meet Governor Northam's goals to support health equity, DMAS announced the Healthy Birthday Virginia initiative to ensure mothers and babies celebrate the first birthday together.[4-4] DMAS, in the early stages of this initiative, began drafting documentation that will provide analysis, categorical actions required to achieve the metrics, and factors for success.
  - The Healthy Birthday Virginia initiative will add new services, providers, community partners and resources; require state and local infrastructure modifications; and tackle challenging issues, such as exploring ways to increase training for healthcare professionals regarding implicit bias and cultural competency. The initiative will continue DMAS' collaborative work with partners to find ways to improve the efficiency and effectiveness of strategies, policies, and procedures to positively impact maternity care for DMAS beneficiaries.
- In April 2019, Virginia was selected as one of eight U.S. states to participate in the NASHP Maternal and Child Health Policy Innovations Program (MCH PIP) policy academy that will help to identify, promote, and advance innovative state-level policy initiatives to improve access to care for Medicaid-eligible pregnant and parenting women with or at risk of SUD through health care delivery system transformation.[4-5]
- DMAS partnered with VDH to participate during Year III (2018–2019) of the CDC's 6|18 project, with a focus on smoking cessation.
- Virginia is a recipient of the CMS SUPPORT Act grant fund to perform a comprehensive analysis of the current capacity, barriers, and gaps in the SUD treatment network, focusing on pregnant women and parenting moms.

[4-3] Commonwealth of Virginia, Office of the Governor. "Governor Northam Announces Goal to Eliminate Racial Disparity in Virginia Maternal Mortality Rate by 2025." Available at: https://www.governor.virginia.gov/newsroom/all-releases/2019/june/headline-840941-en.html. Accessed on: Dec 20, 2019.

[4-4] Commonwealth of Virginia, Department of Medical Assistance Services. "Virginia Medicaid Announces Strategies to End Maternal and Infant Mortality Among Members." Available at: https://www.dmas.virginia.gov/files/links/3961/Press%20Release%20for%20Healthy%20Birthday%20Virginia%20(07.01.2019).pdf. Accessed on: Dec 20, 2019.

[4-5] National Academy for State Health Policy. "New Eight-State Policy Academy Advances Access to Care for Pregnant/Parenting Women with SUD." Available at: https://nashp.org/new-eight-state-policy-academy-advances-access-to-care-for-pregnant-parenting-women-with-sud/. Accessed on: Dec 20, 2019.

- DMAS is developing a data dashboard to track metrics related to the health of pregnant women. Key elements highlighted on the dashboard are scheduled to include SUD diagnosis, mental health screening by MCOs, and counts of pregnant women enrolled in Medicaid by trimester of pregnancy.
- DMAS and the VDSS have developed an automatic monthly process to allow new mothers to receive Medicaid coverage without a gap in coverage following their 60-day postpartum period.
- Under the Medallion 4.0 managed care program, DMAS evaluates monthly deliverables from the MCOs and monitors maternal health performance measures.
- To understand and hear from Virginians, the SHHR scheduled 10 listening sessions across the Commonwealth. The purpose of these sessions was to raise awareness among local healthcare and service providers about SHHR's work and to hear about the lived experiences of women and families across Virginia.
- DMAS is collaborating with VDH and the Virginia Hospital and Healthcare Association to engage in quality improvement and community engagement initiatives for identified hospitals with poor maternal health outcomes and racial disparities.
- DMAS participates in various maternal health initiatives in partnership with state partners to address policy innovation in areas including maternal mental health, coordinated care efforts for substance exposed infants and their families, substance use screening and intervention, and family planning access.

Upcoming Initiatives

DMAS will continue efforts to identify improvements to the efficiency and effectiveness of strategies, policies, and procedures that positively impact maternity care for DMAS beneficiaries. A multi-divisional team at DMAS was tasked with the goal of developing and implementing low-barrier, rapid-cycle strategies to increase enrollment and/or maximize access to maternal care for women eligible for Medicaid or FAMIS MOMS. Future initiatives include the following:

- The SHHR, along with the State agencies, will develop a five-year strategic plan to ensure healthy pregnancies and alleviate adverse experiences for all women through collaborative efforts to reduce maternal and infant deaths.
- DMAS will develop strategies around eligibility and enrollment, the healthcare delivery system, and data/reporting.
- DMAS will partner with VDSS to develop policy and system changes that streamline Medicaid eligibility processes.
- DMAS will focus on developing a streamlined managed care enrollment process and make the care accessible for all pregnant and parenting members.
- The Governor's proposed budget requested that DMAS implement a home visiting benefit effective July 1, 2021, for pregnant and postpartum women at risk of poor health outcomes. Prior to implementation, DMAS will engage all relevant stakeholders in the development of the benefit and gaining the necessary federal approvals. The Governor also requested that DMAS extend postpartum

coverage for FAMIS MOMS from 60 days to 12 months. Currently, women up to 205 percent of the FPL are eligible for coverage during their pregnancy and up to 60 days postpartum from the delivery date on file.

- The Governor requested that the SHHR convene a workgroup to review and make recommendations regarding the State regulation of doulas and establishing a community doula benefit for pregnant women covered by Medicaid.

Appendix A. Demographic Characteristics of Study Members

Appendix A presents the demographic characteristics of women with singleton births during each measurement period from CY 2016 through CY 2018. Results for CY 2016 and CY 2017 were identified from the 2017–18 Prenatal Care and Birth Outcomes Focused Study.[A-1] Use caution when comparing results over time due to variations in the level of manual review required for each year's probabilistically linked birth records.

Table A-1—Distribution of Singleton Births by Medicaid Characteristics, CY 2016–2018

Medicaid Characteristics	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
Singleton Births	**31,841**	**100.0**	**31,142**	**100.0**	**33,726**	**100.0**
Medicaid Program						
FAMIS MOMS	1,549	4.9	1,621	5.2	1,771	5.3
Medicaid for Pregnant Women	24,312	76.4	23,618	75.8	25,860	76.7
Other Medicaid	5,980	18.8	5,903	19.0	6,095	18.1
Medicaid Delivery System						
Fee-for-Service	8,160	25.6	7,887	25.3	9,714	28.8
Managed Care	23,681	74.4	23,255	74.7	24,012	71.2

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

[A-1] Health Services Advisory Group, Inc. *2017–18 Prenatal Care and Birth Outcomes Focused Study*. Commonwealth of VA, Department of Medical Assistance Services; March 2019.

Table A-2—Distribution of Singleton Births by Demographic Category, CY 2016–2018

Demographic Category	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
Singleton Births	**31,841**	**100.0**	**31,142**	**100.0**	**33,726**	**100.0**
Maternal Age Category						
15 Years and Younger	97	0.3	73	0.2	96	0.3
16–17 Years	504	1.6	471	1.5	516	1.5
18–20 Years	3,810	12.0	3,663	11.8	3,855	11.4
21–24 Years	8,620	27.1	8,219	26.4	8,258	24.5
25–29 Years	9,814	30.8	9,862	31.7	10,431	30.9
30–34 Years	5,873	18.4	5,715	18.4	6,685	19.8
35–39 Years	2,533	8.0	2,586	8.3	3,140	9.3
40–44 Years	540	1.7	517	1.7	696	2.1
45 Years and Older	30	0.1	34	0.1	34	0.1
Unknown	20	0.1	2	0.0	15	0.0
Maternal Race/Ethnicity Category						
White, Non-Hispanic	13,768	43.2	13,265	42.6	14,095	41.8
Black, Non-Hispanic	11,992	37.7	11,910	38.2	12,333	36.6
Asian, Non-Hispanic	1,207	3.8	1,212	3.9	1,272	3.8
Hispanic, Any Race	3,922	12.3	3,763	12.1	5,692	16.9
Other/Unknown	952	3.0	992	3.2	334	1.0

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table A-3—Distribution of Singleton Births by Medicaid Delivery System and Program, CY 2016–2018

Medicaid Delivery System	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
FAMIS MOMS						
Fee-for-Service	351	22.7	353	21.8	353	19.9
Managed Care	1,198	77.3	1,268	78.2	1,418	80.1
Total Singleton Births	**1,549**	**100.0**	**1,621**	**100.0**	**1,771**	**100.0**
Medicaid for Pregnant Women						
Fee-for-Service	6,292	25.9	6,108	25.9	7,312	28.3
Managed Care	18,020	74.1	17,510	74.1	18,548	71.7
Total Singleton Births	**24,312**	**100.0**	**23,618**	**100.0**	**25,860**	**100.0**
Other Medicaid Program						
Fee-for-Service	1,517	25.4	1,426	24.2	2,049	33.6
Managed Care	4,463	74.6	4,477	75.8	4,046	66.4
Total Singleton Births	**5,980**	**100.0**	**5,903**	**100.0**	**6,095**	**100.0**

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table A-4—Distribution of Singleton Births by Medicaid Program and Demographic Category, CY 2016–2018

Demographic Category	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
FAMIS MOMS						
Singleton Births	**1,549**	**100.0**	**1,621**	**100.0**	**1,771**	**100.0**
Maternal Age Category						
15 Years and Younger	1	0.1	2	0.1	0	0.0
16–17 Years	14	0.9	7	0.4	12	0.7
18–20 Years	65	4.2	80	4.9	90	5.1
21–24 Years	355	22.9	362	22.3	375	21.2
25–29 Years	533	34.4	596	36.8	648	36.6
30–34 Years	381	24.6	366	22.6	389	22.0
35–39 Years	168	10.8	172	10.6	208	11.7
40–44 Years	30	1.9	34	2.1	47	2.7
45 Years and Older	1	0.1	1	0.1	1	0.1
Unknown	1	0.1	1	0.1	1	0.1
Maternal Race/Ethnicity Category						
White, Non-Hispanic	689	44.5	701	43.2	793	44.8
Black, Non-Hispanic	466	30.1	495	30.5	552	31.2
Asian, Non-Hispanic	124	8.0	135	8.3	128	7.2
Hispanic, Any Race	218	14.1	238	14.7	271	15.3
Other/Unknown	52	3.4	52	3.2	27	1.5
Medicaid for Pregnant Women						
Singleton Births	**24,312**	**100.0**	**23,618**	**100.0**	**25,860**	**100.0**
Maternal Age Category						
15 Years and Younger	5	0.0	1	0.0	3	0.0
16–17 Years	29	0.1	16	0.1	18	0.1
18–20 Years	2,670	11.0	2,542	10.8	2,688	10.4
21–24 Years	7,023	28.9	6,691	28.3	6,778	26.2
25–29 Years	7,668	31.5	7,593	32.1	8,113	31.4
30–34 Years	4,475	18.4	4,353	18.4	5,224	20.2

Demographic Category	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
35–39 Years	1,964	8.1	1,990	8.4	2,445	9.5
40–44 Years	436	1.8	401	1.7	552	2.1
45 Years and Older	25	0.1	30	0.1	28	0.1
Unknown	17	0.1	1	0.0	11	0.0
Maternal Race/Ethnicity Category						
White, Non-Hispanic	10,730	44.1	10,335	43.8	10,925	42.2
Black, Non-Hispanic	8,632	35.5	8,475	35.9	8,876	34.3
Asian, Non-Hispanic	998	4.1	990	4.2	1,051	4.1
Hispanic, Any Race	3,222	13.3	3,033	12.8	4,756	18.4
Other/Unknown	730	3.0	785	3.3	252	1.0
Other Medicaid Program						
Singleton Births	**5,980**	**100.0**	**5,903**	**100.0**	**6,095**	**100.0**
Maternal Age Category						
15 Years and Younger	91	1.5	70	1.2	93	1.5
16–17 Years	461	7.7	448	7.6	486	8.0
18–20 Years	1,075	18.0	1,041	17.6	1,077	17.7
21–24 Years	1,242	20.8	1,166	19.8	1,105	18.1
25–29 Years	1,613	27.0	1,673	28.3	1,670	27.4
30–34 Years	1,017	17.0	996	16.9	1,072	17.6
35–39 Years	401	6.7	424	7.2	487	8.0
40–44 Years	74	1.2	82	1.4	97	1.6
45 Years and Older	4	0.1	3	0.1	5	0.1
Unknown	2	0.0	0	0.0	3	0.0
Maternal Race/Ethnicity Category						
White, Non-Hispanic	2,349	39.3	2,229	37.8	2,377	39.0
Black, Non-Hispanic	2,894	48.4	2,940	49.8	2,905	47.7
Asian, Non-Hispanic	85	1.4	87	1.5	93	1.5
Hispanic, Any Race	482	8.1	492	8.3	665	10.9
Other/Unknown	170	2.8	155	2.6	55	0.9

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table A-5—Distribution of Singleton Births by Medicaid Delivery System and Demographic Category, CY 2016–2018

Demographic Category	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
Fee-for-Service						
Singleton Births	**8,160**	**100.0**	**7,887**	**100.0**	**9,714**	**100.0**
Maternal Age Category						
15 Years and Younger	23	0.3	12	0.2	24	0.2
16–17 Years	116	1.4	84	1.1	108	1.1
18–20 Years	1,014	12.4	1,004	12.7	1,097	11.3
21–24 Years	2,215	27.1	2,166	27.5	2,304	23.7
25–29 Years	2,338	28.7	2,355	29.9	2,790	28.7
30–34 Years	1,487	18.2	1,372	17.4	2,002	20.6
35–39 Years	766	9.4	730	9.3	1,076	11.1
40–44 Years	185	2.3	153	1.9	292	3.0
45 Years and Older	11	0.1	11	0.1	19	0.2
Unknown	5	0.1	0	0.0	2	0.0
Maternal Race/Ethnicity Category						
White, Non-Hispanic	3,414	41.8	3,233	41.0	3,438	35.4
Black, Non-Hispanic	2,516	30.8	2,559	32.4	2,721	28.0
Asian, Non-Hispanic	309	3.8	276	3.5	275	2.8
Hispanic, Any Race	1,688	20.7	1,596	20.2	3,188	32.8
Other/Unknown	233	2.9	223	2.8	92	0.9
Managed Care						
Singleton Births	**23,681**	**100.0**	**23,255**	**100.0**	**24,012**	**100.0**
Maternal Age Category						
15 Years and Younger	74	0.3	61	0.3	72	0.3
16–17 Years	388	1.6	387	1.7	408	1.7
18–20 Years	2,796	11.8	2,659	11.4	2,758	11.5
21–24 Years	6,405	27.0	6,053	26.0	5,954	24.8
25–29 Years	7,476	31.6	7,507	32.3	7,641	31.8
30–34 Years	4,386	18.5	4,343	18.7	4,683	19.5

Demographic Category	CY 2016		CY 2017		CY 2018	
	n	%	n	%	n	%
35–39 Years	1,767	7.5	1,856	8.0	2,064	8.6
40–44 Years	355	1.5	364	1.6	404	1.7
45 Years and Older	19	0.1	23	0.1	15	0.1
Unknown	15	0.1	2	0.0	13	0.1
Maternal Race/Ethnicity Category						
White, Non-Hispanic	10,354	43.7	10,032	43.1	10,657	44.4
Black, Non-Hispanic	9,476	40.0	9,351	40.2	9,612	40.0
Asian, Non-Hispanic	898	3.8	936	4.0	997	4.2
Hispanic, Any Race	2,234	9.4	2,167	9.3	2,504	10.4
Other/Unknown	719	3.0	769	3.3	242	1.0

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table A-6—Distribution of CY 2018 Singleton Births by Maternal Managed Care Characteristics

Medicaid Characteristics	n	%
Singleton Births	**33,726**	**100.0**
Managed Care Organization at Delivery		
Fee-for-Service	9,714	28.8
Managed Care	24,012	71.2
Aetna	*1,646*	*4.9*
Anthem	*8,849*	*26.2*
INTotal	*1,142*	*3.4*
Kaiser	*470*	*1.4*
Magellan	*329*	*1.0*
Optima	*5,565*	*16.5*
UHCCP	*505*	*1.5*
VA Premier	*5,506*	*16.3*
Managed Care Enrollment Category		
Not enrolled with an MCO prior to delivery (e.g., FFS)	8,329	24.7
Enrolled with one MCO prior to delivery	23,765	70.5
Enrolled with more than one MCO prior to delivery	1,632	4.8
Length of Enrollment in Any Medicaid Program Prior to Delivery		
≤ 30 days	3,697	11.0
31–90 days	1,897	5.6
91–180 days	3,969	11.8
>180 days	24,163	71.6

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table A-7—Distribution of CY 2018 Singleton Births by Selected Demographic Categories

Demographic Category	n	%
Singleton Births	**33,726**	**100.0**
Region		
Central	8,471	25.1
Charlottesville/Western	4,318	12.8
Northern/Winchester	8,189	24.3
Roanoke/Alleghany	2,910	8.6
Southwest	1,957	5.8
Tidewater	7,879	23.4
No Region Listed	2	0.0
Maternal Gravidity		
No Prior Pregnancy	9,970	29.6
Had Prior Pregnancy	23,726	70.3
Unknown	30	0.1
Trimester of Prenatal Care Initiation		
1st	23,459	69.6
2nd	6,487	19.2
3rd	1,684	5.0
No Prenatal Care	667	2.0
Unknown Trimester	1,429	4.2

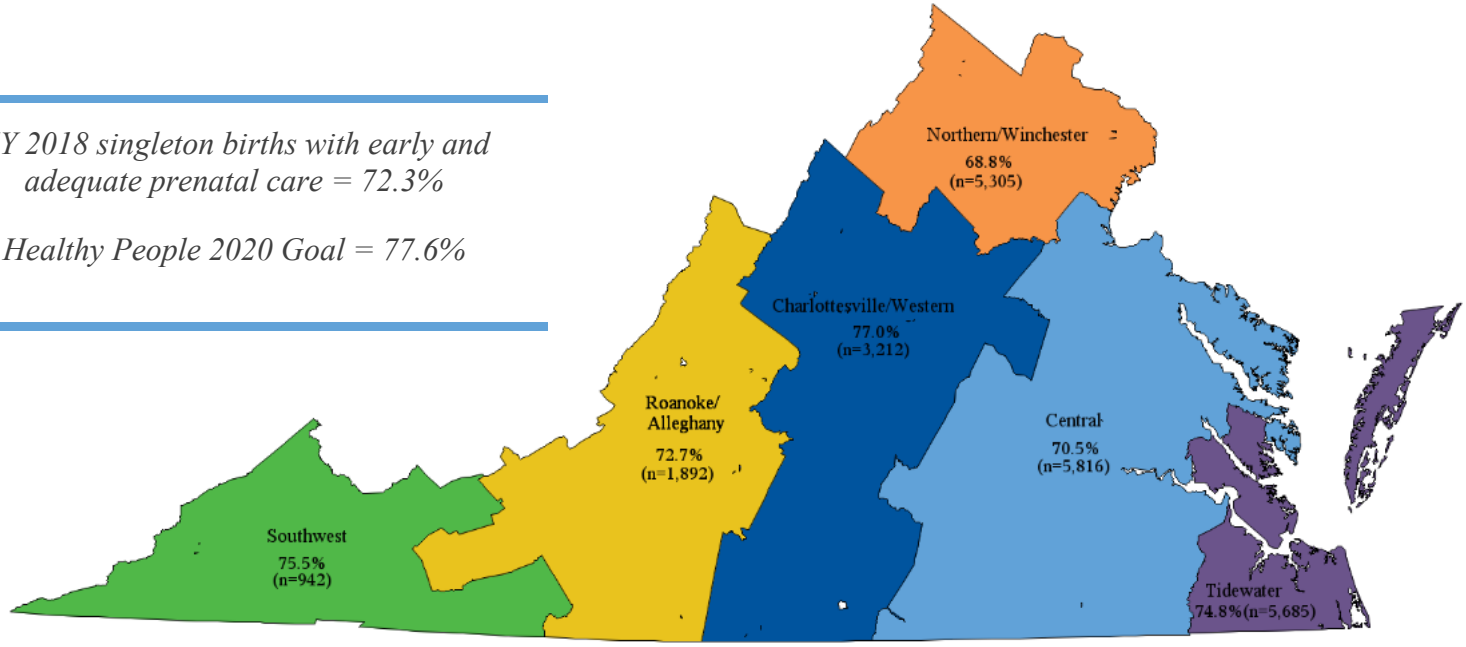
Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Detailed Findings—Adequacy of Prenatal Care

Figure B-1—Percentage of CY 2018 Singleton Births with Early and Adequate Prenatal Care by Medallion 4.0 Region[B-1]

CY 2018 singleton births with early and adequate prenatal care = 72.3%

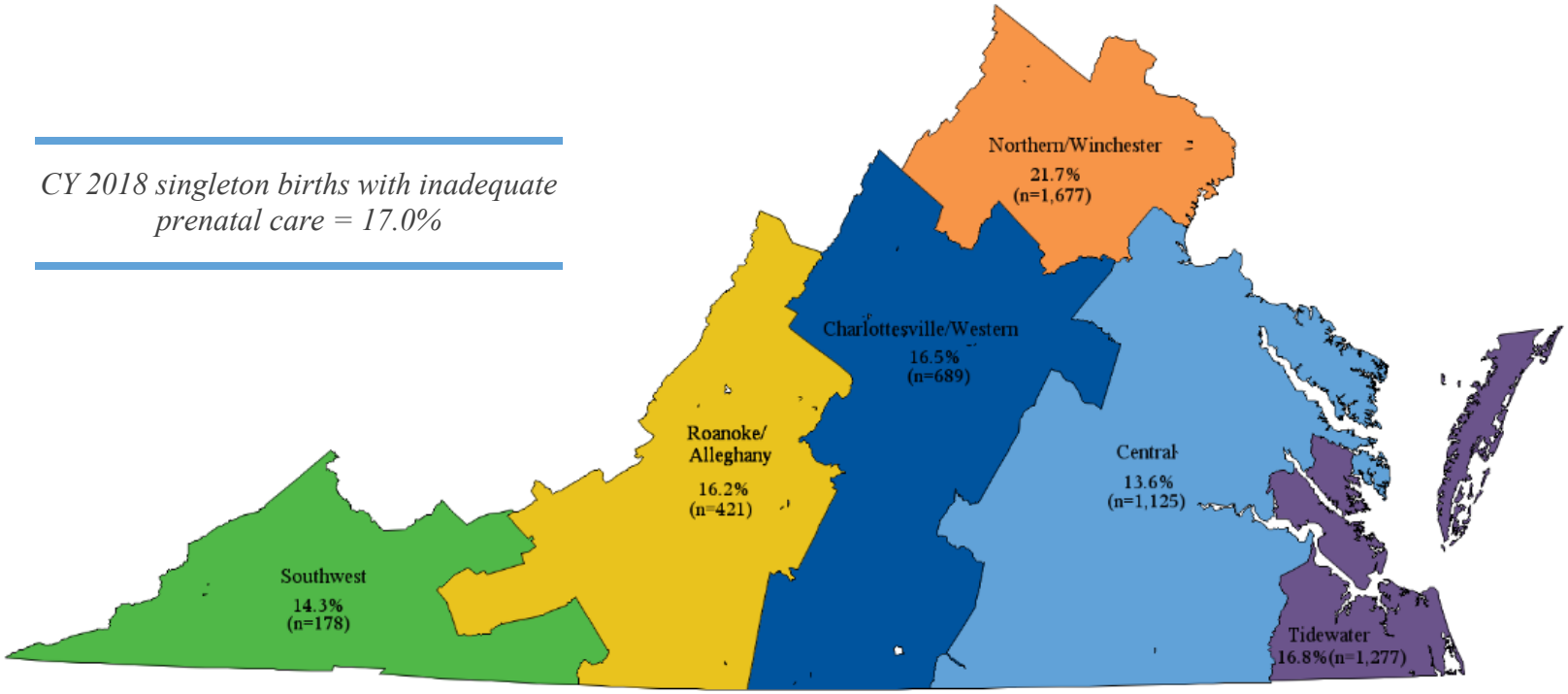
Healthy People 2020 Goal = 77.6%



[B-1] Geographic region boundaries changed between Medallion 3.0 and Medallion 4.0; for consistency, HSAG assigned each birth to the mother's region of residence using the Medallion 4.0 regions, regardless of whether the birth occurred before or after the Medallion program transition. Due to the timing of the Medallion 4.0 transition, women covered by Medallion 4.0 at delivery would have limited Medallion 4.0 coverage during the prenatal period (e.g., they may have been covered by Medallion 3.0 during the prenatal period).

Figure B-2—Percentage of CY 2018 Singleton Births with Inadequate Prenatal Care by Medallion 4.0 Region[B-2]

CY 2018 singleton births with inadequate prenatal care = 17.0%



[B-2] Geographic region boundaries changed between Medallion 3.0 and Medallion 4.0; for consistency, HSAG assigned each birth to the mother's region of residence using the Medallion 4.0 regions, regardless of whether the birth occurred before or after the Medallion program transition. Due to the timing of the Medallion 4.0 transition, women covered by Medallion 4.0 at delivery would have limited Medallion 4.0 coverage during the prenatal period (e.g., they may have been covered by Medallion 3.0 during the prenatal period).

Table B-1—Distribution of Singleton Births by Prenatal Care (PNC) Indicator and Maternal Age at Delivery, CY 2016–CY 2018

Maternal Age at Delivery (Years)	Missing Information			Inadequate PNC			Intermediate PNC			Adequate PNC			Adequate Plus PNC			Total		
	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018
Singleton Births (n)	**784**	**957**	**2,133**	**5,130**	**5,211**	**5,368**	**3,167**	**3,121**	**3,372**	**13,150**	**12,567**	**13,274**	**9,610**	**9,286**	**9,579**	**31,841**	**31,142**	**33,726**
≤15	0.3%	0.5%	0.5%	0.7%	0.4%	0.6%	0.4%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	**0.3%**	**0.2%**	**0.3%**
16–17	2.4%	1.8%	1.8%	2.2%	1.8%	2.1%	1.3%	1.8%	1.8%	1.5%	1.5%	1.3%	1.4%	1.3%	1.4%	**1.6%**	**1.5%**	**1.5%**
18–20	11.7%	14.9%	13.6%	13.0%	13.1%	12.2%	12.6%	12.0%	12.6%	12.2%	11.5%	11.1%	10.9%	10.9%	10.5%	**12.0%**	**11.8%**	**11.4%**
21–24	30.2%	25.3%	24.8%	26.7%	26.4%	24.4%	28.1%	27.2%	24.6%	27.4%	26.9%	25.4%	26.2%	25.5%	23.2%	**27.1%**	**26.4%**	**24.5%**
25–29	29.1%	29.4%	29.5%	31.1%	30.7%	30.0%	31.2%	30.4%	30.0%	31.1%	32.1%	31.5%	30.3%	32.3%	31.3%	**30.8%**	**31.7%**	**30.9%**
30–34	16.5%	17.3%	17.7%	16.8%	17.8%	19.3%	17.4%	18.5%	19.9%	18.5%	18.3%	19.7%	19.8%	18.7%	20.7%	**18.4%**	**18.4%**	**19.8%**
35–39	7.7%	8.5%	10.0%	7.5%	8.1%	9.1%	7.6%	8.0%	9.0%	7.5%	8.0%	8.8%	9.0%	8.9%	10.1%	**8.0%**	**8.3%**	**9.3%**
40–44	2.0%	2.1%	2.1%	1.8%	1.5%	2.1%	1.2%	1.7%	1.7%	1.4%	1.4%	1.8%	2.2%	2.0%	2.5%	**1.7%**	**1.7%**	**2.1%**
≥45	0.0%	0.2%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	**0.1%**	**0.1%**	**0.1%**
Unknown	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	**0.1%**	**0.0%**	**0.0%**

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table B-2—Distribution of Singleton Births by Prenatal Care (PNC) Indicator and Maternal Race/Ethnicity, CY 2016–CY 2018

Maternal Race/ Ethnicity	Missing Information			Inadequate PNC			Intermediate PNC			Adequate PNC			Adequate Plus PNC			Total		
	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018
Singleton Births (n)	**784**	**957**	**2,133**	**5,130**	**5,211**	**5,368**	**3,167**	**3,121**	**3,372**	**13,150**	**12,567**	**13,274**	**9,610**	**9,286**	**9,579**	**31,841**	**31,142**	**33,726**
White, Non-Hispanic	69.1%	63.8%	59.4%	38.6%	37.2%	36.2%	38.0%	36.7%	36.2%	44.3%	44.1%	42.5%	43.8%	43.5%	42.0%	**43.2%**	**42.6%**	**41.8%**
Black, Non-Hispanic	21.8%	23.4%	24.9%	39.2%	40.3%	38.7%	41.1%	43.5%	39.9%	36.3%	35.9%	35.2%	38.8%	40.1%	38.6%	**37.7%**	**38.2%**	**36.6%**
Asian, Non-Hispanic	1.1%	3.4%	1.7%	4.5%	4.1%	4.3%	3.4%	3.5%	3.8%	3.9%	4.5%	4.2%	3.6%	3.1%	3.4%	**3.8%**	**3.9%**	**3.8%**
Hispanic, Any Race	6.1%	7.4%	12.8%	14.2%	14.9%	19.8%	14.5%	13.8%	19.2%	12.3%	12.1%	17.0%	11.1%	10.3%	15.2%	**12.3%**	**12.1%**	**16.9%**
Other/ Unknown	1.8%	1.9%	1.2%	3.5%	3.6%	1.0%	3.0%	2.6%	0.9%	3.1%	3.4%	1.1%	2.7%	3.0%	0.8%	**3.0%**	**3.2%**	**1.0%**

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table B-3—Distribution of CY 2018 Singleton Births by Prenatal Care (PNC) Indicator and Maternal Medallion 4.0 Region of Residence

Maternal Region of Residence	Missing Information	Inadequate PNC	Intermediate PNC	Adequate PNC	Adequate Plus PNC	Total
Singleton Births (n)	**2,133**	**5,368**	**3,372**	**13,274**	**9,579**	**33,726**
Central	10.5%	21.0%	38.7%	27.9%	22.0%	**25.1%**
Charlottesville/Western	6.8%	12.8%	8.0%	12.9%	15.7%	**12.8%**
Northern/Winchester	22.2%	31.2%	21.7%	24.7%	21.2%	**24.3%**
Roanoke/Alleghany	14.3%	7.8%	8.6%	9.4%	6.7%	**8.6%**
Southwest	33.2%	3.3%	3.8%	4.3%	3.8%	**5.8%**
Tidewater	12.8%	23.8%	19.1%	20.7%	30.6%	**23.4%**
No Region Listed	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

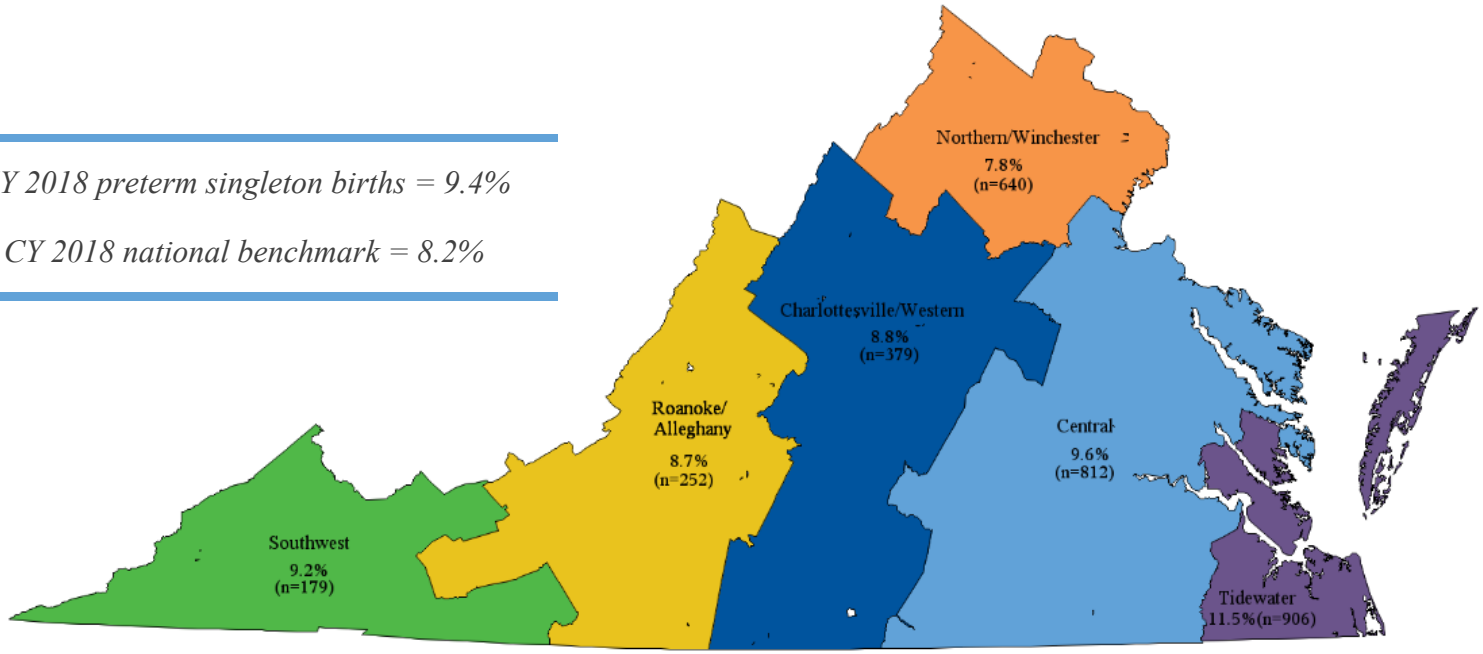
Detailed Findings—Preterm Births

Note: While births with an unknown length of gestation are included in the Appendix B tables for completeness, study indicator calculations exclude these births.

Figure B-3—Percentage of CY 2018 Preterm Singleton Births (<37 Weeks) by Medallion 4.0 Region[B-3]

CY 2018 preterm singleton births = 9.4%

CY 2018 national benchmark = 8.2%



[B-3] Geographic region boundaries changed between Medallion 3.0 and Medallion 4.0; for consistency, HSAG assigned each birth to the mother's region of residence using the Medallion 4.0 regions, regardless of whether the birth occurred before or after the Medallion program transition. Due to the timing of the Medallion 4.0 transition, women covered by Medallion 4.0 at delivery would have limited Medallion 4.0 coverage during the prenatal period (e.g., they may have been covered by Medallion 3.0 during the prenatal period).

Table B-4—Distribution of Singleton Births by Preterm Birth Indicator and Maternal Age at Delivery, CY 2016–CY 2018

Maternal Age at Delivery (Years)	Preterm Births (<37 Weeks)			Early-Term Births (37–38 Weeks)			Full/Late-Term Births (39–41 Weeks)			Post-Term Births (≥42 Weeks)			Unknown			Total		
	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018
Singleton Births (n)	**3,005**	**2,892**	**3,168**	**8,202**	**8,182**	**9,331**	**20,468**	**19,935**	**21,109**	**144**	**86**	**83**	**22**	**47**	**35**	**31,841**	**31,142**	**33,726**
≤15	0.4%	0.4%	0.3%	0.2%	0.2%	0.3%	0.3%	0.2%	0.3%	0.7%	0.0%	0.0%	0.0%	0.0%	2.9%	**0.3%**	**0.2%**	**0.3%**
16–17	1.1%	1.8%	1.9%	1.6%	1.5%	1.5%	1.7%	1.5%	1.5%	1.4%	0.0%	1.2%	4.5%	2.1%	5.7%	**1.6%**	**1.5%**	**1.5%**
18–20	10.5%	10.4%	10.9%	11.5%	11.0%	10.7%	12.4%	12.2%	11.8%	13.2%	15.1%	12.0%	13.6%	8.5%	14.3%	**12.0%**	**11.8%**	**11.4%**
21–24	23.6%	21.7%	21.4%	25.9%	25.8%	23.2%	28.1%	27.4%	25.5%	29.2%	20.9%	26.5%	9.1%	23.4%	22.9%	**27.1%**	**26.4%**	**24.5%**
25–29	29.9%	31.5%	29.4%	30.4%	31.1%	30.9%	31.1%	31.9%	31.2%	27.8%	32.6%	28.9%	31.8%	36.2%	28.6%	**30.8%**	**31.7%**	**30.9%**
30–34	21.0%	19.8%	20.7%	19.3%	19.3%	20.4%	17.7%	17.7%	19.4%	20.1%	20.9%	24.1%	36.4%	25.5%	20.0%	**18.4%**	**18.4%**	**19.8%**
35–39	10.6%	11.3%	12.6%	9.0%	8.7%	10.2%	7.2%	7.7%	8.4%	6.9%	8.1%	7.2%	4.5%	2.1%	2.9%	**8.0%**	**8.3%**	**9.3%**
40–44	2.8%	2.9%	2.7%	2.0%	2.1%	2.6%	1.4%	1.3%	1.7%	0.7%	2.3%	0.0%	0.0%	2.1%	2.9%	**1.7%**	**1.7%**	**2.1%**
≥45	0.2%	0.2%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.1%**	**0.1%**	**0.1%**
Unknown	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.1%**	**0.0%**	**0.0%**

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table B-5—Distribution of Singleton Births by Preterm Birth Indicator and Maternal Race/Ethnicity, CY 2016–CY 2018

Maternal Race/Ethnicity	Preterm Births (<37 Weeks)			Early-Term Births (37–38 Weeks)			Full/Late-Term Births (39–41 Weeks)			Post-Term Births (≥42 Weeks)			Unknown			Total		
	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018
Singleton Births (n)	**3,005**	**2,892**	**3,168**	**8,202**	**8,182**	**9,331**	**20,468**	**19,935**	**21,109**	**144**	**86**	**83**	**22**	**47**	**35**	**31,841**	**31,142**	**33,726**
White, Non-Hispanic	38.9%	38.3%	36.8%	38.8%	39.4%	38.8%	45.5%	44.5%	43.8%	62.5%	57.0%	61.4%	40.9%	34.0%	48.6%	**43.2%**	**42.6%**	**41.8%**
Black, Non-Hispanic	45.3%	46.3%	44.9%	42.0%	41.4%	39.7%	34.9%	35.8%	34.0%	25.7%	29.1%	24.1%	54.5%	55.3%	45.7%	**37.7%**	**38.2%**	**36.6%**
Asian, Non-Hispanic	2.5%	2.6%	3.3%	4.4%	4.0%	3.8%	3.7%	4.1%	3.9%	2.1%	5.8%	4.8%	0.0%	0.0%	0.0%	**3.8%**	**3.9%**	**3.8%**
Hispanic, Any Race	10.9%	10.2%	14.1%	12.1%	12.4%	16.7%	12.7%	12.3%	17.4%	6.9%	7.0%	8.4%	4.5%	6.4%	2.9%	**12.3%**	**12.1%**	**16.9%**
Other/ Unknown	2.5%	2.6%	0.9%	2.6%	2.9%	1.0%	3.2%	3.4%	1.0%	2.8%	1.2%	1.2%	0.0%	4.3%	2.9%	**3.0%**	**3.2%**	**1.0%**

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table B-6—Distribution of CY 2018 Singleton Births by Preterm Birth Indicator and Maternal Medallion 4.0 Region of Residence

Maternal Region of Residence	Preterm Births (<37 Weeks)	Early-Term Births (37–38 Weeks)	Full/Late-Term Births (39–41 Weeks)	Post-Term Births (≥42 Weeks)	Unknown	Total
Singleton Births (n)	**3,168**	**9,331**	**21,109**	**83**	**35**	**33,726**
Central	25.6%	27.5%	24.0%	18.1%	14.3%	**25.1%**
Charlottesville/Western	12.0%	11.7%	13.4%	26.5%	8.6%	**12.8%**
Northern/Winchester	20.2%	22.7%	25.6%	22.9%	8.6%	**24.3%**
Roanoke/Alleghany	8.0%	8.1%	8.9%	10.8%	17.1%	**8.6%**
Southwest	5.7%	5.2%	6.1%	7.2%	17.1%	**5.8%**
Tidewater	28.6%	24.7%	22.0%	14.5%	34.3%	**23.4%**
No Region Listed	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

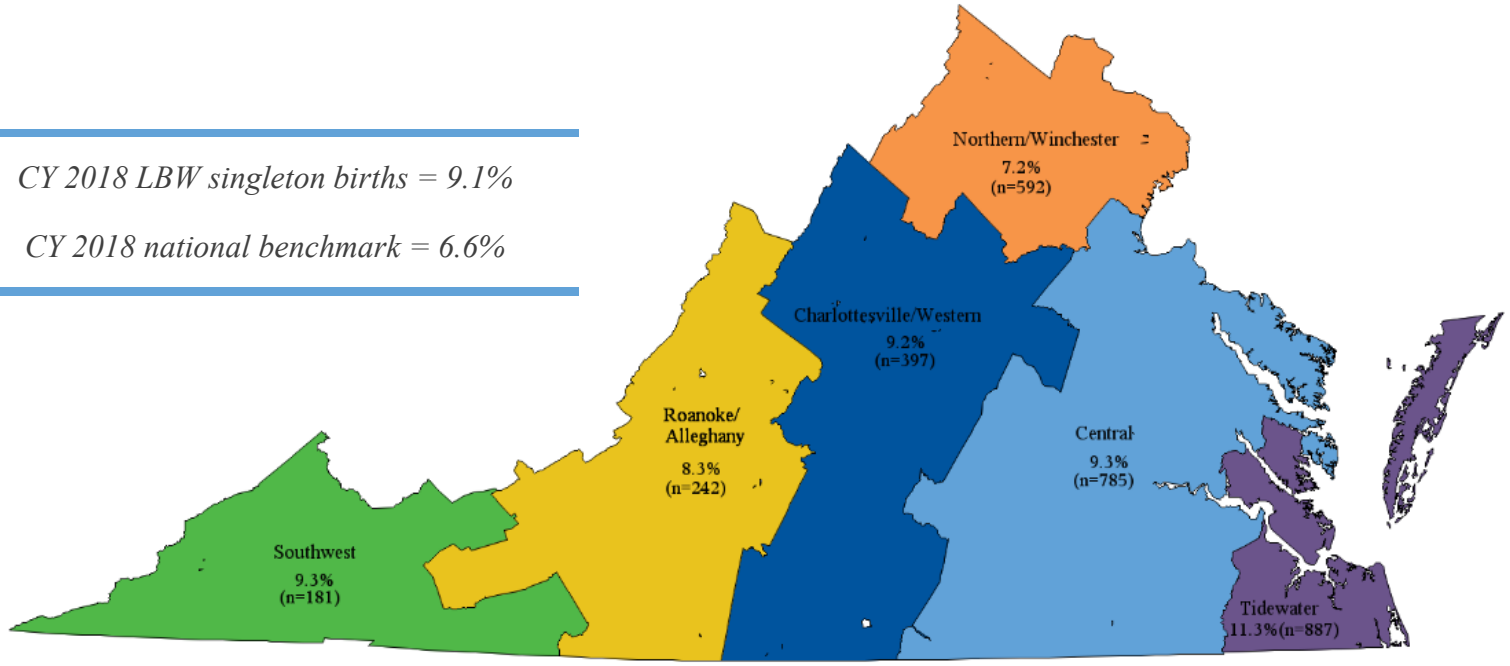
Detailed Findings—Birth Weight

Note: While births with unknown birth weight are included in the Appendix B tables for completeness, study indicator calculations exclude these births.

Figure B-4—Percentage of CY 2018 Low Birth Weight Singleton Births (<2,500 Grams) by Medallion 4.0 Region[B-4]

CY 2018 LBW singleton births = 9.1%

CY 2018 national benchmark = 6.6%



[B-4] Geographic region boundaries changed between Medallion 3.0 and Medallion 4.0; for consistency, HSAG assigned each birth to the mother's region of residence using the Medallion 4.0 regions, regardless of whether the birth occurred before or after the Medallion program transition. Due to the timing of the Medallion 4.0 transition, women covered by Medallion 4.0 at delivery would have limited Medallion 4.0 coverage during the prenatal period (e.g., they may have been covered by Medallion 3.0 during the prenatal period).

Table B-7—Distribution of Singleton Births by Birth Weight Indicator and Maternal Age at Delivery, CY 2016–CY 2018

Maternal Age at Delivery (Years)	Very Low Birth Weight (<1,500g)			Moderately Low Birth Weight (1,500g–2,499g)			Normal Birth Weight (≥2,500g)			Total*		
	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018
Singleton Births (n)	**488**	**500**	**538**	**2,320**	**2,273**	**2,546**	**29,024**	**28,366**	**30,631**	**31,841**	**31,142**	**33,726**
≤15	0.2%	0.8%	0.2%	0.4%	0.1%	0.1%	0.3%	0.2%	0.3%	**0.3%**	**0.2%**	**0.3%**
16–17	1.8%	1.4%	1.7%	1.1%	1.6%	1.8%	1.6%	1.5%	1.5%	**1.6%**	**1.5%**	**1.5%**
18–20	10.0%	11.8%	12.3%	12.4%	11.3%	11.8%	12.0%	11.8%	11.4%	**12.0%**	**11.8%**	**11.4%**
21–24	21.1%	21.8%	20.6%	25.6%	24.5%	22.9%	27.3%	26.6%	24.7%	**27.1%**	**26.4%**	**24.5%**
25–29	33.2%	28.8%	26.4%	30.1%	32.9%	29.1%	30.8%	31.6%	31.2%	**30.8%**	**31.7%**	**30.9%**
30–34	17.6%	21.0%	22.5%	19.1%	18.2%	20.0%	18.4%	18.3%	19.8%	**18.4%**	**18.4%**	**19.8%**
35–39	12.1%	11.0%	11.2%	9.2%	8.8%	11.9%	7.8%	8.2%	9.1%	**8.0%**	**8.3%**	**9.3%**
40–44	3.5%	3.2%	4.8%	1.8%	2.2%	2.3%	1.7%	1.6%	2.0%	**1.7%**	**1.7%**	**2.1%**
≥45	0.2%	0.2%	0.4%	0.2%	0.3%	0.0%	0.1%	0.1%	0.1%	**0.1%**	**0.1%**	**0.1%**
Unknown	0.2%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	**0.1%**	**0.0%**	**0.0%**

Note: Due to rounding, the percentages in each column may not sum to 100 percent.
* The following total number of singleton births with unknown birth weight are included in the totals for each measurement period: CY 2016 = 9, CY 2017 = 3, and CY 2018 = 11.

Table B-8—Distribution of Singleton Births by Birth Weight Indicator and Maternal Race/Ethnicity, CY 2016–CY 2018

Maternal Race/Ethnicity	Very Low Birth Weight (<1,500g)			Moderately Low Birth Weight (1,500g–2,499g)			Normal Birth Weight (≥2,500g)			Total*		
	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018	CY 2016	CY 2017	CY 2018
Singleton Births (n)	**488**	**500**	**538**	**2,320**	**2,273**	**2,546**	**29,024**	**28,366**	**30,631**	**31,841**	**31,142**	**33,726**
White, Non-Hispanic	31.1%	25.4%	28.8%	36.3%	36.7%	36.3%	44.0%	43.4%	42.5%	**43.2%**	**42.6%**	**41.8%**
Black, Non-Hispanic	56.1%	60.8%	53.2%	50.1%	49.8%	48.5%	36.4%	36.9%	35.3%	**37.7%**	**38.2%**	**36.6%**
Asian, Non-Hispanic	3.1%	2.8%	2.8%	3.1%	2.4%	3.6%	3.9%	4.0%	3.8%	**3.8%**	**3.9%**	**3.8%**
Hispanic, Any Race	7.4%	8.4%	14.1%	8.3%	8.6%	10.8%	12.7%	12.4%	17.4%	**12.3%**	**12.1%**	**16.9%**
Other/Unknown	2.3%	2.6%	1.1%	2.3%	2.5%	0.8%	3.1%	3.3%	1.0%	**3.0%**	**3.2%**	**1.0%**

Note: Due to rounding, the percentages in each column may not sum to 100 percent.
* The following total number of singleton births with unknown birth weight are included in the totals for each measurement period: CY 2016 = 9, CY 2017 = 3, and CY 2018 = 11.

Table B-9—Distribution of CY 2018 Singleton Births by Birth Weight Indicator and Maternal Medallion 4.0 Region of Residence

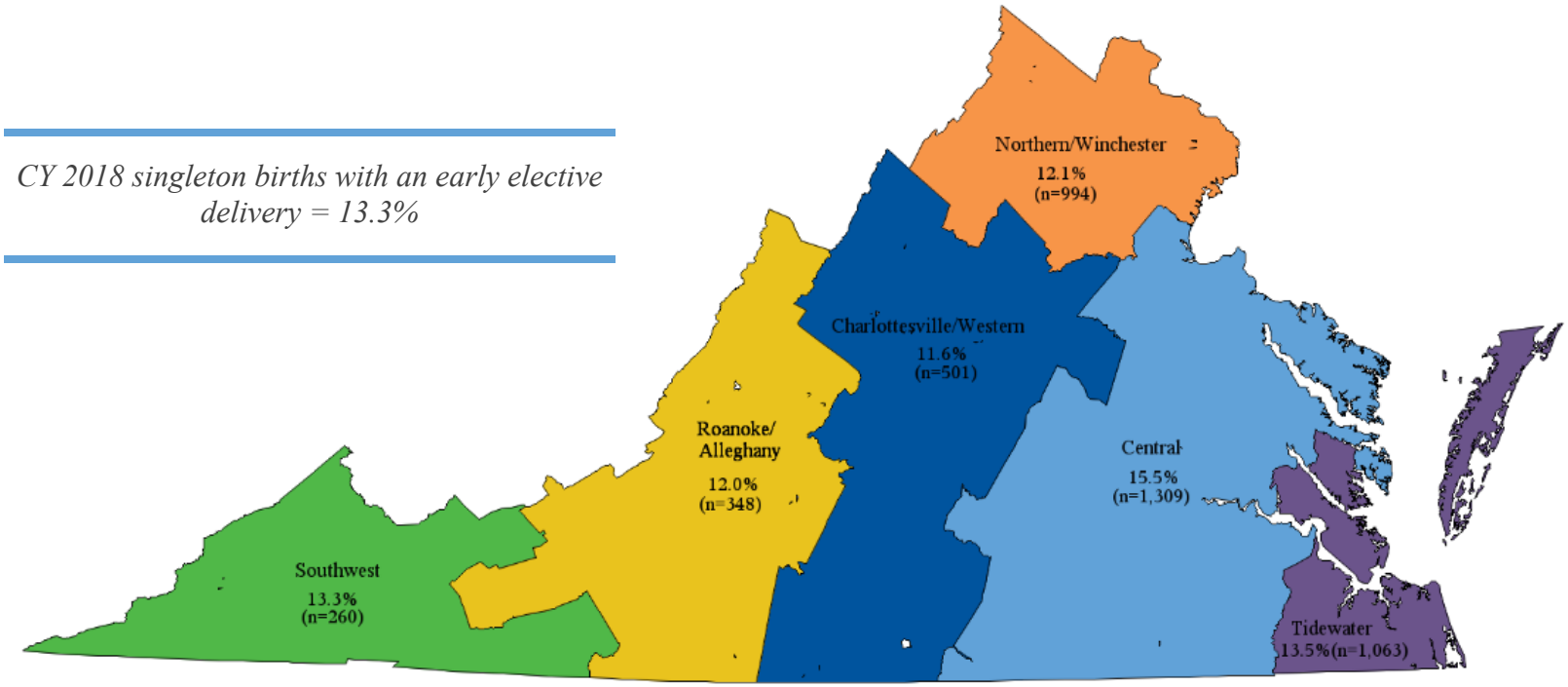
Maternal Region of Residence	Very Low Birth Weight (<1,500g)	Moderately Low Birth Weight (1,500g–2,499g)	Normal Birth Weight (≥2,500g)	Total*
Singleton Births (n)	**538**	**2,546**	**30,631**	**33,726**
Central	24.2%	25.7%	25.1%	**25.1%**
Charlottesville/Western	12.3%	13.0%	12.8%	**12.8%**
Northern/Winchester	20.1%	19.0%	24.8%	**24.3%**
Roanoke/Alleghany	6.7%	8.1%	8.7%	**8.6%**
Southwest	4.6%	6.1%	5.8%	**5.8%**
Tidewater	32.2%	28.0%	22.8%	**23.4%**
No Region Listed	0.0%	0.0%	0.0%	**0.0%**

Note: Due to rounding, the percentages in each column may not sum to 100 percent.
* Eleven singleton births with unknown birth weight are included in the CY 2018 totals.

Detailed Findings—Early Elective Deliveries

Figure B-5—Percentage of CY 2018 Singleton Births with Early Elective Deliveries by Medallion 4.0 Region[B-5]

CY 2018 singleton births with an early elective delivery = 13.3%



[B-5] Geographic region boundaries changed between Medallion 3.0 and Medallion 4.0; for consistency, HSAG assigned each birth to the mother's region of residence using the Medallion 4.0 regions, regardless of whether the birth occurred before or after the Medallion program transition. Due to the timing of the Medallion 4.0 transition, women covered by Medallion 4.0 at delivery would have limited Medallion 4.0 coverage during the prenatal period (e.g., they may have been covered by Medallion 3.0 during the prenatal period).

Table B-10—Distribution of CY 2018 Singleton Births by Early Elective Deliveries Indicator and Maternal Age at Delivery

Maternal Age at Delivery (Years)	Early Elective Deliveries	No Early Elective Deliveries
Singleton Births (n)	**4,475**	**29,251**
≤15	0.4%	0.3%
16–17	1.5%	1.5%
18–20	8.6%	11.9%
21–24	21.1%	25.0%
25–29	31.4%	30.9%
30–34	22.1%	19.5%
35–39	11.8%	8.9%
40–44	2.9%	1.9%
≥45	0.1%	0.1%
Unknown	0.0%	0.0%

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table B-11—Distribution of CY 2018 Singleton Births by Early Elective Deliveries Indicator and Maternal Race/Ethnicity

Maternal Race/Ethnicity	Early Elective Deliveries	No Early Elective Deliveries
Singleton Births (n)	**4,475**	**29,251**
White, Non-Hispanic	39.1%	42.2%
Black, Non-Hispanic	39.9%	36.1%
Asian, Non-Hispanic	3.5%	3.8%
Hispanic, Any Race	16.5%	16.9%
Other/Unknown	1.0%	1.0%

Note: Due to rounding, the percentages in each column may not sum to 100 percent.

Table B-12—Distribution of CY 2018 Singleton Births by Early Elective Deliveries Indicator and Maternal Medallion 4.0 Region of Residence

Maternal Region of Residence	Early Elective Deliveries	No Early Elective Deliveries
Singleton Births (n)	**4,475**	**29,251**
Central	29.3%	24.5%
Charlottesville/Western	11.2%	13.0%
Northern/Winchester	22.2%	24.6%
Roanoke/Alleghany	7.8%	8.8%
Southwest	5.8%	5.8%
Tidewater	23.8%	23.3%
No Region Listed	0.0%	0.0%

Note: Due to rounding, the percentages in each column may not sum to 100 percent.