DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
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CENTERS FOR MEDICARE & MEDICAID SERVICES
CENTER FOR MEDICAID & CHIP SERVICES

State Demonstrations Group

July 31, 2023

Cheryl Roberts
Director
Virginia Department of Medical Assistance Services
600 East Broad Street, Suite 1300
Richmond, VA 23219

Dear Director Roberts:

The Centers for Medicare & Medicaid Services (CMS) completed its review of the Virginia FAMIS MOMS and FAMIS Select revised Evaluation Design, which is required by the Special Terms and Conditions (STCs), specifically, STC #32, of the state's section 1115 demonstration, "Virginia FAMIS MOMS and FAMIS Select" (Project No: 21-W-00058/3 and 11-W-00381/3), effective through June 30, 2029. CMS has determined that the Evaluation Design, which was amended on May 17, 2022 to reflect the 12 month continuous post-partum coverage component(s), and revised on May 23, 2023, meets the requirements set forth in the STCs and our evaluation design guidance, and therefore approves the state's Evaluation Design.

CMS has added the approved PPC Evaluation Design to the demonstration's STCs as Attachment D. A copy of the STCs, which includes the new attachment, is enclosed with this letter. In accordance with 42 CFR 431.424, the approved Evaluation Design may now be posted to the state's Medicaid website within 30 days. CMS will also post the approved Evaluation Design as a standalone document, separate from the STCs, on Medicaid.gov.

Please not that three Interim Evaluation Reports, in alignment with the approved Evaluation Design, are due to CMS per the expectation and timeline as outlined in STC#36. Likewise, a Summative Evaluation Report, consistent with this approved design, is due to CMS within 18 months of the end of the demonstration period. In accordance with 42 CFR 431.428 and the STCs, we look forward to receiving updates on evaluation activities in the demonstration monitoring reports.

We appreciate our continued partnership with Virginia on the FAMIS MOMS and FAMIS Select section 1115 demonstration. If you have any questions, please contact your CMS demonstration team

Sincerely,

Paula M. Kazi -S

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Date: 2023.09.18 16:39:04 -04'00'

Paula Kazi
Acting Director
Division of Demonstration Monitoring and Evaluation

cc: Margaret Kosherzenko, State Monitoring Lead, CMS Medicaid and CHIP Operations Group

ATTACHMENT C
CMS APPROVED DEMONSTRATION EVALUATION PLAN

Demonstration Period: July 1, 2019 - June 30, 2029

A. General Background Information

1. Demonstration Background and Evaluation Period. On October 25, 2019, the Centers for Medicare and Medicaid Services (CMS) approved a ten-year extension of Virginia's Section 1115 Children's Health Insurance Program (CHIP) demonstration ("Demonstration"), Virginia Family Access to Medical Insurance Security (FAMIS) MOMS and FAMIS Select (Project No. 21-W-00058/3).[1] At the time of the extension, the Demonstration included the two programs/populations authorized since approval of the original Demonstration in 2005: FAMIS MOMS and FAMIS Select. The FAMIS MOMS program provides CHIP coverage to uninsured pregnant women with family income up to 200 percent of the federal poverty level (FPL).[2,3] Pregnant women who are eligible for this coverage include those who are lawfully residing immigrants and those with access to state employees' health benefit coverage. The Demonstration also authorizes FAMIS Select, private or employer-sponsored insurance (ESI) premium assistance for families with children in FAMIS, Virginia's CHIP program. On November 3, 2021, CMS approved Virginia's evaluation design for these two components of the Demonstration.

While the approved evaluation design for the FAMIS MOMS and FAMIS Select components of the Demonstration remains the same, this document updates the evaluation plan to reflect the 12 months postpartum coverage amendment to the Demonstration, approved November 18, 2021. This document provides background and context for the amendment; outlines additional evaluation goals, research questions, hypotheses, and measures; and describes analytic methods, data sources, and other aspects of the methodology for the 12 months postpartum coverage Demonstration evaluation. Because the postpartum coverage component of the Demonstration was approved as an amendment after the initial renewal was granted, the evaluation time-period for this component began later than the start of the Demonstration approval period. The evaluation time-period for the 12 months postpartum coverage Demonstration component began July 1, 2022. On this date, final systems and operational changes went into effect and full implementation of the postpartum coverage extension was complete for all populations. The end date of the evaluation time-period for all components of the Demonstration is the close of the Demonstration approval period, June 30, 2029.

Virginia's 12 Months Postpartum Demonstration Amendment. There is broad agreement among researchers, providers, and policymakers that extending eligibility for Medicaid and CHIP enrolled pregnant women from 60 days postpartum to 12 months postpartum is an

[1] Virginia FAMIS MOMS and FAMIS Select Section 1115 Demonstration (effective through June 30, 2029). Available at https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/va/va-famis-moms-famis-select-ca.pdf.
[2] 200 percent FPL plus 5 percent income disregard.
[3] FAMIS MOMS coverage is the same as that provided to pregnant women under the Medicaid state plan (i.e., the Medicaid prenatal benefit package).

important step toward improving maternal health outcomes. Notably, the Centers for Disease Control and Prevention (CDC) defines the postpartum period as 12 months after delivery; and the American Medical Association, the American Academy of Family Physicians, the Society for Maternal Fetal Medicine, state maternal mortality review committees, health plans, and consumer advocacy groups, alike, recommend extending Medicaid coverage to 12 months postpartum.[4] In 2018, the American College of Obstetricians and Gynecologists issued guidance calling for the extension of postpartum care into the "fourth trimester" and the provision of certain postpartum services, such as management of chronic conditions, screening for mental health disorders, and breastfeeding support.[5] In response to increasing recognition of this important public health issue, on November 18, 2020, then-Governor Ralph Northam signed into law the 2020 Special Session I Virginia Acts of Assembly, Chapter 56, directing the Department of Medical Assistance Services (DMAS) to seek federal approval to extend Medicaid and FAMIS MOMS coverage from 60 days to 12 months postpartum.[6]

In accordance with state statute, the Commonwealth of Virginia ("the Commonwealth") sought and received approval from CMS on November 18, 2021 for an amendment to the Demonstration to provide continuous coverage through 12 months postpartum for pregnant individuals in Medicaid and FAMIS MOMS. Through this amendment, Virginia will have the opportunity to evaluate whether 12 months postpartum coverage reduces maternal and infant mortality and morbidity, improves health outcomes for both the mother and the infant, and advances health equity.

2. Demonstration Goals. With CMS approval, the Commonwealth amended the Demonstration to provide state plan benefits to postpartum individuals in Medicaid and CHIP with income below 200 percent of the FPL[7] for a total of 12 months. The Commonwealth provides continuous eligibility for these individuals during the entire postpartum period. In doing so, Virginia seeks to achieve the following goals:

1. Promote continuous coverage and continuity of care for women in the postpartum period.
2. Increase access to medical and behavioral health care services and treatments for women in the postpartum period.
3. Improve health and address health-related social needs for postpartum Medicaid and CHIP enrolled women.
4. Improve health access and health outcomes for infants of postpartum Medicaid and CHIP enrolled women.
5. Advance health equity by reducing racial/ethnic and other disparities in maternal coverage, access, and health outcomes as well as infant health outcomes among postpartum Medicaid

[4] CDC. Pregnancy Mortality Surveillance System. Available at http://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm; and Making the Case for Extending Medicaid Coverage Beyond 60 Days Postpartum: A Toolkit for State Advocates. Available at https://static1.squarespace.com/static/5ed4f5c9127dab51d7a53f8e/t/5ee12b312ecd4864f647fe67/1591814991589/State+White+Paper+061020-V6.pdf.
[5] The American College of Obstetricians and Gynecologists. Optimizing Postpartum Care. Available at https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2018/05/optimizing-postpartum-care.
[6] 2020 Special Session I Virginia Acts of Assembly, Chapter 56. Available at https://budget.lis.virginia.gov/get/budget/4283/HB5005/.
[7] 200 percent FPL plus 5 percent income disregard.

and CHIP enrolled women and their infants.

The Commonwealth has designed this Demonstration amendment to promote the objectives of the Medicaid program by improving the health and well-being of low-income individuals and families in the state.

3. Demonstration Implementation and Design. The Commonwealth is continuing all existing features of the Section 1115 Demonstration for FAMIS MOMS and FAMIS Select. The Commonwealth has applied all current Medicaid state plan covered services for pregnant women to individuals in the Demonstration amendment populations for the duration of the 12 months postpartum. This waiver extends the time all pregnant individuals receive benefits, until 12 months postpartum, but does not change the benefits offered for any pregnant individual. On July 1, 2022, final systems and operational changes took effect for full implementation of the postpartum coverage extension for all populations. Virginia's implementation was statewide rather than a staged regional rollout, limiting geographical comparisons. As discussed below, the timing and contextual factors of implementation limit within-state comparisons among Medicaid and CHIP populations.

4. Demonstration Population Groups and Covered Services. The eligibility groups affected by the Demonstration are as follows:

a. **FAMIS MOMS.** This includes uninsured pregnant individuals in families with income up to and including 200 percent of the FPL[8] who are not eligible for Medicaid, including lawfully present (ICHIA/CHIPRA 214) individuals. This also includes pregnant individuals with access to state employee health benefit coverage (in accordance with the hardship exception as provided in section 2110(b)(6)(C) of the Social Security Act ["the Act"]).

   Under the demonstration, Virginia is also authorized to deem infants born to FAMIS MOMS to be eligible for Medicaid or CHIP coverage, as appropriate, consistent with 42 CFR 435.117 and 457.360. These infants are deemed eligible on their date of birth and remain eligible until attaining the age of 1.

b. **FAMIS Select Premium Assistance.** Children eligible for and enrolled in Virginia's separate CHIP program may elect to enroll in FAMIS Select and receive CHIP premium assistance payments to purchase private or employer-sponsored health insurance coverage. Such enrollment is voluntary and based on informed choice regarding all implications of choosing premium assistance in lieu of direct CHIP state plan coverage, including the possibility of reduced benefits and increased cost-sharing, and that the CHIP cost-sharing limit of five percent on annual aggregate cost-sharing will not apply.

c. **Postpartum Extension.** This demonstration extends continuous postpartum coverage for Medicaid and CHIP pregnant individuals from the end of the state plan 60-day postpartum benefit period to the end of the 12th month following the end of the pregnancy (including individuals enrolled while pregnant during a period of retroactive

[8] 200 percent FPL plus 5 percent income disregard.

eligibility and/or for individuals who did not have enrollment in Medicaid or CHIP while pregnant). Eligibility for the extended postpartum period is determined by the date the birth takes place. After the conclusion of the continuous 12-month postpartum period, the Commonwealth will redetermine eligibility. There is no enrollment limit under this proposal. Eligible populations are provided 12 months continuous extended postpartum coverage as follows:

i. Individuals enrolled in the FAMIS MOMS population as described in subparagraph 4a above, with exception for individuals whose program eligibility is derived by section 1903(v)(4) or 2107(e)(l)(O) of the Act. This includes individuals who enroll after giving birth and are in the postpartum period.

ii. Pregnant and postpartum individuals in any Medicaid state plan eligibility group, with exception for individuals whose program eligibility is derived by section 1903(v)(4) or 2107(e)(l)(O) of the Act as described in subpart 4(c)iv below. This includes individuals who enroll in Medicaid after giving birth and are in the postpartum period.

iii. Individuals who are within 12 months postpartum but beyond the state plan 60-day postpartum coverage period (including those who were not enrolled in Medicaid or CHIP while pregnant), have household income up to and including 200 percent of the FPL,[9] and meet all other Medicaid or CHIP eligibility criteria, with exception for individuals whose program eligibility is derived by section 1903(v)(4) or 2107(e)(l)(O) of the Act. Additionally, if an individual's income or eligibility changes during the 12 months postpartum they will not be disenrolled. Instead, their eligibility will be re-evaluated at 12 months postpartum.

iv. Lawfully present (ICHIA/CHIPRA 214) Individuals – Individuals determined to be "lawfully residing" in the United States for the purpose of establishing Medicaid or CHIP eligibility in accordance with section 1903(v)(4) or 2107(e)(l)(O) of the Act. At the time of Virginia's demonstration approval, these individuals' eligibility for 12-months postpartum coverage was only authorized for a five-year period starting April 1, 2022, through March 31, 2027, in accordance with sections 9812 and 9822 of the American Rescue Plan Act of 2021 (ARP) (Pub. L. 117-2). The 2023 Consolidated Appropriations Act permanently extended this group's eligibility for 12 months postpartum coverage in states electing the option.

This document describes the evaluation design for the Postpartum Extension component of the Demonstration, item 4.c. above.

Covered Services. FAMIS MOMS coverage is the same as that provided to pregnant women under the Medicaid state plan. Under the Demonstration amendment, the Medicaid for pregnant

[9] Plus 5% income disregard.

women and FAMIS MOMS benefit packages remain aligned. All individuals eligible for the 12-month extended postpartum coverage period receive full state plan benefits during the pregnancy and the 12 months postpartum. The benefit package includes comprehensive health and dental benefits (including orthodontics for individuals under the age of 21) for the duration of the 12 months postpartum. Dental services are through the Commonwealth's contracted Smiles for Children service provider. No cost-sharing is imposed, as pregnant women are exempt from such requirements.

5. Other Relevant Contextual Factors. There are several critical contextual factors relevant to the evaluation, namely changes in eligibility policy in the years preceding the evaluation period for the Demonstration amendment that may make it more difficult to find valid comparison groups for quasi-experimental study designs for this evaluation. These considerations are summarized below and will be further explored in the Methodological Limitations section. The recent changes in eligibility for postpartum Medicaid coverage are important to document as they affect the populations that fall under this demonstration amendment and subsequently may make it difficult to isolate the effects of extending postpartum coverage.

Virginia's 2019 Medicaid Expansion. As of January 1, 2019, Virginia expanded Medicaid eligibility to the new adult group (adults age 19-64 with income up to 138% of the FPL). Under Medicaid expansion, more women became eligible for full coverage before and after pregnancy, while previously they may not have been eligible except when qualifying on the basis of the pregnancy. Women enrolled in the Medicaid for Pregnant Women group during their pregnancy were reevaluated for eligibility at 60 days postpartum and often qualified for Medicaid expansion coverage at that time.

However, the postpartum coverage gains achieved with Medicaid expansion and the 12 months postpartum continuous coverage that will be provided under the Demonstration amendment differ from each other in two key ways:

1. Under the Demonstration amendment, coverage will be provided to all pregnant/postpartum individuals regardless of eligibility group up to 200% FPL.[10, 11]
2. Under the Demonstration amendment, continuous coverage will be guaranteed through 12 months postpartum, regardless of changes in income or household size/composition. Eligibility will no longer be reevaluated at 60 days postpartum.

The income eligibility limit for the Medicaid expansion adult group is 138% of the FPL, and Virginia's Medicaid for Pregnant Women income eligibility limit is 148% of the FPL. Virginia's FAMIS MOMS income eligibility limit is 200% of the FPL.[12] Because of the differences in upper income limits across eligibility categories, and because eligibility was reassessed at 60 days postpartum when the pregnant person's household income might have increased, some individuals enrolled in Medicaid for Pregnant Women during their pregnancy—and many women enrolled in FAMIS MOMS during their pregnancy—were above the income limit for Medicaid expansion when reassessed at 60 days postpartum. These members may have qualified

[10] 200 percent FPL plus 5% income disregard
[11] With the exception of the FAMIS Prenatal Coverage or "unborn child" population
[12] 200 percent FPL plus 5% disregard

for Virginia's limited benefit family planning program, Plan First, or were closed out of coverage after their postpartum period ended.

In September 2019, DMAS implemented processes to automate the movement of individuals receiving coverage on the basis of pregnancy at 60 days postpartum into the Medicaid expansion group or other appropriate eligibility group, if they met criteria. While this change led to more seamless transitions for eligible postpartum individuals and reduced administrative burden and churn, eligibility for the Medicaid expansion group was still limited to 138% FPL and there was no guarantee of continuous coverage if family income increased during the pregnancy and the first 60 days postpartum.

Prior research demonstrates that in Virginia and other states, Medicaid expansion has provided a significant pathway for continued coverage after the first two months postpartum, increased health care utilization in the postpartum period,[13, 14] and decreased mortality in the postpartum period.[15] Not only have outcomes improved, but Medicaid expansion has also been an important mechanism in reducing disparities in health outcomes for both birthing individuals and infants. For example, from 2010-2016, the infant mortality rate declined more in expansion compared to non-expansion states. Importantly, declines in infant mortality rates among Black/African American infants in expansion states were more than twice as large as those in non-expansion states.[16] As of May 2023, over 750,000 adult Virginians were enrolled in Medicaid expansion, making it an increasingly important tool to improve maternal and infant mortality and morbidity.[17]

COVID-19 Public Health Emergency Maintenance of Effort in effect beginning March 2020. To promote stability of coverage during the COVID-19 pandemic, the Families First Coronavirus Response Act (FFCRA) provided a 6.2 percentage point increase in the federal share of certain Medicaid spending tied to a requirement for states to ensure continuous coverage for current Medicaid enrollees.[18] This Maintenance of Effort (MOE) required states to ensure that all individuals enrolled in full-benefit Medicaid on March 18, 2020 remained enrolled until the end of the COVID-19 Public Health Emergency (PHE). This applied to members enrolled in Medicaid who reached the end of the 60-day postpartum period. Under the MOE, these individuals remained enrolled in Medicaid under the pregnancy eligibility group. The 2023 Consolidated Appropriations Act de-linked the continuous coverage requirement from the PHE and set out a period of phased "unwinding" for states to return to regular renewal operations.

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[13] Gordon SH, Sommers BD, Wilson IB, Trivedi AN. Effects Of Medicaid Expansion On Postpartum Coverage And Outpatient Utilization. *Health Aff (Millwood)*. 2020;39(1):77-84.

[14] Dunlop AL, Joski P, Strahan AE, Sierra E, Adams EK. Postpartum Medicaid Coverage and Contraceptive Use Before and After Ohio's Medicaid Expansion Under the Affordable Care Act. *Womens Health Issues*. 2020;30(6):426-435.

[15] Eliason EL. Adoption of Medicaid Expansion Is Associated with Lower Maternal Mortality. *Womens Health Issues*. 2020;30(3):147-152.

[16] Bhatt CB, Beck-Sagué CM. Medicaid Expansion and Infant Mortality in the United States. *Am J Public Health*. 2018;108(4):565-567. doi:10.2105/AJPH.2017.304218

[17] Medicaid Expansion Enrollment. Accessed April 2022. https://www.dmas.virginia.gov/data/medicaid-expansion-enrollment/

[18] Dolan, Musumeci, Tolbert, Rudowitz. Medicaid Maintenance of Eligibility Requirements: Issues to Watch. Accessed April 2022. https://www.kff.org/medicaid/issue-brief/medicaid-maintenance-of-eligibility-moe-requirements-issues-to-watch/

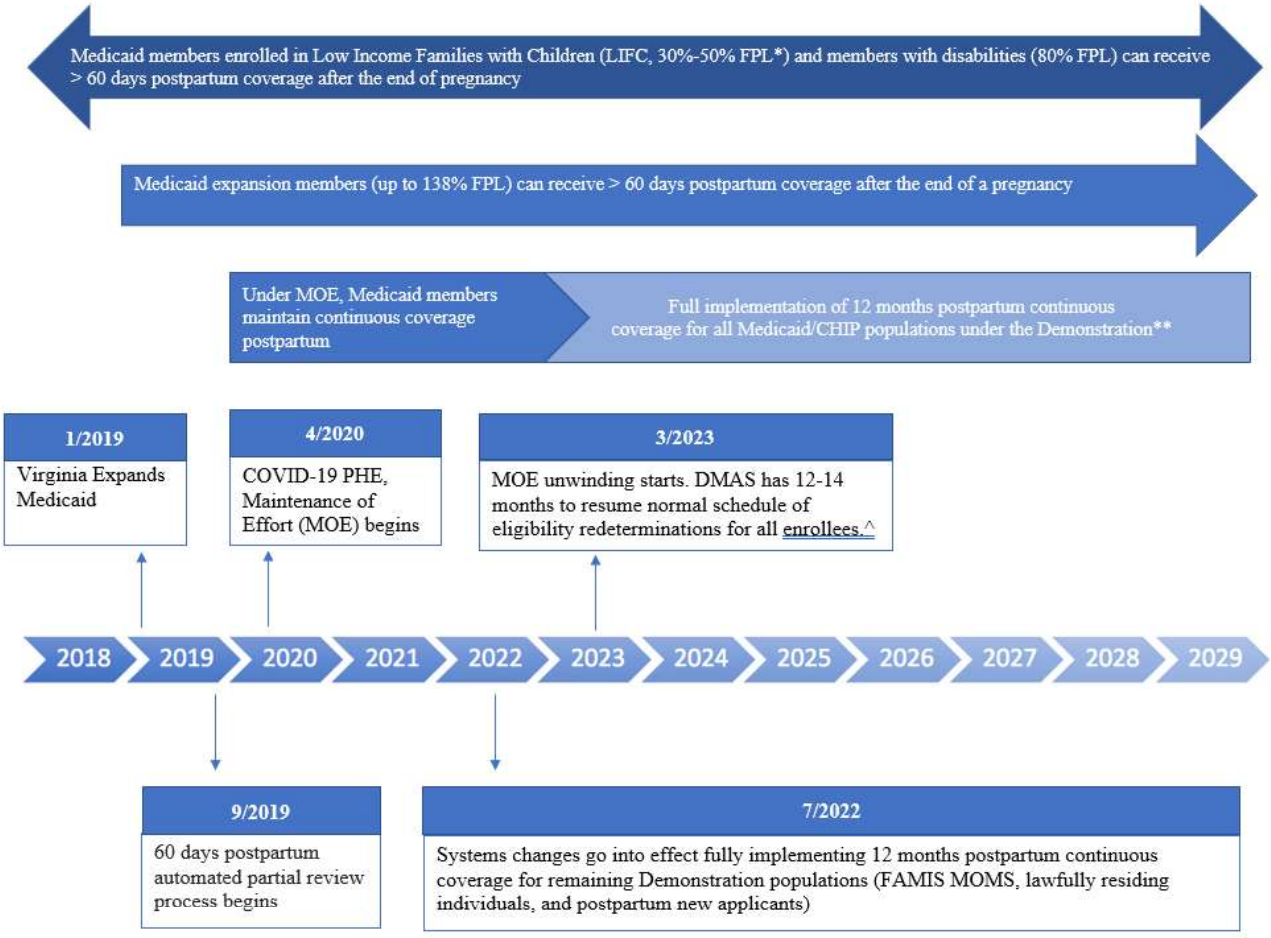
Starting on March 1, 2023, Virginia began to resume Medicaid coverage redeterminations, meaning the first terminations occurred in May of 2023.[19] Notably, the MOE did not apply to the FAMIS MOMS population, so eligibility redeterminations at 60 days postpartum continued for these members during the PHE. The MOE also did not apply to the lawfully residing (ICHIA/CHIPRA 214) populations.

Final systems changes took effect July 1, 2022 for full implementation of the 12 months guaranteed continuous postpartum coverage, including for these populations. Although there may be opportunities for limited comparisons between Medicaid groups—who have had greater access to extended postpartum coverage prior to the Demonstration implementation—and the FAMIS MOMS and CHIPRA 214 populations, such comparisons should be approached with caution. Unobserved differences between the populations might confound expected changes in utilization and outcomes related to the Demonstration, such as how income and residency status influence health-related behaviors and health care utilization.

For example, members enrolled in FAMIS MOMS generally have higher household incomes than those enrolled in Medicaid expansion or other Medicaid eligibility categories. Individuals with higher incomes tend to experience lower maternal morbidity and better infant health outcomes than those with lower incomes.[20,21] Data from the FAMIS MOMS demonstration to date indicate that birth outcomes for this population compare favorably to those for Virginia's Medicaid populations.[22] Similarly, with regard to the CHIPRA 214 populations, prior research suggests that women who are immigrants may experience lower maternal and infant mortality but less utilization of recommended care in the perinatal period.[23,24,25]

[19] Unwinding the Medicaid Continuous Coverage Requirement. April 28, 2023. Center on Budget and Policy Priorities. https://www.cbpp.org/research/health/unwinding-the-medicaid-continuous-coverage-requirement
[20] Wishart D, Cruz Alvarez C, Ward C, Danner S, O'Brian CA, Simon M. Racial and Ethnic Minority Pregnant Patients with Low-Income Experiences of Perinatal Care: A Scoping Review. *Health Equity*. 2021;5(1):554-568. Published 2021 Sep 3
[21] Singh GK. *Maternal and Child Health Bureau.* Rockville, MD: U.S. Department of Health and Human Services; 2010. [Accessed 15 September, 2020]. Maternal Mortality in the United States 1935-2007:Substantial Racial/Ethnic Socioeconomic, and Geographic Disparities Persist. A 75th Anniversary Publication. Health Resources and Services Administration. https://www hrsa.gov/sites/default/files/ourstories/mchb75th/mchb75maternalmortality.pdf
[22] See, for example, Commonwealth of Virginia Department of Medical Assistance Services, 2021-22 Medicaid and CHIP Maternal and Child Health Focus Study Report, January 2023.
[23] Singh GK. Trends and Social Inequalities in Maternal Mortality in the United States, 1969-2018. *Int J MCH AIDS*. 2021;10(1):29-42. doi:10.21106/ijma.444
[24] Maru, S., Glenn, L., Belfon, K. *et al.* Utilization of Maternal Health Care Among Immigrant Mothers in New York City, 2016–2018. *J Urban Health* **98,** 711–726 (2021). https://doi.org/10.1007/s11524-021-00584-5
[25] Miller LS, Robinson JA, Cibula DA. Healthy Immigrant Effect: Preterm Births Among Immigrants and Refugees in Syracuse, NY. *Matern Child Health J*. 2016;20(2):484-493.

Figure 1: Timeline of changes in eligibility for extended postpartum coverage



Notes: * Amount varies by locality but is approximately 30-50% FPL on average.
** With the exception of FAMIS Prenatal Coverage.
^ The Public Health Emergency expired on May 11, 2023. The 2023 Consolidated Appropriations Act de-linked the PHE from the maintenance of effort/continuous coverage requirement, and set out a period of phased "unwinding," which began for Virginia on March 1, 2023, with the first terminations occurring in May 2023.

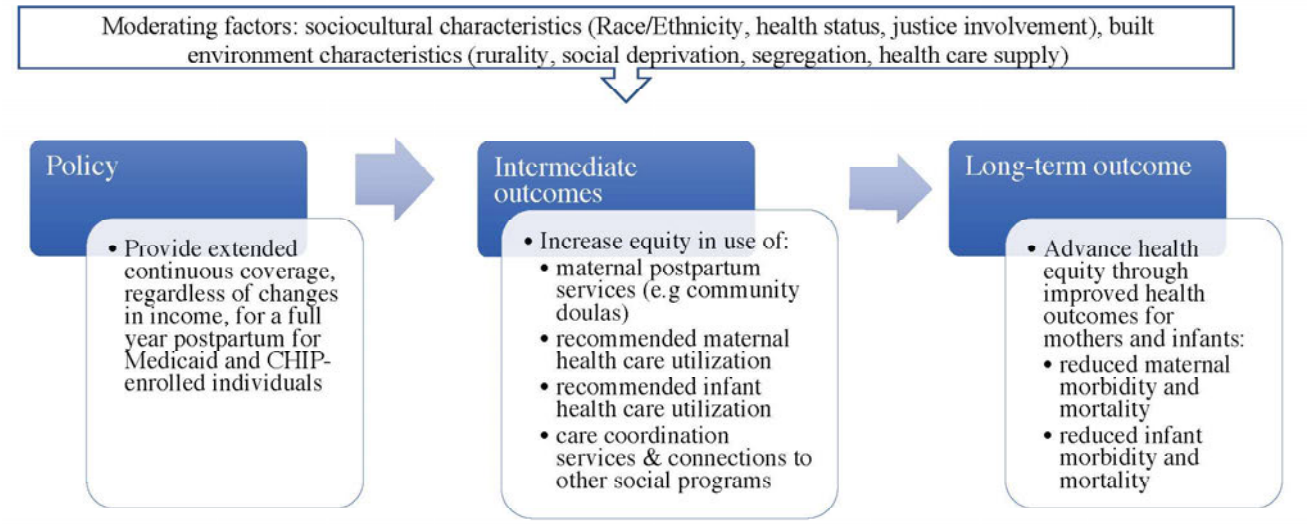
B. Evaluation Hypotheses and Research Questions

The overarching goals of this demonstration are to improve continuity of coverage, increase access to medical and behavioral health care services, reduce maternal and infant mortality and morbidity, and advance health equity. We will first discuss our logic model, followed by the research questions and outcome measures.

1. Logic Model. Our logic model is depicted below and addresses intermediate and long-term outcomes of the policy changes as well as the moderating factors that may drive the effects of the Demonstration (Figure 2). Potential moderators of the effect of the policy on both intermediate and long-term outcomes are adapted from the National Institute on Minority Health and Health

Disparities Research Framework[26] and include sociocultural (member race/ethnicity, health status, justice involvement) and built environment factors (geographic region, urban/rural, residential segregation, social deprivation, health care systems supply). Although factors such as race/ethnicity and health status have often been considered confounding variables, we believe that these factors are likely to affect many aspects of the lived experience of the individual and should be operationalized as moderators instead of confounders. We first articulate the policy change that we will be evaluating: Provide extended continuous coverage, regardless of changes in income, for a full year postpartum for Medicaid and CHIP-enrolled individuals. We then articulate intermediate outcome: increase equity in the use of recommended services for both mother and child in the postpartum period. We believe that the increased utilization of recommended medical and behavioral health care services will help achieve the long-term goals of reduced mortality and morbidity.

Figure 2: Logic Model



2. Hypotheses and Research Questions. Table 1 below describes the specific research questions, hypotheses, and performance metrics that will be used to assess whether the extended postpartum coverage demonstration has achieved the goals as described above. These metrics and hypotheses are grouped into five overarching research questions:

1. Does the Demonstration promote continuous coverage and continuity of care for postpartum women?
2. Does the Demonstration increase use of recommended medical and behavioral health care services (e.g., follow-up on referrals to specialist, use of preventive screenings, and use of recommended primary care visits) for postpartum women and their infants?
3. Does the Demonstration improve the health outcomes and outcomes related to health-related social needs for postpartum women?

[26] Alvidrez J, Castille D, Laude-Sharp M, Rosario A, Tabor D. The National Institute on Minority Health and Health Disparities Research Framework. *Am J Public Health*. 2019;109(S1):S16-S20.

4. Does the Demonstration increase the use of recommended health care services (e.g., well-child visits and vaccinations) and improve health outcomes for infants born to these women?
5. Does the Demonstration reduce racial/ethnic and other disparities and advance health equity for postpartum women and their infants?

C. Methodology

1. Evaluation Methodology Summary. To answer the research questions posed above, this evaluation will use mixed methods that include both qualitative and quantitative components. Quantitative data sources will include administrative Medicaid inpatient, outpatient, and pharmacy claims and enrollment data, vital records for births and deaths linked to Medicaid administrative data, corrections data linked to Medicaid administrative data, and Medicaid member survey data. We will supplement Medicaid data with the following sources to provide information in the pre-demonstration period: 1) Pregnancy Risk Assessment Monitoring Systems (PRAMS), 2) Virginia All Payer Claims Database (APCD), and 3) Virginia Health Information Hospital Discharge data. Qualitative data will be obtained from open-ended survey responses during the member survey and qualitative interviews will be conducted with providers and other stakeholders to better understand the successes and challenges of the demonstration implementation, education and outreach efforts. Ultimately, we will use both quantitative and qualitative methods to understand how members' access, utilization, and outcomes change in response to this demonstration.

Understanding how this demonstration addresses disparities across racial groups (e.g., Black/African American compared to White members) in health access, use of services, and outcomes across sociocultural and built environment characteristics is of particular importance. To do this, we will focus on both individual-level factors and community-level factors across multiple domains known to influence health disparities to advance our understanding of the equity impacts of postpartum coverage extensions.

2. Evaluation Period. The evaluation period for the postpartum coverage Demonstration component began on July 1, 2022 and continues through June 30, 2029. However, data from January 1, 2017 to June 30, 2022 will be used to establish pre-demonstration trends. Including 2017 and 2018 data is important to establish a pre-Medicaid expansion baseline. Prior to January 1, 2019, although pregnant individuals in Virginia were guaranteed continuous coverage during pregnancy and through 60 days postpartum, once they reached 60 days postpartum these groups found few coverage groups where they could gain eligibility. Some very low-income adults with children qualified for the Low-Income Families with Children (LIFC) coverage group, and individuals could also qualify for Medicaid coverage on the basis of a disability. Therefore, data from 2017 and 2018 provide information about individuals before any changes in eligibility occurred prior to the postpartum extension that may influence outcomes.

In addition to expansion, the maintenance of effort (MOE) requirement resulting from the COVID-19 public health emergency was in effect starting in March 2020. As a result, members who were enrolled in Medicaid pregnancy eligibility from this time until redeterminations resumed in March 2023 were not disenrolled after 60 days postpartum regardless of their current eligibility status. In effect, the MOE has functioned in a similar manner as the postpartum

extension for a significant majority of Virginia's eligible population, making it difficult to disentangle differences between the MOE and Demonstration-related postpartum coverage extensions.

All DMAS administrative data is available to the independent evaluator with a 3-6 month delay, making all measures that are derived only from administrative data (inpatient, outpatient, pharmacy claims and enrollment data) available for the 2025 interim report, future evaluation reports, and the summative report. Publicly available data such as the Segregation Index, Maternity Care Deserts, and Social Deprivation Index are readily available, making all measures derived from these data available for the 2025 interim report, future evaluation reports, and the summative report. The most recent year of data for these publicly available data sources will be linked to the Medicaid enrollment file using members' census tract.

DMAS administrative data is linked to Virginia Department of Corrections data. This allows us to identify the date of release or incarceration to a state facility for any Medicaid-enrolled individual. Therefore, we will be able to identify a subsample of women who were incarcerated in the perinatal period and examine particular outcomes.

DMAS administrative data that is linked with the Virginia Department of Health (birth and death records) may have lags in the data due to the additional steps of joining data sources. This may mean that for measures derived from these sources (maternal morbidity, infant outcomes) there may be a delay in the availability of the information for inclusion in Demonstration reports. Further, additional quantitative data typically lags 1-2 years (e.g., All Payers Claims Database; Virginia Health Information Hospital Discharge Data), affecting the inclusion of these data in some reports. Additionally, the initial survey data will be collected in late 2024/early 2025, allowing for 12 months of full implementation of the Demonstration *after the PHE expires* prior to fielding the surveys. Preliminary data will be available for the interim report in 2025 and the summative report in 2030. We anticipate repeating member surveys bi-annually thereafter for the remainder of the Demonstration period (i.e., 3 separate survey field periods, each 2 years apart) to monitor trends in utilization and outcomes related to postpartum coverage extension.

3. Populations of Interest.

This demonstration amendment prevents individuals who experience income and household composition changes that would have led to termination of eligibility from losing eligibility during the 12-month postpartum period. We are particularly interested in changes in the outcomes of the eligibility groups that were not generally eligible for postpartum coverage for more than 2 months after delivery prior to the demonstration. These groups include (1) FAMIS MOMS (CHIP pregnant women with incomes below 200% of the FPL)[27], who typically are above income for Medicaid expansion and who do not qualify for continuous coverage beyond 60 days postpartum under the MOE, (2) lawfully residing (CHIPRA 214) individuals who qualify on the basis of pregnancy, are covered through 60 days postpartum, and to date have not qualified for coverage under Medicaid expansion and also have not been subject to the MOE, and (3) Medicaid pregnant women with household income above the cutoff for Medicaid expansion (138-148% FPL)—these individuals did not qualify for continued coverage in the

[27] 200 percent FPL plus 5 percent income disregard

Medicaid expansion group pre- and post- MOE, but they do qualify under the MOE to continue in the Medicaid for Pregnant women coverage group for the duration of the PHE.

Among pregnant/postpartum individuals in Medicaid, we expect the Demonstration to improve outcomes in the years following implementation as compared to the years prior. We expect the Demonstration to have a greater impact on FAMIS MOMS, CHIPRA 214 individuals, and Medicaid pregnant women with household income above the cutoff for Medicaid expansion as these individuals had limited access to extended postpartum coverage prior to the Demonstration implementation. While we expect improvements, changes in the third group, for which the MOE was applied, may be more difficult to identify because these individuals experienced continuous coverage similar to the Demonstration under the MOE. A more plausibly valid approach to understand the effect of the Demonstration may be to compare the pre-COVID years (2017, 2018, and 2019) and the years after the Demonstration was fully implemented.

In addition to the eligibility groups discussed, we want to evaluate the efficacy of this demonstration across both sociocultural and built environments across the Commonwealth. We want to focus on individuals from minoritized backgrounds, including from communities that lack sufficient health care supply and social resources. First, we will focus on differences in outcomes across racial groups due to national and statewide disparities in maternal and infant health outcomes. The maternal mortality and morbidity crisis disproportionately impacts women of color, with non-Hispanic Black/African American women 2.5 times more likely to suffer a pregnancy-related death than non-Hispanic White women, and 3.1 times more likely to suffer a pregnancy-related death than Hispanic women.[28] Similarly, non-Hispanic Black/African American and American Indian/Alaska Native women experience significantly higher rates of severe maternal morbidity than non-Hispanic white women.[29] In Virginia, reports by the Virginia Department of Health found that Black/African American women in the state are more than twice as likely to die from pregnancy-related causes compared to White women, largely tracking trends at the national level.[30] Virginia faces unacceptable racial inequities in maternal mortality and morbidity that the Commonwealth aims to address through the Demonstration; to achieve this goal, these racial disparities must be analyzed in the evaluation. The COVID-19 pandemic has further exacerbated existing health disparities and is expected to contribute—both directly and indirectly—to increased rates of mortality and morbidity for mothers and infants of color.[31]

This evaluation also focuses on women with a chronic behavioral or physical health condition as well as women who experience a high-risk event during labor and delivery. In addition, this evaluation will focus on women whose infants experienced a health event. Individuals with multiple chronic health conditions are more likely to experience preterm delivery, cesarean delivery, severe maternal morbidity and mortality and have a longer length of stay during

[28] CDC. Maternal Mortality in the United States: Changes in Coding, Publication, and Data Release, 2018. Available at https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-02-508.pdf.
[29] Racial and Ethnic Disparities in the Incidence of Severe Maternal Morbidity in the United States, 2012-2015. Available at https://pubmed.ncbi nlm nih.gov/30303912/.
[30] 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; and House Bill 2546. Available at https://lis.virginia.gov/cgi-bin/legp604.exe?191+sum+HB2546.
[31] CDC. COVID-19 Cases, Hospitalizations, and Deaths, by Race/Ethnicity. Available at https://www.cdc.gov/coronavirus/2019-ncov/downloads/covid-data/hospitalization-death-by-race-ethnicity.pdf

delivery than those with no chronic condition or with one chronic condition.[32] The Virginia Maternal Mortality Review Team found that 70% of women who experienced a pregnancy-associated death had at least one chronic condition with a median of two conditions.[33] Importantly, the Maternal Mortality Review Team noted missed opportunities for care coordination and referrals to specialists in these cases of maternal mortality. Only 25% of women with a chronic condition received a referral to a specialist during their pregnancy.[29] This missed opportunity for care coordination may be contributing to significant racial disparities in maternal mortality as Black/African American women with at least one chronic condition had a mortality rate over twice that of their White counterparts. Last, the Virginia Maternal Mortality Review Team urged better care coordination to help reduce both the overall rate of maternal mortality and racial disparities in outcomes.[29]

Postpartum individuals with substance use disorders are another population of interest. The postpartum period represents a particularly vulnerable time for those with a substance use disorder. For example, among women with opioid use in the year prior to delivery, the highest overdose rate occurred 7-12 months after delivery.[34] However, receiving pharmacotherapy for opioid use disorder was associated with reduced overdose rates in the early postpartum period, suggesting that evidence-based substance use treatment can reduce morbidity.[35] Additionally, women experiencing any substance use disorders in pregnancy have higher odds of not receiving appropriate prenatal or postpartum care.[36]

Further, individuals experiencing a "high-risk pregnancy event" or who have an infant who experienced a high-risk event may need additional follow-up from medical services, including mental health as well as social services. To assess whether postpartum women and their infants are receiving these necessary services is a focal point of the surveys deployed in this evaluation. Ultimately, the postpartum period is a potentially vulnerable time for all individuals but may exacerbate conditions existing prior to pregnancy or that were developed in pregnancy. Ensuring adequate access to and use of care for postpartum women and their infants is a central goal of the Demonstration.

Finally, this evaluation also includes a focus on pregnant and postpartum individuals involved in the justice system. Incarceration among women is increasing as an estimated 210,595 women were incarcerated in 2015 in the U.S., a 645% increase in incarcerated women since 1980.[37]

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[32] Admon LK, Winkelman TNA, Heisler M, Dalton VK. Obstetric Outcomes and Delivery-Related Health Care Utilization and Costs Among Pregnant Women With Multiple Chronic Conditions. *Prev Chronic Dis*. 2018;15:E21. Published 2018 Feb 8.

[33] Rouse. Virginia Pregnancy Associated Deaths, 1999-2012: Need for Coordination of Care. Virginia Maternal Mortality Review Team. August 2019. Available at https://www.vdh.virginia.gov/content/uploads/sites/18/2019/08/MMRT-Chronic-Disease-Report-FINAL-VERSION.pdf

[34] Schiff DM, Nielsen T, Terplan M, et al. Fatal and Nonfatal Overdose Among Pregnant and Postpartum Women in Massachusetts. *Obstet Gynecol*. 2018;132(2):466-474.

[35] Schiff DM, Nielsen T, Terplan M, et al. Fatal and Nonfatal Overdose Among Pregnant and Postpartum Women in Massachusetts. *Obstet Gynecol*. 2018;132(2):466-474. doi:10.1097/AOG.0000000000002734

[36] Nidey N, Kair LR, Wilder C, et al. Substance Use and Utilization of Prenatal and Postpartum Care. *J Addict Med*. 2022;16(1):84-92.

[37] Bronson J, Sufrin C. Pregnant Women in Prison and Jail Don't Count: Data Gaps on Maternal Health and Incarceration. *Public Health Rep*. 2019;134(1_suppl):57S-62S.

While data are extremely sparse on the intersection of pregnancy and justice involvement, it is estimated that about 4% of women in prisons are pregnant at the time of admission to prison and 5% at the time of admission to jail.[38] Importantly, the period of re-entry into the community after release from incarceration is a vulnerable time for all formerly incarcerated individuals as they experience a higher mortality rate compared to non-incarcerated individuals.[39] However, there is limited understanding of health outcomes and health care utilization among formerly incarcerated postpartum individuals. Medicaid's impact on incarcerated individuals is limited as Medicaid cannot pay for outpatient services while an individual is incarcerated. However, Medicaid can be a critical resource for accessing care after an individual is released from incarceration. Evaluating the effects of postpartum coverage extensions on the health and health-related social needs of individuals recently released from incarceration will provide critical information to enable Virginia to reduce disparities among Medicaid members.

Community-level factors can affect the type and amount of resources available to an individual as well as increase health risks, ultimately affecting health care utilization as well as outcomes.[40] For example, individuals from rural communities often report greater access to a usual source of care but fewer health screenings.[41] In addition, individuals living in more highly segregated areas tend to have lower access to health care and utilization as health care supply tends to be lower in these areas of high segregation.[42,43] Community-level factors not only affect the health status of an individual when they are enrolled in Medicaid, but can moderate the effectiveness of Medicaid policies after enrollment. Social deprivation is a measure that reflects an aggregate socioeconomic status of a community.[44] Individuals living in higher social deprivation index communities tend to experience a greater benefit of health policies that expand health care access such as Medicaid expansion. For example, those in more socially deprived communities experienced improved hypertension control after receiving insurance coverage.[45] In addition to general socioeconomic community factors, health care supply can influence health outcomes. For example, individuals who were living in "maternity care deserts," counties with no hospitals offering obstetric care and no OB/GYN or certified nurse midwife providers, experienced greater pregnancy-associated mortality up to a year postpartum.[46] Understanding how this postpartum

[38] Maruschak LM. *Medical Problems of Prisoners*. Washington, DC: US Department of Justice, Bureau of Justice Statistics; 2008. https://www.bjs.gov/content/pub/pdf/mpp.pdf.
[39] Binswanger IA, Stern MF, Deyo RA, et al. Release from prison--a high risk of death for former inmates [published correction appears in N Engl J Med. 2007 Feb 1;356(5):536]. *N Engl J Med*. 2007;356(2):157-165.
[40] Williams DR, Collins C. Racial residential segregation: a fundamental cause of racial disparities in health. *Public Health Rep*. 2001;116(5):404-416.
[41] Caldwell JT, Ford CL, Wallace SP, Wang MC, Takahashi LM. Intersection of Living in a Rural Versus Urban Area and Race/Ethnicity in Explaining Access to Health Care in the United States. Am J Public Health. 2016;106(8):1463-1469.
[42] Anderson KF. Racial/Ethnic Residential Segregation, the Distribution of Physician's Offices and Access to Health Care: The Case of Houston, Texas. *Social Sciences*. 2018; 7(8):119. https://doi.org/10.3390/socsci7080119
[43] Health Care Disparities in Race-Ethnic Minority Communities and Populations: Does the Availability of Health Care Providers Play a Role?
[44] Butler DC, Petterson S, Phillips RL, Bazemore AW. Measures of social deprivation that predict health care access and need within a rational area of primary care service delivery. *Health Serv Res*. 2013;48(2 Pt 1):539-559
[45] H A, Bb G, K F, et al. Role of health insurance and neighborhood-level social deprivation on hypertension control following the affordable care act health insurance opportunities. *Soc Sci Med*. 2020;265:113439.
[46] Wallace M, Dyer L, Felker-Kantor E, et al. Maternity Care Deserts and Pregnancy-Associated Mortality in Louisiana. *Womens Health Issues*. 2021;31(2):122-129. doi:10.1016/j.whi.2020.09.004

coverage extension demonstration may reduce disparities across pregnant and postpartum members in different communities is critical in advancing the Commonwealth's and CMS's commitment to reducing health inequities.

4. Data Sources. As described below, this evaluation will use primary qualitative data sources and primary and secondary quantitative data sources. We will first discuss secondary data sources and then describe primary data sources we will collect for this evaluation.

Medicaid Administrative Data. These data include both enrollment data files and encounter data. Enrollment data includes member's date of birth, sex race/ethnicity, census tract of residence, and Medicaid MCO plan and eligibility category. In prior work with Virginia Medicaid populations, we found that 86.9% [83.3%] of individuals identifying as NH Black/African American [NH White] in claims identified as the same racial ethnic group in a member survey, suggesting that it is appropriate to use the claims data assignment of race/ethnicity for this evaluation work.[47] We will use sex identified in the enrollment file. In prior work, 98.9% of individuals identified as women in the claims data identified themselves as women in survey data.[48] Census tract of residence is identified within the enrollment file for the most current residence as well as any address that has been used at the time of Medicaid enrollment. Therefore, we can identify if someone has moved during pregnancy or postpartum. Census tract will be used to link publicly available data on community-level factors such as social deprivation index, segregation index, or rural status.

Virginia Medicaid's claims system is a live database of all claims filed for all Virginia Medicaid members, including members who are fee-for-service (FFS) or managed care. This data includes the claim header, claim detail, claim status (paid or denied), provider code, and any other relevant coding information. It is linked to the Medicaid member by the Medicaid member identification number. These data will be used for most measures involving utilization of services.

Linked secondary data. We will link several different secondary data sources to the administrative files described above. First, Virginia will employ the dataset from the annual Birth Outcomes Study conducted by DMAS' contractor. The dataset is created by the contractor and DMAS subject matter experts using deterministic and probabilistic data linking to match Medicaid members with birth registry records, thereby identifying births paid by Virginia Medicaid/CHIP during a given calendar year. Member claims and encounter data files are matched with birth registry data fields for members from each of the data linkage processes. All probabilistically or deterministically linked birth registry records are included in the eligible study population.

[47] In a sample of 1,622 Medicaid expansion enrollees, we compared how individuals identified their race on a survey and how that individual's race was identified in DMAS's administrative file. The percentages reflect the congruence of identification.

[48] In a sample of 1,622 Medicaid expansion enrollees, we compared how individuals identified their gender on a survey and how that individual's gender was identified in DMAS's administrative file. The percentages reflect the congruence of identification.

Second, we will use several publicly available datasets linked to Medicaid administrative data by census tract. The rural status of the census tract will be established using RUCA codes from the USDA Economic Research Service data source.[49] Social deprivation index data will come from the Robert Graham Center[50] and the segregation index will be calculated from the American Community Service data on population reports.[51] Maternity Care Deserts are noted at the county level and come from the March of Dimes.[52]

Additional Quantitative Data. There are three data sources we will use to supplement Medicaid claims data, allowing us to better examine pre-demonstration trends: 1) Pregnancy Risk Assessment Monitoring System (PRAMS), 2) Virginia All Payer Claims Database (APCD), and 3) Virginia Health Information Hospital Discharge data. These three data sources provide data on individuals of various insurance status and have ways of identifying Medicaid individuals, making these datasets relevant to this evaluation.

First, the Pregnancy Risk Assessment Monitoring System is a national survey administered at the state level to a sample of individuals taken from birth certificate data. Importantly, PRAMS is asked of individuals typically between 2-4 months postpartum, a time of interest for this evaluation since this is the time period during which members historically would have faced disenrollment and health coverage transitions. PRAMS is currently available for Virginia for years 2017-2020[53], making it possible to compare Virginia data across time, including in periods prior to the demonstration. The survey asks detailed questions about income and household composition, enabling us to more finely identify individuals who meet current eligibility criteria for the demonstration. In addition to the income questions, the survey also asks about Medicaid coverage before and during pregnancy, allowing us to identify individuals who delivered while enrolled in Medicaid. The PRAMS questions cover outcomes in demonstration Goal 1, Goal 2, Goal 3, making it a robust data source for our demonstration. While there are many strengths of PRAMS, there are several limitations. For example, the state sample is not necessarily representative and typically has a small pool of respondents (989 for 2019).[54] Despite these limitations, it may be an important dataset to understand changes in coverage trends, outpatient utilization, and health outcomes in the postpartum period. PRAMS data from 2017-2028 for all states that meet the response threshold for the given year will be used for this evaluation to allow demonstration performance in Virginia to be benchmarked among regional and national averages. The final year, 2028, was selected to allow time for the data to be released and analyzed and included in the Draft Summative Evaluation Report due in December 2030.

[49] Rural-Urban Continuum codes. Accessed April 2022. https://www.census.gov/topics/housing/housing-patterns/guidance/appendix-b.html
[50] Social Deprivation Index. Accessed April 2022. https://www.graham-center.org/maps-data-tools/social-deprivation-index.html
[51] Housing Patterns: Appendix B: Measures of Residential Segregation. Accessed April 2022. https://www.census.gov/topics/housing/housing-patterns/guidance/appendix-b.html
[52] Nowhere to Go: Maternity Care Deserts. Accessed April 2022. https://www.marchofdimes.org/research/maternity-care-deserts-report.aspx
[53] Are PRAMS data available to researchers? https://www.cdc.gov/prams/prams-data/researchers.htm
[54] 2019 PRAMS Response Rate Table. https://www.cdc.gov/prams/prams-data/response-rate-tables/2019-response-rate-table html

Another important dataset is the Virginia All Payer Claims Database (APCD).[55] Prior work in Arkansas has used the APCD to examine coverage transitions and outpatient utilization among postpartum persons following Medicaid expansion.[56] The APCD is a dataset that contains deidentified claims for inpatient and outpatient care accompanied with limited demographic data (including insurance status, gender, zip code, census tract) for most Virginians. While these data are not identified, individuals are linked across time, allowing us to examine post-birth utilization for individuals. The benefits of the APCD include being able to track claims associated with an individual even when they transition to other insurance coverage and being able to identify outpatient claims. We can adapt research on Medicaid expansion effects among postpartum persons using APCD data in Arkansas to our demonstration evaluation in Virginia, particularly for Goals 1 and 2. A limitation of the APCD is that it does not include claims for individuals who are uninsured. Additionally, the type of Medicaid eligibility, such as FAMIS MOMS versus Medicaid expansion, cannot be distinguished, as the APCD does not include eligibility category. Because of its strengths, the APCD data from 2017-2028 will be used for this evaluation.

Virginia Health Information (VHI) Hospital Discharge data provide inpatient utilization claims for all individuals at all Virginia hospitals regardless of insurance status.[57] These hospital claims can be linked over time at the individual level and identify the insurance of the individual, including Medicaid coverage. This allows us to identify covered Medicaid individuals at their delivery and follow any inpatient use in the year postpartum. Importantly, this dataset includes uninsured individuals, providing information for periods of uninsurance that are not included in Virginia's APCD. Goal 3 includes two additional outcomes to this goal, based upon prior literature examining changes in inpatient use after Medicaid expansion,[58] of 1) any hospitalization in the year after delivery, and 2) pregnancy-related hospitalization in the year after delivery. Similar to the limitations of the APCD, the VHI data does not provide details on the type of Medicaid coverage, so identifying, for example, FAMIS-eligible versus Medicaid expansion eligible individuals is not possible. VHI Hospital Discharge data from 2017-2028 will be used for this evaluation.

Ultimately, we believe that augmenting our Medicaid claims data with other data sources including the PRAMS, APCD, and Virginia Health Information Hospital Discharge data will provide a more robust evaluation plan of this demonstration.

Survey data. Primary data will consist of member surveys. Our evaluation team has extensive experience with surveys of Virginia Medicaid members including members newly eligible via Medicaid expansion, members with an opioid use disorder using DMAS' Addiction and Recovery Treatment Services (ARTS), and members enrolled in Commonwealth Coordinated Care Plus (CCC Plus). The postpartum member surveys planned for this evaluation will employ similar methods to leverage our past successes. The initial postpartum member survey will be

[55] All Payers Claim Database (APCD). http://www.vhi.org/apcd/
[56] Steenland MW, Wilson IB, Matteson KA, Trivedi AN. Association of Medicaid Expansion in Arkansas With Postpartum Coverage, Outpatient Care, and Racial Disparities. *JAMA Health Forum*. 2021;2(12):e214167. Published 2021 Dec 17. doi:10.1001/jamahealthforum.2021.4167
[57] Patient Level Data. https://www.vhi.org/Products/patientleveldata.asp
[58] Steenland MW, Wherry LR. Medicaid Expansion Led To Reductions In Postpartum Hospitalizations. *Health Aff (Millwood)*. 2023;42(1):18-25. doi:10.1377/hlthaff.2022.00819

fielded in 2024-2025 and include a stratified random sample of Medicaid and FAMIS MOMS members with a live delivery about 12 months prior to the interview, and therefore are able to recall coverage, health, and service utilization experiences in the 12 months after delivery.

We will oversample individuals who experienced a pregnancy-related "high-risk" event at any time during the prenatal period, delivery, or postpartum period (e.g., gestational diabetes, preeclampsia/eclampsia, maternal substance use diagnosis, postpartum depression or psychosis diagnosis, infection, hemorrhage, thrombotic emboli, cardiovascular conditions related to pregnancy, incarceration, prenatal tobacco use).[59] We will also oversample individuals who had an infant with a health-related event (e.g., preterm birth, low-birth weight, neonatal abstinence syndrome). The main objectives of the postpartum extension survey are: (1) to assess member experiences with insurance coverage (including enrollment, continuity of coverage, and barriers to enrollment); (2) to understand how members' access to and utilization of health care differs by health status (e.g., those with a high-risk event) and sociocultural factors (race/ethnicity, those experiencing food and housing insecurity, social support levels, and experience with the criminal justice system), and built environment factors (community-level residential segregation and social deprivation); (3) to better understand care coordination for individuals following delivery; and 4) to understand members' perceptions of their own and their infant's health. The survey will include several open-ended questions to allow for qualitative data concerning utilization and access to care. The first member survey will be fielded in multiple waves over the course of several months (expected field date to begin in late 2024/early 2025) with an accrual goal of ~1,500 completed surveys. We anticipate repeating member surveys bi-annually thereafter for the remainder of the Demonstration period.

All analyses based on the survey data will be weighted to reflect the actual distribution of Medicaid and FAMIS MOMS members with live deliveries at the time of the sample draw. Survey weights will be constructed specifically to make two adjustments: (1) to correct for differences between survey respondents and nonrespondents based on age, sex, race/ethnicity, rural/urban residence, and region; (2) to account for the oversampling of members with a "high risk" event as described above. Our weighting strategy will be similar to that used in our prior surveys of Virginia Medicaid members.[60]

Survey nonresponse may lead to biased estimates to the extent that survey respondents differ from nonrespondents in ways that affect survey estimates. To partially correct for this, survey weights rebalance the sample of respondents to account for differences between respondents and nonrespondents on known characteristics. Because the sample will be obtained from member enrollment data, data for age, sex, race/ethnicity, rural/residence, and region will be available for both survey respondents and nonrespondents. Using these data, an initial weight will be constructed using the propensity cell method.

The weight will be further adjusted to account for the oversampling of members with high-risk events. By comparing the distribution of the sample (corrected for differential nonresponse as described above) with the actual distribution of the target population at the time of sampling, the

[59] Petersen EE, Davis NL, Goodman D, et al. Vital Signs: Pregnancy-Related Deaths, United States, 2011–2015, and Strategies for Prevention, 13 States, 2013–2017. MMWR Morb Mortal Wkly Rep 2019;68:423–429
[60] https://hbp.vcu.edu/media/hbp/policybriefs/pdfs/ARTSmembersurveyreport.5.5.22.pdf

inverse of the probability of selection will be computed and applied to the survey weight. This will allow the oversampled group (members with high-risk events) to be weighted less heavily, resulting in survey estimates that reflect their actual representation in the target population. Finally, survey data analyses will conducted as pooled analyses as well as stratified by whether the member had a "high-risk" event.

Postal addresses are the most consistently reported and accurate contact information in the enrollment data, while telephone numbers are either missing or considered inaccurate for the majority of members. Therefore, the member survey will be conducted by mail. Respondents will be provided with a $2 incentive in the survey packet that is mailed to them, as well as a stamped envelope with which to return the completed survey.

Qualitative Interviews. Qualitative interviews will be conducted in 2025 to better understand the successes and challenges of the early phases of demonstration implementation, education and outreach efforts to members, and the impact on the continuity and "seamlessness" of postpartum services when coverage is extended to 12 months instead of a redetermination and potential termination of benefits at two months. By using in-depth open-ended interviews with major providers and key stakeholders, the qualitative interviews will allow for greater understanding of how the processes of outreach and care delivery through the postpartum period have changed in response to extended continuous coverage.

Qualitative data collection will consist of semi-structured interviews with respondents who work closely with Medicaid-eligible and enrolled pregnant and postpartum individuals. These will include major providers of prenatal and postpartum care to women and families enrolled in Medicaid, including OBGYN/GYN providers, pediatricians, family medicine and primary care. Providers from a diverse range of facilities will be recruited, including the two major academic health centers in the Commonwealth (VCU and UVA health systems), Federally Qualified Health Centers, and private practices. In addition to clinical providers, we will also include representatives of community organizations promoting prenatal and postpartum care for low income women, the managed care organizations that administer services to Medicaid members, and organizations promoting enrollment in Medicaid and other public benefits (for example, the Virginia Health Care Foundation and Virginia Poverty Law Center). We will ensure geographic diversity for qualitative respondents, such as by selecting providers from all Virginia regions, including Northern, Central, Tidewater, Charlottesville, Southwest, and Roanoke Regions. For the over 200 FQHCs in Virginia, we will randomly select 10-12 facilities stratified by region, and excluding clinics that do not provide general maternal and child health services (e.g., dental clinics or those specializing primarily in behavioral health). We will conduct about 20-24 interviews in total.

Summary. Using a mixture of both primary and secondary data sources as well as quantitative and qualitative data will illuminate the robust effects of the postpartum coverage extensions as well as the differential effect across individuals. Importantly, this evaluation will explore the equity of postpartum coverage extensions by focusing on how members' experiences differ across individual and community factors that perpetuate health disparities.

5. Measures. The measures for this analysis are summarized in Table 1 and will be used to answer the research questions outlined in Section 2.1 above.

Table 1: Outcomes, hypotheses, measures, and data sources

Demonstration Goal 1: Promote continuous coverage and continuity of care for women in the postpartum period.
Evaluation Hypothesis 1a: Extending postpartum coverage will increase the months of continuous coverage for postpartum women
Evaluation Hypothesis 1b: Extending postpartum coverage will improve the continuity of care during the postpartum period

Hyp.	Outcome	Measure steward	Technical operationalization of outcome	Data source	Analytic approach
1a	Percent of individuals continuously enrolled for 12 months postpartum	None	Individuals continuously enrolled for 12 months after their delivery/ Total individuals in the demonstration[1] who gave birth in the corresponding year	Medicaid enrollment data	Interrupted time series
	Median days of continuous enrollment postpartum	None	Enrollment days among all individuals in the demonstration[1] who gave birth in the corresponding year	Medicaid enrollment data	Interrupted time series
	Median days of continuous enrollment in MCO	None	Days enrolled in an MCO among all individuals in the demonstration[1] who gave birth in the corresponding year	Medicaid enrollment data	Interrupted time series
	Time of enrollment in Medicaid to enrollment in MCO	None	Days from enrollment in Medicaid to enrollment in MCO among all individuals in the demonstration[1] who gave birth in the corresponding year	Medicaid enrollment data	Interrupted time series
	Barriers to enrollment	None	Questions on the member survey: "Did you experience any difficulties enrolling in your Medicaid coverage?" "Did you experience any difficulties staying enrolled in your Medicaid coverage?" Free response question on the survey about barriers	Survey data	Descriptive
1b	Number and proportion of beneficiaries reporting a barrier in finding a participating provider	Section 115 Demonstration Postpartum Coverage Demonstration	Did you experience difficulty in finding a doctor to go to in the year after delivery?	Survey data	Descriptive

		Technical Assistance			
	Care coordination utilization	None	Individuals that spoke with a care coordinator from their Medicaid managed care organization in the 12 months after delivery	Survey data	Descriptive
	Care coordination utilization	None	Counts of care coordination utilization activities from MCO reports	MCO reports	Descriptive
	Care coordination sufficiency	None	Did individuals need care coordination and not receive it in the 12 months after delivery	Survey data	Descriptive
	Follow-up on referrals	None	Where you referred to a specialist or other health care provider to take care of a particular health need?	Survey	Descriptive
	Continuity of pharmacotherapy for OUD	NQF #3175	Number of members who have at least 180 days of continuous pharmacotherapy with a medication prescribed for OUD without a gap of more than 7 days/ Individuals who had a diagnosis of OUD and at least one claim for an OUD medication	APCD	Controlled interrupted time series
	Linkage to other government safety net programs	None	Did individuals get enrolled in WIC or SNAP if they qualified	Survey data	Descriptive
Demonstration Goal 2: Increase access to medical and behavioral health services and treatments for women in the postpartum period. **Hypothesis 2:** Utilization of recommended medical and behavioral health services and treatments in the postpartum period will increase after postpartum coverage is extended.					
2a	Unmet health care need	None	Percent of individuals that needed health care and did not get it	Survey	Descriptive
	Use of postpartum outpatient care within the first year postpartum	None	Mean number of outpatient visits after delivery in the year postpartum among all individuals in the demonstration[1] who gave birth in the corresponding year	PRAMS; APCD	Descriptive (PRAMS) Controlled interrupted time series (APCD)

Use of postpartum outpatient care that follows ACOG	ACOG	Number of deliveries with a visit one month after delivery and a second visit between 1 month and 12 weeks after delivery/ Total individuals in the demonstration[1] who gave birth in the corresponding year	APCD	Controlled interrupted time series
Use of postpartum outpatient care as determined by NCQA HEDIS measure	NQF 1517 (and in Medicaid core set)	The percentage of deliveries in which women had a postpartum visit on or between 7 and 84 days after delivery.	APCD	Controlled interrupted time series
Receipt of respectful care-Delivery	Adapted from Mothers on Respect index (MORi)	During the delivery of my baby, overall I felt (Yes/No): Comfortable asking questions about the labor and delivery care that I received Comfortable declining care that was offered Comfortable accepting the options for care that my provider recommended I was able to choose the care options that I received My providers treated me with respect Satisfied with the labor and delivery care I received	Survey	Descriptive
Respectful Care		While you were in the hospital at the time of your baby's birth, did any of the following things happen? I felt frustrated with the type of care I received during delivery I felt my doctor, nurse or other healthcare workers didn't listen to me I felt that my concerns about my health were not taken seriously I felt my concerns about my baby's health were not taken seriously	Survey	Descriptive

			I felt my opinions about my care, or the care of my baby were not valued I felt like I couldn't ask questions or wasn't given the opportunity to ask questions I felt forced to take treatments or medications that I didn't want to take I left the hospital worried or concerned about my own health I left the hospital worried or concerned about my baby's health		
	Receipt of respectful care-Postpartum	Adapted from Mothers on Respect index (MORi)	After the delivery of my baby, overall I felt (Yes/No): Comfortable asking questions about the postpartum care that I received Comfortable declining care that was offered Comfortable accepting the options for care that my provider recommended I was able to choose the care options that I received My providers treated me with respect Satisfied with the labor and delivery care I received	Survey	Descriptive
	Use of community doula services during labor and postpartum	None	Number of deliveries in which the mother used doula services during labor and in the 12 months after delivery (CPT code 99501)/ Total individuals in the demonstration[1] who gave birth in the corresponding year	Medicaid Claims data	Descriptive
	Use of lactation consultation services	None	Number of deliveries in which lactation consultation occurred in the 12 months after delivery (CPT codes 99341-4, 99347-9,99201-3, 99212-5)/ Total individuals in the demonstration[1] who gave birth in the corresponding year	APCD	Controlled interrupted time series

	Use of any contraception in the postpartum period	Adapted from PRAMS	Use of any kind of birth control postpartum (sterilization; intrauterine device (IUD); contraceptive implant; birth control pills; shots or injections; contraceptive patch; vaginal ring; condoms)/ all deliveries	PRAMS; APCD	Descriptive (PRAMS) Controlled interrupted time series (APCD)
	Specific type of contraception in the postpartum period	Adapted from PRAMS	Highly effective: Long-acting reversible contraception (LARC) methods include Intrauterine Device (IUD) or contraceptive implant. Moderately effective methods include birth control pills, shots or injections (e.g., Depo–Provera), contraceptive patch, and vaginal ring.	PRAMS; APCD	Descriptive (PRAMS) Controlled interrupted time series (APCD)
	Screening for STI in the postpartum period	Section 1115 Postpartum Demonstration Technical assistance	Percentage of beneficiaries tested for any sexually transmitted diseases (STD)/sexual transmitted infection (STI) (by STD/STI)	APCD	Controlled interrupted time series
	Diabetes management	Section 1115 Postpartum Demonstration Technical assistance/ HEDIS	PQI 01: Diabetes Short-Term Complications Admission Rate: Age 18 and Older (PQI01-AD)	APCD; VHI	Controlled interrupted time series
	Hypertension control	Section 1115 Postpartum Demonstration Technical assistance/ HEDIS	Assesses adults 18–85 years of age who had a diagnosis of hypertension and whose blood pressure was adequately controlled (<140/90 mm Hg).	APCD	Controlled interrupted time series
	Depression screening	None	Individuals who were screened for depression (CPT 96161/96160, 96127, 96156)	APCD	Controlled interrupted time series

	Self-report depression screening	None	Answer to the question "During your postpartum checkup, did a doctor, nurse, or other health care worker do any of the following things?...Ask me if I was feeling down or depressed"	Survey data; PRAMS	Descriptive
	Mental health treatment	HEDIS	Percentage of members receiving the following mental health services during the measurement year: inpatient, intensive outpatient or partial hospitalization, outpatient, emergency department, telehealth, any service	APCD; VHI	Controlled interrupted time series
	Mental health treatment follow-up	Section 1115 Postpartum Demonstration Technical assistance/ HEDIS	ED visits for individuals with a diagnosis of mental illness and who received a follow-up visit for mental illness within 30 days of the ED visit (31 total days) & within 7 days of the ED visit (8 total days).	APCD	Controlled interrupted time series
	Antidepressant Medication	Section 1115 Postpartum Demonstration Technical assistance/ HEDIS	*Effective Acute Phase Treatment:* Adults who remained on an antidepressant medication for at least 84 days (12 weeks). *Effective Continuation Phase Treatment:* Adults who remained on an antidepressant medication for at least 180 days (6 months).	APCD	Controlled interrupted time series
	Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment (IET-AD)	Section 1115 Postpartum Demonstration Technical assistance/ HEDIS	*Initiation of AOD Treatment:* Adolescents and adults who initiated treatment through an inpatient AOD admission, outpatient visit, intensive outpatient encounter or partial hospitalization, telehealth or medication-assisted treatment (MAT) within 14 days of diagnosis. *Engagement of AOD Treatment:* Adolescents and adults who initiated treatment and had	APCD	Controlled interrupted time series

			two or more additional AOD services or MAT within 34 days of the initiation visit.		
	Follow-up for substance abuse treatment	NCQA-FUA-AD	Number of ED visits with a principal diagnosis of SUD/OUD that had a follow up visit for treatment with a primary diagnosis of SUD/OUD with 7 (and 30) days of the visit/ Number of ED visits with a principal diagnosis of SUD/ OUD	APCD	Controlled interrupted time series
	Intimate partner violence	PRAMS	Answer to the question "During your postpartum checkup, did a doctor, nurse, or other health care worker do any of the following things?... Ask me if someone was hurting me emotionally or physically?"	Survey	Descriptive
	Intimate partner violence	None	Diagnoses codes for physical, sexual and psychological abuse during pregnancy or the postpartum period (e.g., O9A.3x, O9A.4x and O9A.5x series). These codes are specific to abuse complicating pregnancy, childbirth and the puerperium. And, diagnoses codes for abuse (e.g., T74 and T76) used in conjunction with claims identifying a member as pregnant or in the postpartum period	Medicaid claims data	Descriptive
	Annual Dental Visit	NCQA	Percent of members with at least one dental visit during the year postpartum[2]	APCD	Controlled interrupted time series
Demonstration Goal 3: Improve health outcomes and reduce health-related social needs for postpartum Medicaid and CHIP enrolled women. **Hypothesis 3a:** After extension of postpartum coverage, women will experience better health outcomes in the postpartum period. **Hypothesis 3b:** After extension of postpartum coverage, individuals will experience fewer health-related social needs in the postpartum period.					
3a	Self-rated health	None	Responses to the question "In general, how would you rate your physical health?" with the possible answers being excellent/very good/good/fair/poor	Survey	Descriptive

	Self-rated mental health	None	Responses to the question "In general, how would you rate your mental health, including your mood and ability to think?" with the possible answers being excellent/very good/good/fair/poor"	Survey	Descriptive
	Self-reported medical conditions	None	Response to the question with the header "Has a doctor, nurse, or other health professional EVER told you that you had any of the following?" and yes/no/not sure to the following conditions (each a separate question): high blood pressure/hypertension, heart condition, diabetes, cancer, depression/anxiety/other mental health problem, stroke, asthma, COPD, problem using alcohol or drugs, Hep C, HIV/AIDS, other	Survey	Descriptive
	Self-rated depression	PRAMS	Since your new baby was born, how often have you felt down, depressed, or hopeless? Since your new baby was born, how often have you had little interest or little pleasure in doing things you usually enjoyed?	Survey	Descriptive
	Tobacco utilization	PRAMS	Have you smoked at least 100 cigarettes in the past 2 years? In the 3 months before you got pregnant, how many cigarettes did you smoke on an average day? In the last 3 months of your pregnancy, how many cigarettes did you smoke on an average day? How many cigarettes do you smoke on an average day now?	Survey	Descriptive

	Any hospitalization in the year after delivery	Steenland et al.	Deliveries with any hospitalizations/all deliveries	VHI	Controlled interrupted time series
	Pregnancy related hospitalization in the year after delivery	Steenland et al.	Deliveries with hospitalizations with a primary diagnosis related to complications of pregnancy, childbirth, and the puerperium/all deliveries	VHI	Controlled interrupted time series
	Inter-birth intervals	Section 1115 Postpartum Demonstration Technical Assistance	Individuals who have a pregnancy less than 12 months after the index pregnancy	APCD	Controlled interrupted time series
	Maternal mortality	CDC	*Pregnancy-associated death* is defined as the death of a woman while pregnant or within one year of the termination of a pregnancy irrespective of the cause of death or the outcome of the pregnancy	VDH data linked to Medicaid claims	Interrupted time series
3b	Food insecurity	USDA	"In the last 12 months we worried whether our food would run out before we got money to buy more." With the answers as often true, sometimes true, never true	Survey	Descriptive
	Housing insecurity	North Carolina Medicaid Screening Tool	"Within the past 12 months, have you ever stayed: outside, in a car, in a tent, in an overnight shelter, or temporarily in someone else's home (i.e. couch-surfing)?"	Survey	Descriptive
Demonstration Goal 4: Improve health care access and health outcomes for infants of postpartum Medicaid and CHIP enrolled women. **Hypothesis 4:** After the Demonstration, infants will experience increased utilization of recommended health care services and treatments and better health outcomes					
4	Well-child visits	NCQA, CMS 2022 Maternity Core Set	*Well-Child Visits in the First 30 Months of Life*: Assesses children who turned 15 months old during the measurement year and had at least six well-child visits with a primary care physician during their first 15 months of life.	Medicaid claims data	Interrupted time series

		AAP Recommended Schedule of Visits	Median number of well-child visits in the first 30 months of life Number of newborns with first visit within 3-5 days after birth		
	Immunizations	None	Rate of appropriate year 1 immunizations (Hep B 2 doses, rotavirus 2 doses, DTAP3 doses, HiB 2 doses, PCV 13 3 doses, polio 2 doses)	Medicaid claims	Interrupted time series
	Mother's perceived health of child	None	Responses to the question "In general, how would you rate your child's physical health?" with the possible answers being excellent/ very good/good/fair/poor	Survey	Descriptive
	Preterm births	CDC	Number of preterm (less than 37 weeks gestation) live singleton births divided by total number of singleton live births in the same year	VDH data linked to Medicaid claims	Interrupted time series
	Low-birth weight infants	CDC	Number of singleton (term) live births with birthweight of less than 2,500 grams in a given year, divided by the total number of singleton (term) live births in the same year (very low birth weight and the low birth weight category included)	VDH data linked to Medicaid claims	Interrupted time series
Demonstration Goal 5: Advance health equity by reducing racial/ethnic and other disparities in maternal coverage, access, and health outcomes and infant health outcomes among postpartum Medicaid and CHIP enrolled women and their infants. **Hypothesis 5 (examples):** Racial and ethnic, geographic, and other disparities in coverage, utilization of recommended care, and health outcomes will be reduced for mothers and infants in the demonstration.					
5	For measures listed above, stratified by racial and ethnic, geographic and other subpopulations of interest, as feasible		Individual level characteristics o Race/ethnicity o Income o Substance Use Diagnosis (SUD) o Chronic condition[3]		Medicaid enrollment data, claims data, survey

		○ High-risk pregnancy event ○ Individuals re-entering into the community after incarceration Community level factors (census tracts) ○ Rurality ○ MCO region ○ Social Deprivation Index (SDI) ○ Segregation Index ○ Maternity Care Deserts Health insurance factors ○ MCO[4]	data, VDH linked data

[1] Excludes FAMIS Prenatal Coverage ("unborn child" group) and Emergency-Only births. [2] All pregnant members have access to comprehensive dental services. All Virginia Medicaid members have full dental benefits effective July 1, 2021. [3] Chronic conditions include endocrine disorder, chronic mental illness, chronic substance abuse, cardiovascular, pulmonary disease, neuromuscular disease, hematologic malignancies, neoplasia, gastrointestinal disease, genital disease, collagen-vascular disease, chronic infectious disease, urinary disease (as determined by Virginia Maternal Mortality Review Team report *Chronic Disease in Virginia Pregnancy Associated Deaths, 1999-2012: Need for Coordination of Care* https://www.vdh.virginia.gov/content/uploads/sites/18/2019/08/MMRT-Chronic-Disease-Report-FINAL-VERSION.pdf) Notes: information for race will come from enrollment files. Information for SUD will come from claims file. Census tract of an individual will come from enrollment files and be linked to publicly available data at the census tract level. [4] Virginia has six Medicaid managed care organizations at this time. Differences in outcomes will be assessed across MCOs.

6. Analytic Methods.

Below we describe the three main analytic approaches—interrupted time series (Approach 2 in CMS Postpartum Coverage Demonstrations: Evaluation Technical Assistance), controlled interrupted time series (Approach 1), and cross-sectional analyses (Approach 4)—that will be used during this postpartum coverage demonstration evaluation.

Interrupted Time Series Analyses. As described above, measures for which we have data only on Virginia Medicaid members (e.g., Goal 1 measures on enrollment and continuity of coverage), including claims-based measures of utilization that are specific to Virginia Medicaid, will rely primarily on summary-level interrupted time series analyses (ITS) with the unit of time measured in quarters to allow for some variation in outcomes prior to the postpartum Demonstration implementation (Q1 2017-Q2 2022, ~22 quarters) and post (Q3 2022-Q2 2029, ~34 quarters). These ITS analyses will be similar to those described as Approach 2 in the CMS Postpartum Coverage Demonstrations: Evaluation Technical Assistance. For these analyses, the unit of analysis is the summary measure (e.g., a ratio or percentage) at a given time period rather than individual's outcome at the given time period. Assume an outcome of interest Y, across $t = 0$ ….., $_{m}$ time periods. Let Y_t represent the outcome at time t, T represents the time elapsed, and W_t represent an indicator variable specifying whether or not time T is part of the post-postpartum coverage extension implementation period in Virginia. The interrupted time series model is given by:

$$Y_t = \beta_0 + \beta_1 T + \beta_2 W_t + \beta_3 W_t * T + \varepsilon_t$$

where β_0 and β_1 represent the pre-postpartum coverage extension intercept and slope respectively, and β_2 and β_3 represent the change in the intercept and slope respectively during the post-intervention period. The parameter ε_t represents random error in the time series at time t. The estimates β_2 and β_3 are the parameters of the interest in the model.

As discussed above, Medicaid expansion (beginning in January 2019) followed by the prolonged MOE (beginning in March 2020) and unwinding period (beginning in March 2023) will influence access to and use of services in the year following delivery for most members, both before and after implementation of the demonstration. To account for this, the framework above will be extended to examine changes in four time periods in Virginia (i.e., pre-Medicaid expansion [Q1 2017-Q4 2018]; post-expansion but pre-MOE [Q1 2019-Q1 2020]; post-expansion, during MOE/unwinding and preceding and following initial implementation of the post-partum waiver [Q2 2020-Q4 2023];[61] and post-MOE/unwinding, post-postpartum

[61] Because the resumption of normal eligibility redeterminations after the end of the MOE is not a fixed point in time, but rather an extended unwinding period, it is challenging to choose the transition point between the third period and the fourth period in the framework for our analysis. Virginia has selected Q4 of 2023 as the end date of the third period because, by December of 2023, Virginia's unwinding will be mostly complete and the Commonwealth will be close to resuming an annual renewal cycle. According to Virginia's unwinding plan, most individuals in the Demonstration who gained extended postpartum coverage in the initial quarter of Demonstration implementation (Q3 of 2022), along with all individuals enrolled in Q3 of 2022, are on schedule to have initiated a 1-year renewal by the end of Q4 of 2023. In addition, segmenting the time periods in this way enables Virginia to include analysis of two quarters of data from framework's fourth time period in our July 1, 2025 interim evaluation report, which covers the period ending June 30, 2024.

Demonstration implementation [Q1 2024-Q2 2028]). Note, since the MOE/unwinding and initial implementation of the demonstration overlap and the MOE continued coverage for essentially all pregnant persons on Medicaid, we have combined the during MOE, pre-waiver implementation period [Q2 2020 – Q2 2022] and the during MOE/unwinding and post-waiver implementation period [Q3 2022 – Q4 2023]. In this case, additional parameters for the change in intercept and slope to account for the additional policy periods would also be estimated giving the model the following form:

$$Y_t = \beta_0 + \beta_1 T + \beta_2 W_{1t} + \beta_3 W_{1t}*T + \beta_4 W_2 t + \beta_5 W_2 t*T + \beta_6 W_3 t + \beta_7 W_3 t*T + \varepsilon_t$$

Where W_{1t}, W_{2t}, W_{3t}, are indicators of the second (post-expansion but pre-MOE), third (during MOE/unwinding and pre- and early post-implementation of the postpartum Demonstration), and fourth (post-MOE/unwinding, post-implementation of the postpartum Demonstration) time periods. The coefficients β_2 and β_3 represent the changes in the second time period relative to the first (post-expansion but pre-MOE versus pre-expansion), β_4 and β_5 represent the changes in the third time period relative to the first (during MOE/unwinding and pre- and early post-implementation of postpartum Demonstration versus pre-expansion), and β_6 and β_7 represent the changes in the fourth time period relative to the first (post-MOE/unwinding, post-postpartum Demonstration versus pre-expansion).

Controlled Interrupted Time Series Analyses. As described above, measures for which we have data only on Virginia Medicaid members, including claims-based measures of utilization that are specific to Virginia Medicaid, will rely primarily on summary-level controlled interrupted time series analyses (CITS)[62] with the unit of time measured in quarters to allow for some variation in outcomes prior to the postpartum Demonstration implementation (Q1 2017-Q2 2022, ~22 quarters) and post (Q3 2022-Q2 2028, ~30 quarters). These CITS analyses will be similar to those described as Approach 1 in the CMS Postpartum Coverage Demonstrations: Evaluation Technical Assistance. For these analyses, the unit of analysis is the summary measure (e.g., a ratio or percentage) at a given time period rather than individual's outcome at the given time period. Assume an outcome of interest Y, across $t = 0$ ….., $_m$ time periods. Let Y_t represent the outcome at time t, T represents the time elapsed since the start of the evaluation period, and W_t represent an indicator variable specifying whether or not time T is part of the post-postpartum coverage extension implementation period in Virginia. Let G be an indicator for whether a person is covered by Medicaid (G=1) or private insurance (G=0). Note, for hospital outcomes using the VHI Hospital Discharge data set, separate analyses will use the self-pay/uninsured as a comparator. The controlled interrupted time series model is given by:

$$Y_t = \beta_0 + \beta_1 T + \beta_2 W_t + \beta_3 W_t*T + \beta_4 G + \beta_5 G*T + \beta_6 G*W_t + \beta_7 G*W_t*T + \varepsilon_t$$

where β_0 and β_1 represent the pre-postpartum coverage extension intercept and slope respectively, and β_2 and β_3 represent the change in the intercept and slope respectively during the post-intervention period. β_4 represents the difference in intercept between the intervention and control group at T=0, β_5 represents the slope difference between the intervention and control group in the pre-intervention period, β_6 represents the difference between the change in level in

[62] https://academic.oup.com/ije/article/47/6/2082/5049576

the control and intervention group associated with the intervention, β_7 represents the difference between the change in slope in the control and intervention group associated with the intervention. The parameter ε_t represents random error in the time series at time *t*. The estimates β_6 and β_7 are the parameters of the interest in the model.

As described earlier for the ITS model, the CITS model framework above will be extended to examine changes in four time periods in Virginia (i.e., pre-Medicaid expansion [Q1 2017-Q4 2018]; post-expansion but pre-MOE [Q1 2019-Q1 2020]; post-expansion, during MOE/unwinding and preceding and following initial implementation of the postpartum waiver [Q2 2020-Q4 2023]; and post-MOE/unwinding, post-postpartum Demonstration implementation [Q1 2024-Q2 2028]). Note, since the MOE and initial implementation of the demonstration waiver overlap and the MOE continued coverage for essentially all pregnant persons on Medicaid, we have combined the during MOE, pre-waiver implementation period [Q2 2020 – Q2 2022] and the during MOE/unwinding and post-waiver implementation period [Q3 2022 – Q4 2023]. In this case, additional parameters for the change in intercept and slope to account for the additional policy periods would also be estimated giving the model the following generalized form:

$$Y_t = \beta_0 + \beta_1 T + \beta_w W_w + \beta_h W_w * T + \beta_g G_g + \beta_j G_g * W_w + \beta_k G_g * W_w * T + \varepsilon_t$$

Where $W_w = W_{2t}, W_{3t}, W_{4t}$, which are indicators of the second (post-expansion but pre-MOE), third (during MOE/unwinding and pre- and early post-postpartum Demonstration), and fourth (post-MOE/unwinding, post-postpartum Demonstration implementation) time periods. $G_w = G_{2t}, G_{3t}, G_{4t}$ are the period specific indicators for treatment and control groups. The coefficients βj and βk represent the difference in changes in the second, third, or forth time periods relative to the first between the treatment and control groups. To balance intervention and control groups on the probability of selection into treatment based on observables, propensity score weights will be included in CITS analyses.[63] To account for autocorrelation, Newey-West standard errors will be used in all CITS models.[64]

Cross-sectional analyses of postpartum member survey data and PRAMS data. An example of the cross-sectional analyses the evaluators will conduct from postpartum member survey data follows. Evaluators will assess whether members receiving extended postpartum coverage report receiving care coordination, specifically help with substance use, other health needs, or health-related social needs. As there is no pre-intervention survey data, descriptive (non-experimental) analyses will be required. Examples of cross-sectional analyses that will be leveraged from these data include linear probability models/logistic regressions estimating the adjusted probability/likelihood of whether or not members enrolled in extended postpartum coverage also report receiving assistance with substance use, other health needs, or health-related social needs (outcomes; Y_{it}).

$$Y_{it} = \beta_1 X_{it} + YEAR_t + \varepsilon_{it}$$

[63] https://academic.oup.com/ije/article/47/6/2082/5049576

[64] Newey, W. K., & West, K. D. (1986). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix.

These analyses will be adjusted for covariates (X_{it}) including member characteristics (sex, race/ethnicity, eligibility group, age), education, psychological distress, polysubstance use, employment, housing and food insecurity, and survey time period ($YEAR_t$), if the survey is repeated in subsequent years.

For PRAMS analyses, we will use annual PRAMS survey data from each state for each year during the period 2017-2028 to compare performance on demonstration outcomes available in PRAMS (see Table 1) to regional and national benchmarks before and after implementation of the demonstration waiver.

$$Y_{it} = \beta_l X_{it} + YEAR_t + STATE_s + \varepsilon_{it}$$

These analyses will be adjusted for covariates (X_{it}) including PRAMS survey participant characteristics (sex, race/ethnicity, age), education, etc., survey year ($YEAR_t$), and state fixed effects ($STATE_s$). For benchmark analyses, we will predict and describe annual outcomes for Virginia, all states (national average), and for states near Virginia (e.g., KY, MD, NC, TN, WV).

Analyses of equity in the association of Virginia's postpartum coverage extension with intermediate and long-term outcomes. To test for disparities in the parameters described above across groups of Medicaid members, the models described above will be sequentially stratified by race/ethnicity, as well as built environment and health system domains of influence, as there is evidence that sociocultural and place-based factors have distinct and compounding effects on individuals (e.g. NH White members in high SDI census tracts, NH White members in low SDI census tracts, NH Black/African American members in high SDI census tracts, NH Black/African American members in low SDI census tracts). [65] We will compare the adjusted associations between postpartum coverage extension and the outcomes described in Table 1 between, for example, NH Black/African American members in high SDI census tracts and NH Black/African American members in low SDI census tracts as well as the same comparison for NH White members. We will then compare the adjusted associations between NH White members and NH Black/African American members in low SDI census tracts as well as NH White members and NH Black/African American members in high SDI census tracts. Differences in postpartum coverage extension coefficients across stratified models will be tested using parameter stability tests in Stata (e.g., suest command). We will repeat the process and stratify models by race/ethnicity plus residential segregation, urbanicity, and maternity care deserts. Importantly, stratification by domains of influence allows these constructs to modify not only the postpartum coverage association with outcomes but with all other covariates as well.[66]

Qualitative interview analysis

An interview guide with open-ended questions will be developed that focuses on the major areas of (1) provider knowledge about Medicaid 12-months postpartum continuous coverage, (2)

[65] Probst JC, Moore CG, Glover SH, Samuels ME. Person and place: the compounding effects of race/ethnicity and rurality on health. *Am J Public Health*. 2004;94(10):1695-1703.

[66] Yue D, Pourat N, Chen X, et al. Enabling Services Improve Access To Care, Preventive Services, And Satisfaction Among Health Center Patients. *Health Aff (Millwood)*. 2019;38(9):1468-1474.

patient education and knowledge of Medicaid coverage and benefits before and after delivery; (3) provider input on opportunities the 12 months postpartum extension presents for improvements in care, process, and outcomes, and how DMAS and the MCOs can support such efforts; (4) impact on care coordination and continuity of care, including specific benefits such as contraception, behavioral health, addiction treatment services, and services to address health-related social needs; and (5) any specific barriers providers or patients face in using Medicaid benefits in the postpartum period. Interviews will largely be conducted by Zoom and limited to 1 hour. Interviews will be recorded (with the permission of respondents). Notes and transcripts from the interviews will be coded based on fields that correspond to major topics of interest, respondent type, and region, and entered into either a spreadsheet or database used for qualitative analysis, such as Atlas.ti. The analysis will identify common themes based on similar responses to questions across different respondent types and regions, as well as systematic differences in responses based on respondent type and region.

D. Methodological Limitations

There are several critical methodological limitations to consider. First, it will be difficult to disentangle the effects of Medicaid expansion and the Maintenance of Effort versus the Demonstration, particularly in the early years of the Demonstration. Starting March 2020, the MOE ensured continuous coverage for Medicaid individuals without regard for changes in income, including individuals who enrolled in Medicaid during pregnancy or postpartum, in effect mirroring, for a longer period of time, the policy change that went into effect with the postpartum coverage extension. (Exceptions to the MOE are FAMIS MOMS and CHIPRA 214 lawfully residing populations.) The MOE ended and redeterminations resumed on March 1, 2023. Virginia's "unwinding" process rolls out over the course of the 2023-2024 demonstration year.

In addition, it is difficult to find an appropriate comparison group within and outside of Virginia. The launch of Virginia's 12 months postpartum coverage demonstration is statewide rather than staged by region, limiting the ability to compare outcomes by geographic region. Other timing and contextual factors limit within-state comparisons among Medicaid and CHIP populations. This a particular challenge with the methodology that we have described so far. However, we offer potential solutions below that have been used in prior literature focused on Medicaid expansion and postpartum outcomes.[67,68,69] In particular, the evaluation design includes two non-Medicaid within-state quantitative data sets (APCD, VHI Hospital Discharges) that will allow for comparisons of utilization during the 12-month postpartum period for ALL people giving birth on Medicaid and those with commercial insurance. Given the limitations in DMAS claims data (i.e., we do not observe utilization for the intervention group prior to waiver implementation

[67] Johnston EM, McMorrow S, Alvarez Caraveo C, Dubay L. Post-ACA, More Than One-Third Of Women With Prenatal Medicaid Remained Uninsured Before Or After Pregnancy. *Health Aff (Millwood)*. 2021;40(4):571-578. doi:10.1377/hlthaff.2020.01678

[68] Steenland MW, Wilson IB, Matteson KA, Trivedi AN. Association of Medicaid Expansion in Arkansas With Postpartum Coverage, Outpatient Care, and Racial Disparities. *JAMA Health Forum*. 2021;2(12):e214167. Published 2021 Dec 17. doi:10.1001/jamahealthforum.2021.4167

[69] Gordon SH, Sommers BD, Wilson IB, Trivedi AN. Effects Of Medicaid Expansion On Postpartum Coverage And Outpatient Utilization. *Health Aff (Millwood)*. 2020;39(1):77-84. doi:10.1377/hlthaff.2019.00547

for most of the postpartum period) and limitations in these additional quantitative data sets (i.e., we do not observe the type of Medicaid benefit individuals are covered under, only that they have Medicaid), the intervention group in the statistical models includes all people giving birth on Medicaid, not only those affected by the postpartum coverage waiver. This is an important point as any policy effect detected will be conservative (biased towards zero).

Finally, Virginia is among the first states to begin implementing extended postpartum coverage through this mechanism and among the first to evaluate it. Therefore, we cannot compare our outcomes against states that have conducted similar demonstrations. We do, however, include in this evaluation within-state comparators (e.g., uninsured, commercially insured) using APCD and VHI data and compare pre- and post-demonstration implementation performance in Virginia to regional and national averages using PRAMS.

E. Attachments

1. Timeline and Major Milestones.

Milestone	Date
DMAS delivers Draft Interim Evaluation Report for the period July 2019-June 2022.[1]	No later than June 30, 2023
DMAS delivers Final Interim Evaluation Report for the period July 2019-June 2022; DMAS posts final document and any supporting documents on DMAS website.[1]	No later than 60 days after receiving CMS comments on the Draft Interim Evaluation Report
DMAS delivers Draft Interim Evaluation Report for the period July 2019-June 2024.[2]	No later than June 30, 2025
DMAS delivers Final Interim Evaluation Report for the period July 2019-June 2024; DMAS posts final document and any supporting documents on DMAS website.[2]	No later than 60 days after receiving CMS comments on the Draft Interim Evaluation Report
DMAS delivers Draft Interim Evaluation Report for the period July 2019-June 2027.[2] (Draft Interim Evaluation Report will accompany Application for Demonstration Extension, if applicable, and will be posted to the Commonwealth's public website, along with the application, for public comment.)	No later than June 30, 2028
DMAS delivers Final Interim Evaluation Report for the period July 2019-June 2027; DMAS posts final document and any supporting documents on DMAS website.[2]	No later than 60 days after receiving CMS comments on the Draft Interim Evaluation Report
DMAS delivers Draft Summative Evaluation Report for the demonstration period (July 2019-June 2029).[2]	No later than December 30, 2030
DMAS delivers Final Summative Evaluation Report for the demonstration period (July 2019-June 2029).[2]	No later than 60 days after receiving CMS comments on the Draft Summative Evaluation Report
DMAS posts Final Summative Evaluation Report to the Commonwealth's website.[2]	Within 30 calendar days of approval by CMS.

[1] Note this timeline reflects that of STCs. However, data specific to the postpartum coverage demonstration component will not be available for the first interim report due June 30, 2023.
[2] Data specific to the postpartum coverage demonstration component will be available for the second interim report and all subsequent reports.

2. Evaluation Budget.

The total estimated cost of the evaluation of the postpartum coverage waiver for FY 2023 through 2030 (July 2022 through June 2030) is $1,523,679 (see Table A1). Direct costs include $1,385,163 in personnel costs, and $210,180 in nonpersonnel costs. Indirect costs are computed as 10% of the direct costs, for a total of $138,516. Details of the personnel and nonpersonnel costs are shown in the table below. These include the costs for overseeing and conducting the analysis of Medicaid administrative data, other data sources identified in the evaluation plan, member survey design and data collection, and preparation of reports. Nonpersonnel costs reflect additional costs for conducting member surveys by mail in FY 2025, 2027, and 2029, including printing and mailing of survey questionnaires, postage, letterhead, ink, and $5 respondent incentives.

Table A2 shows the estimated costs of the evaluation by year. Costs are inflated by 2% per year to account for increases in both personnel and nonpersonnel costs (actual costs may differ if inflation is higher or lower than 2% annually). Both personnel and nonpersonnel costs are higher in FY 2025, 2027, and 2029 than in other years due to the inclusion of member surveys in these years.

Table A1. Budget for Postpartum Coverage Waiver Evaluation Plan, FY2023 – FY2030

Total FY 23-FY 30				
Researcher	**Role**	**Responsibilities**	**% Effort**	**Cost**
Andrew Barnes	Principal Investigator	Overall responsibility for analysis, survey design, and report preparation	15%	235,674
Peter Cunningham	Co-Principal Investigator	Responsibility for overseeing analysis of claims data, assists with survey design and report preparation	7%	152,806
TBN	Graduate Research Assistant	Directs analysis, oversees questionnaire design, preparation of tables for reports, and assistance with report production.	75% survey years; 50% non-survey years	158,980
TBN	2 Graduate Research Assistants	Assists qualitative interviews, quantitative analysis, preparation of tables for reports, and assistance with report production.	25%	128,742
Wilson Lam	Data Analyst	Statistical programming related to the analysis of Medicaid administrative databases.	25%	141,936
Maggie Grant	Survey Manager	Oversees survey design, data collection and data entry	45%	64,768
TBN	Hourly Research Assistant	Assist in qualitative and survey data collection and data entry	50%	47,140
Fringe benefits		40.30% for FT faculty, staff, and postdocs. 8.30% for Hourly staff		244,937
Non-Personnel Costs				
<u>Secondary data</u>				
Virginia All Payers Claims Database	$2,000 per year for each year 2017-2028			24,000
Virginia Health Information Hospital Discharge Data	$6,360 per year for each year 2023-2028			38,160
<u>Member surveys in FY 25, 27, and 29</u>				
Survey supplies and incentive payments	Printing, mailing envelopes, letterhead, ink, $5 respondent incentives			73,551
Postage	Postage estimates based on 9-page survey			74,469

Total Direct Costs	1,385,163
F&A 10%	138,516
Total Costs	1,523,163

Table A2. Budget for Postpartum Coverage Demonstration Evaluation Plan, by Fiscal Year

	Total	FY2023	FY2024	FY2025[1,2]	FY2026	FY2027[1]	FY2028	FY2029[1]	FY2030
Personnel costs	1,174,514	117,340	161,641	158,512	168,144	126,995	174,912	132,212	134,758
Nonpersonnel costs	210,180	6,000	8,360	55,022	8,360	56,888	8,360	$58,830	8,360
Total Direct Costs	1,384,694	123,340	170,001	213,534	176,504	183,883	183,272	191,042	143,118
Indirect Costs (10%)	138,469	12,334	17,000	21,353	17,650	18,388	18,327	19,104	14,312
Total costs	1,523,163	135,674	187,001	234,887	194,154	202,271	201,599	210,146	157,430

[1] Member surveys will be conducted, [2] Qualitative interviews will be conducted

3. Independent Evaluator. This Demonstration will be evaluated by an independent party. DMAS has contracted with a separate entity, the Department of Health Behavior and Policy (HBP) at Virginia Commonwealth University School of Medicine, to draft the evaluation plan, conduct analyses, and provide written evaluation reports that DMAS will use as the basis for the evaluation-related portions of the agency's reports to CMS.

VCU's HBP department is comprised of 16 faculty from multiple disciplines including health economics, social epidemiology, sociology, and health psychology. HBP addresses the behavioral, social, organizational, and policy factors affecting the health of individuals and populations using rigorous quantitative and qualitative methods. The department includes two doctoral programs – one in Health Care Policy and Research, and a second Ph.D. program in Social and Behavioral Sciences.

Along with the Department of Biostatistics and Division of Epidemiology in the Department of Family Medicine, HBP is one of the core public health departments within the VCU School of Medicine. HBP faculty actively collaborate with faculty in other departments and centers within both the School of Medicine and other VCU departments, including the Department of Health Administration, the Department of Family Medicine and Population Health, the Massey Cancer Center, the Wright Center for Clinical and Translational Research, the Institute for Drug and Alcohol Studies, and the Center for the Study of Tobacco Products.

Drs. Peter Cunningham and Andrew Barnes (Principal Investigator and Co-Principal Investigators for this project, respectively) have been leading evaluations for DMAS since 2017, which is part of a broader collaboration they have established with DMAS. In addition to the evaluation of DMAS's postpartum coverage extension Demonstration, Drs. Barnes and Cunningham are the university partners for Virginia for the Medicaid Outcomes Distributed Research Network. They have also collaborated with DMAS on a needs assessment for Virginia's SUPPORT Act grant, and are leading three other state-funded evaluations of Medicaid programs. Through their work with DMAS, they have access to Medicaid enrollment and claims

data that are necessary to complete the evaluation work. As part of the VCU School of Medicine, they are able to draw on the clinical and research expertise of other faculty and researchers within VCU related to substance use disorders. Dr. Cunningham has over 30 years of experience in health services and health policy research, including 19 years at Mathematica Policy Research, Inc., 7 years at the Agency for Healthcare Research and Quality, and 7 years at VCU. Dr. Barnes is a health policy researcher and health economist with 10 years of experience on faculty at VCU. He also has served in advisory roles with AcademyHealth's State Research and Policy Interest Group and AcademyHealth's State-University Partnership Learning Network.

Conflict of Interest Statement. HBP agrees that no agency, employment, joint venture, or partnership has been or will be created between DMAS and HBP. HBP further agrees that as an independent entity, it assumes all responsibility for any federal, state, municipal or other tax liabilities along with workers compensation, unemployment compensation, and insurance premiums that may accrue as a result of funds received pursuant to this work. HBP agrees that it is an independent entity for all purposes including, but not limited to, the application of the Fair Labor Standards Act, the Social Security Act, the Federal Unemployment Tax Act, the Federal Insurance Contribution Act, provisions of the Internal Revenue Code, Virginia tax law, Workers Compensation law, and Unemployment Insurance law.

HBP will maintain communication with DMAS staff throughout the evaluation period to better understand policy and program implementation, and to obtain DMAS' assistance with access to administrative data. HBP will make independent decisions about the evaluation itself, including methodology, analytical strategy, analysis of evaluation data, and presentation of results.

May 16, 2022

Conflict of Interest Statement

The Department of Health Behavior and Policy (HBP) at Virginia Commonwealth University agrees that no agency, employment, joint venture, or partnership has been or will be created between the Virginia Department of Medical Assistance Services (DMAS) and HBP. HBP further agrees that as an independent entity, it assumes all responsibility for any federal, state, municipal or other tax liabilities along with workers compensation, unemployment compensation, and insurance premiums that may accrue as a result of funds received pursuant to this work. HBP agrees that it is an independent entity for all purposes including, but not limited to, the application of the Fair Labor Standards Act, the Social Security Act, the Federal Unemployment Tax Act, the Federal Insurance Contribution Act, provisions of the Internal Revenue Code, Virginia tax law, Workers Compensation law, and Unemployment Insurance law.

HBP will maintain communication with DMAS staff throughout the evaluation period to better understand policy and program implementation, and to obtain DMAS' assistance with access to administrative data. HBP will make independent decisions about the evaluation itself, including methodology, analytical strategy, analysis of evaluation data, and presentation of results.

[redacted]

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