



Strong Start for Mothers and Newborns Evaluation:

YEAR 2 ANNUAL REPORT

Volume 1 – Cross-Cutting Synthesis of Findings

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Executive Summary

The Strong Start for Mothers and Newborns initiative,¹ funded under Section 3021 of the Affordable Care Act, aims to improve maternal and infant outcomes for pregnancies covered by Medicaid and the Children’s Health Insurance Program (CHIP). The initiative funds three enhanced prenatal care approaches—group prenatal care, maternity care homes, and birth centers—and is currently supporting service delivery through 27 awardees and 199 provider sites across 30 states, the District of Columbia, and Puerto Rico, with a proposed target of serving up to 50,000 women. Four-year cooperative agreements, for a total of \$41.4 million, were awarded on February 15, 2013 by the Center for Medicare and Medicaid Innovation (CMMI) of the Centers for Medicare and Medicaid Services.

CMMI contracted with the Urban Institute and its partners, the American Institutes for Research (AIR), Health Management Associates (HMA), and Brilljent, to conduct an independent evaluation of the Strong Start for Mothers and Newborns initiative. This five-year study is charged with evaluating the implementation and impacts of Strong Start on health care delivery, health outcomes, and cost of care. To accomplish this, the evaluation includes three primary components:

- Qualitative case studies to provide an in-depth understanding of how Strong Start approaches are designed and implemented, document barriers or challenges awardees encounter during implementation, and describe perceived success and factors that contribute to success;
- Participant-level process evaluation to collect detailed information on the demographic and risk characteristics, service use, and outcomes of all Strong Start participants; and
- Impact analysis to assess whether and to what extent Strong Start has had an impact on rates of premature births, low birth weight, and Medicaid/CHIP costs, through pregnancy and the first year after the birth. The impact analysis will also assess whether these impacts vary by model type, awardee, site, and type of services offered and received.

The purpose of this second annual report is to present interim findings from the evaluation, summarize the status of the evaluation’s research efforts, and present a plan for the next year of work.

¹ Strong Start II, which is the subject of this report, is one of two initiatives to improve birth outcomes that are being funded by CMS. The other initiative, Strong Start I, is designed to reduce early elective deliveries. In addition, the Mother and Infant Home Visiting program (MIHOPE) has a Strong Start component involving sites that provide care beginning in the prenatal period. The MIHOPE-Strong Start evaluation is funded through CMMI but is being evaluated separately. For the remainder of this document, references to Strong Start refer to Strong Start II.

THE STRONG START AWARDEES AND SITES

The 27 Strong Start awardees are each adopting one or more of the Strong Start approaches to prenatal care. Specifically, 15 are implementing group prenatal care, 15 are implementing the maternity care home approach, and two are implementing birth center care. Included in these counts are four awardees that are implementing more than one approach. Though many awardees launched Strong Start operations in new sites during the second year of implementation, several sites also dropped out. As a result of these changes, the total number of sites decreased from 213 sites in the first year of implementation to 199 sites in the second year.² Slightly more than one-half of Strong Start's provider sites are implementing the maternity care home approach (103 sites), approximately one-fourth offer group prenatal care (54 sites), and one-fifth provide Strong Start services in a birth center setting (42 sites).³

Consistent with the overarching goals of the Strong Start initiative, all awardees maintain a goal to reduce preterm birth among Strong Start participants and decrease the rate of low birth weight among Strong Start newborns. Operational plans and case study data indicate other common goals, including decreasing the cost of care; increasing outreach to Medicaid and CHIP women to inform them of Strong Start services; and increasing rates of breastfeeding among participants. Initially, Strong Start had a goal of reaching up to 80,000 women over a four-year period, and awardee-specific enrollment goals varied, ranging between 1,500 and 3,000 women over the initiative. Because of delayed implementation and early challenges with enrollment, Strong Start awardees have been asked to develop new enrollment goals during the second year of implementation (Hill et al., 2014). Now, a majority of awardees plan to enroll between 1,000 and 2,000 women over the four-year initiative, with a modified total enrollment goal of approximately 50,000 women across all 27 awardees.

CROSS CUTTING ANALYSIS AND EMERGING ISSUES

This Year 2 report presents early Strong Start findings across awardees, in total and by model where relevant. Cross-cutting summaries are organized by data collection method—case studies and participant-level process evaluation—and synthesize ongoing implementation progress, shared successes, and common challenges encountered during roughly the second year of Strong Start implementation. Case study analyses summarize findings from telephone interviews with 26 awardees conducted between March and July 2015 and one awardee site visit conducted in June 2015. Participant-level process evaluation data, collected for each woman enrolled in Strong Start, track key indicators and inform an analysis of participant characteristics, utilization experience, and

² In addition, in the Year 1 Annual Report, we reported that Meridian Health Plan had 48 total sites. However, given that the intervention is centered at one site, the awardee now reports only one participating site.

³ One awardee has implemented more than one Strong Start approach at the same provider site. For our analysis, however, we use their primary Strong Start approach.

a limited number of birth and satisfaction outcomes. The data presented here draw from Intake Forms, Third Trimester and Postpartum Surveys, and Exit Forms collected through Quarter 1 2015.

Syntheses of findings through the second year of data collection allow us to make a number of cross-cutting observations about awardees' progress in implementing Strong Start, promising practices they have adopted to overcome common challenges, and preliminary outcomes among Strong Start participants. With more complete case study and PLPE data at the end of Year 2 of the evaluation, and in advance of receiving birth certificate and Medicaid data that will allow us to begin measuring Strong Start's impacts on key outcomes, we make the following interim observations:

1. ***Strong Start enrollment accelerated during the last year and surpassed 23,000 women by the end of Quarter 1, 2015.*** This total is more than three times higher than where enrollment stood at the same point in 2014. As reported in our Year 1 Annual Report, initial enrollment rates were lower than expected because of a number of factors, including late project start-up for some awardees, slow establishment of routine intake and enrollment procedures, and hesitant support and buy-in from obstetrical providers not accustomed to Strong Start's innovative approaches to prenatal care. Moreover, many awardees found that fewer Medicaid and CHIP patients were eligible for Strong Start than they expected, since they either did not possess sufficient risk factors for preterm birth or were not identified and screened for enrollment until after Strong Start's gestational age cut-off. But several changes were made in the past year that helped accelerate enrollment.

Importantly, in June 2014, CMMI allowed awardees to adjust certain eligibility criteria so that more women could enroll in Strong Start. Specifically, it eliminated the requirement that women be identified with an additional risk factor for preterm birth beyond their Medicaid status, and it allowed awardees to enroll women past 28 weeks gestation. After another revision to criteria in 2015, women are allowed to enroll up to 29 weeks gestation, with some exceptions made for later enrollment in special circumstances.

Even before these changes in eligibility occurred, however, many awardees had already adopted new enrollment procedures that were succeeding in improving rates of enrollment. As described in the case study section, many awardees and sites moved to "opt out" enrollment so that Strong Start participation is the default option in more prenatal practices. Awardees have also increasingly encouraged sites to enroll women with "pending" Medicaid eligibility, since most women with this status are ultimately enrolled in Medicaid. Finally, according to key informants, awardee staff have simply gotten better at identifying potential participants and enrolling them into Strong Start as programs have matured.

Combined, eligibility changes at the federal level and enrollment changes at the local level have helped Strong Start improve its performance in enrolling pregnant women such that the initiative is now nearly halfway toward its projected total enrollment goal of 50,000 women.

2. ***Changes in eligibility criteria have influenced the composition of Strong Start participants somewhat, but the ability of the program to impact outcomes overall (and of the evaluation to detect changes in outcomes) should not be significantly affected.*** Given CMMI’s modification of eligibility criteria for Strong Start, it is reasonable to question whether the potential for Strong Start to improve outcomes (because of later gestational age enrollment) has been compromised. Thus far, however, the evaluation team believes that this is likely not the case. In general, Year 2 case studies did not find that awardees were aggressively seeking to enroll late-term pregnant women into their programs; the participant-level data show that only seven percent of women have been enrolled after 28 weeks gestation. (Across the approaches, group prenatal care sites appeared least likely to enroll women in their third trimesters, given guidance against such practices in the commonly used CenteringPregnancy model.) Thus, though this rate could grow during the next year, and late enrollment can hinder Strong Start’s ability to help women with pregnancy complications that can only be impacted by early intervention, we believe that the overall study sample is still large enough not to have been significantly compromised and that we can control for late enrollment in our impact analysis.

With regard to removal of the requirement that Strong Start participants possess a secondary pre-term risk factor, we do not believe that this change has led to an improvement in women’s risk profiles. Rather, participant-level process evaluation data clearly illustrate that program enrollees continue to exhibit high levels of both medical and psychosocial risk factors, and our case study findings bolster the observation that changes in eligibility criteria have not substantially altered who is being enrolled in Strong Start.

3. ***More complete participant-level data allow us to better understand women’s risk profiles, however we continue to see Strong Start serving a relatively disadvantaged population.*** The addition of Exit Form data to our analyses this year permitted us to characterize participants’ medical risk factors for preterm birth and low birth weight. As described in the participant-level process evaluation section, while we find that Strong Start enrollees exhibit rates of gestational diabetes and hypertension that are comparable to other low-income women of childbearing age, we also find that Strong Start women are more likely to have had a previous preterm birth than women generally. Even though a prior preterm birth is the strongest predictor of having another preterm delivery, Strong Start participants with a prior preterm birth seem to be no more likely to receive 17P injections, which are the standard of care for preventing repeat preterm deliveries. Rates of having had a previous low birth weight baby are lower than is observed in the general population, but approximately 20 percent of participants with previous pregnancies reported short inter-pregnancy intervals (less than 18 months), another strong predictor of poor birth outcomes.

With regard to socioeconomic and psychosocial risk factors, we continue to find Strong Start participants more likely than the general population to have low levels of educational attainment, high rates of unemployment, persistent food insecurity, unstable housing, and

low rates of being married. It is important to note that, overall, women enrolled in birth centers appear to be healthier and to face fewer economic and social challenges than women enrolled in either group prenatal care or maternity care homes.

4. ***Depression is a particularly prevalent risk factor among Strong Start participants, but Strong Start services are specifically designed to provide psychosocial support.*** It is particularly noteworthy that women enrolled in Strong Start exhibit rates of depression that are substantially higher than generally reported rates of perinatal depression. Similar proportions of depression among women are observed within each of the Strong Start approaches—25 percent in group prenatal care, 23 percent in maternity care homes, and 22 percent among birth center enrollees—and case study analyses confirm that key informants from all approach types have identified high rates of depression and have sought to focus on addressing participants’ mental health needs. Strong Start interventions appear well designed to support women with depression or other psychosocial stressors. Birth centers have added peer counselors to the midwifery approach who, according to key informants, specifically focus on talking with women about their circumstances and exploring ways to support women during their pregnancies. The group aspect of group prenatal care is specifically intended to help women build relationships, support and learn from one another, and benefit from the knowledge that there are others experiencing many of the same risks, stress factors, and circumstances that they are experiencing. And the most common feature of maternity care homes is the care manager, who serves as a focal point of support during women’s pregnancies, identifying needs, arranging care and referrals, and generally relieving women of the stress of organizing their own care. Across all approaches, Strong Start staff report that they often refer women to mental health services and supports. Unfortunately, however, these staff also report that such resources are often in short supply in their communities.
5. ***Strong Start’s rich content of care across all three enhanced approaches consistently focuses on such high priority issues as nutrition, maternal health, risks of smoking and substance abuse, preparation for childbirth and delivery, breastfeeding, and family planning.*** As described in the case study section, all three approaches of enhanced prenatal care embodied in Strong Start have implemented an array of services that goes far beyond traditional, medically-focused prenatal care. Whether delivered by midwives and peer counselors in birth centers, care managers in maternity care homes, or midwives and other facilitators in group prenatal care sessions, these services include extensive education and/or counseling on such high priority topics as nutrition, maternal health, the importance of full-term pregnancies, risks associated with smoking and substance abuse, preparation for childbirth and delivery, early signs of labor, breastfeeding, and family planning, among myriad other topics. When Strong Start staff cannot provide a service directly, they routinely refer women to services and resources in the community. Participant-level data are beginning to quantify the extent to which these enhanced services are being provided.

On top of the average 10 prenatal care visits received in each approach receive, women also receive:

- a. In maternity care homes, an additional five enhanced encounters with care managers;
- b. In birth centers, an average of four peer counselor encounters; and
- c. In group prenatal care, most visits last two hours compared to routine prenatal care visits that last 10-15 minutes, and can thus be considered “enhanced.”

Awardees are also providing health education classes, linking women with substance abuse services, and generally relying on the trust established between care coordinators, peer counselors, or group facilitators, to connect women with services that would be beneficial to them and to facilitate healthy pregnancy outcomes.

6. ***Strong Start programs are overcoming implementation challenges, adapting and refining their approaches to care, and evolving in positive ways.*** Through the midpoint of Strong Start implementation, it appears that Strong Start programs have largely “hit their stride.” That is, they have confronted and—in many cases—overcome a number of implementation challenges and barriers, become more comfortable in delivering care, and are beginning to see (or at least perceive) positive results. Examples of such maturation include:

- a. Adopting “opt out” enrollment systems (among other strategies) to boost enrollment rates;
- b. Establishing clearer and more coordinated staff roles and responsibilities;
- c. Adjusting the approach to Strong Start enhanced service delivery to better fit the needs of patient populations and provider practices;
- d. Building stronger relationships with obstetrical providers that enhance both coordination of service delivery and referrals; and
- e. Hiring additional administrative staff to help with data collection and reporting, a move that key informants commonly credited with freeing up practitioners’ time to focus on service delivery.

Some of this progress can be attributed to the ongoing support awardees have received from CMMI, such as financial resources that allowed for administrative staff hiring, training and collaboration provided by the Learning and Diffusion contractor, and the ongoing advocacy and support provided by awardees’ Project Officers. But progress is largely due to the hard work and persistence of awardees in adapting existing routines to accommodate new innovations, and persevering in the face of implementation challenges. To be sure, success is not uniformly observed across all awardees. But with the better part of a year remaining for most programs, we might expect to see continued growth and improvement.

7. ***Strong Start mothers express very high levels of satisfaction with care and experience some positive outcomes, including low C-Section and induced delivery rates (among others).*** While large amounts of missing data require us to be cautious in drawing conclusions, Exit Form data available through Quarter 1 2015 allow us to begin painting a more complete picture of the outcomes experienced by Strong Start participants. These data suggest that C-Section prevalence among women receiving care at Strong Start sites may be lower than the national average, though there is substantial variation across the three approaches. Moreover, reported rates of induced deliveries are lower than national benchmarks. Both findings indicate that women enrolled in Strong Start may be avoiding interventions that are not medically indicated. Rates of preterm delivery and low birth weight babies among Strong Start participants also track fairly well with national benchmarks overall, though these benchmarks do not take into account income or insurance status. There is, again, substantial divergence by approach, with birth centers experiencing much lower rates of both measures compared to group prenatal care and maternity care homes. Further, subgroup analyses indicate that black women, overall, are more likely to experience both preterm deliveries and low birth weight babies than other racial and ethnic subgroups enrolled in Strong Start, a finding consistent with national data.

At this stage, data also suggest that women enrolled in birth center and group prenatal care appear to be more likely to attempt breastfeeding and are having a good deal of success in following through with their intentions to breastfeed. As was the case in Year 1, participants enrolled in Strong Start across all three approaches, but in particular those in birth centers, indicate high levels of satisfaction with their prenatal services and delivery experiences.

Bolstering these quantitative findings, key informants who participated in our case studies have observed many patient-level benefits that they attribute to Strong Start. These include improvements in prenatal and postpartum visit attendance rates; positive changes in nutrition, exercise, and smoking cessation; reduced stress; increased knowledge and confidence about labor and delivery; fewer unnecessary visits to the ED for false labor; better rates of breastfeeding; and increased access to and use of contraception. Finally, virtually all key informants remarked on the strength, trust, and value of the relationships that develop between participants, their peers, and Strong Start staff and providers, be they maternity care home care managers, birth center peer counselors, or group prenatal care facilitators.

8. ***Most Strong Start awardees hope to sustain their programs after the initiative ends and are beginning to plan for the future.*** As the second year of implementation progressed, Strong Start awardees increasingly discussed the issue of sustainability and began planning for the conclusion of federal grant support. Most awardees expect that they will continue Strong Start enhancements in some form after program funding ends. Some plan to identify and transition to other forms of financial support while others plan to adapt their

approaches to better attract funding within or outside their organizations. Numerous awardees hope to attract the attention of state Medicaid/CHIP programs and managed care plans. Given the promise of Strong Start interventions in reducing costs associated with poor birth outcomes, these awardees hope to use Strong Start (and related) data to spur payment reforms at the state level. For example, one health-plan based awardee has already succeeded in receiving supplemental reimbursement for group prenatal care into its Medicaid payments. For maternity care homes, obtaining certification as a patient-centered medical home was described as a strong foundation upon which to continue a maternity care home approach, and some awardees have used Strong Start as a pilot for developing more broad-based, system-wide care coordination services. Among group prenatal care awardees, a majority expressed a strong desire to continue with their new approach to care; in particular, those that had implemented the approach before Strong Start were certain that programs would be sustained, if not for all pregnant women, then at least for certain target high risk groups, such as substance abusers or women with HIV. Birth centers' midwifery approach of care will continue once the award has concluded, but AABC sites' interest in sustaining the new peer counseling service was inconsistent, and many key informants who were interested in sustaining peer counseling were unsure how it could be financially supported.

9. ***States, thus far, have been supportive and accommodating of requests for birth certificate and Medicaid data.*** From the outset, no other component of the Strong Start evaluation was surrounded by more uncertainty than the Technical Assistance/Data Acquisition task. The task's scope of work was designed with technical assistance as the focal point, presuming that states would need hands-on consultation in order to link birth certificate and Medicaid data sets or even to share their data with an outside research organization. Though the team's calls with MDRC (the contractor for the MIHIPE-Strong Start evaluation through the Administration on Children and Families) were helpful in identifying state contacts and discussing the numerous challenges that MDRC encountered in their efforts to apply for and obtain data, they also raised concerns given how slow MDRC's progress has been and how little data had actually been obtained after well over a year of work on their part.

Despite these predicted barriers, we have been pleasantly surprised by the positive reception we have received from state officials from both vital records and Medicaid agencies. As described above, the vast majority of state officials have expressed willingness to work with us to share needed data, many have said that they are familiar with and have prior experience linking these data, and virtually all demonstrated their understanding of the utility and value of linking these data, including the ability to learn more about how poor birth outcomes might be addressed by innovations in prenatal care.

Of course, it is much too early to claim success in our efforts, and we have already encountered cases for which state inertia has become challenging to overcome and

progress has slowed. Still, at this early point, there is cause for optimism that our efforts to obtain and link birth certificate and Medicaid data from a majority of states will prove successful.

10. ***Several challenges can be expected to confront the evaluation’s impact analysis—including imperfect comparison counties and selection bias for certain sites—but the evaluation team is carefully planning ways to address these challenges in future years.***

The evaluation team made good progress in Year 2; as described above, the major focus of our work was on reviewing case study findings to begin identifying any issues or concerns that might surround the selection of comparison group counties for the impacts analysis. Ideally, valid comparison groups would come from the same counties where Strong Start participants reside. However, our comparison groups must comprise women who are similar to Strong Start enrollees and who receive care from a standard Medicaid maternity practice, not from settings that are similar to Strong Start sites. Thus far, it appears that for nine awardees, comparison groups can be pulled from the same counties where Strong Start participants reside. But for 14 awardees, we will need to identify matched counties to select the comparison group for at least one of the sites associated with the awardee. (For three awardees, decisions regarding comparison group selection have not yet been made.) In most cases, this is because Strong Start approaches appear to “saturate” their local areas, and thus there are insufficient standard maternity care practices from which to draw comparison samples. In two cases, Strong Start is the only source of care for high risk pregnant women in Medicaid in the local area, meaning that only low risk women remain in the surrounding counties. For group prenatal care, a different challenge—selection bias—confronts the evaluation. For these practices, which have mostly used “opt in” enrollment approaches, take-up rates of Strong Start have been relatively low, which suggests that women who enroll in group prenatal care may be different from those who choose not to enroll. Moving forward into Year 3 of the evaluation, the evaluation team is developing methods for addressing these challenges.

PROJECT PROGRESS AND PLANS FOR YEAR 3

By the end of Year 2 of the Strong Start for Mothers and Newborns evaluation (August 11, 2015), a large number of tasks in the study’s scope of work had been completed, while several others were proceeding on pace or somewhat behind schedule. In Year 2, qualitative case study data collection was completed, with all 27 awardees’ data summarized in this report. Year 2 also included continued participant-level process evaluation data collection for Quarters 2 through 4 2014 and Quarter 1 2015 and witnessed the launch of the fourth data collection instrument: the Exit Form.

Year 3 of the evaluation calls for not only continued data collection via qualitative case studies and participant-level process evaluation,⁴ but also continued work on our Data Linkage Technical Assistance task, and potentially the receipt of our first wave of 2014 birth certificate and Medicaid data to be used in the project’s Impact Analysis. With regard to data collection:

- In Year 3, the evaluation team will conduct another round of site visits that will mix in-person visits for some awardees and virtual visits (phone interviews) for others. In-person case study visits will include in-person key informant interviews with program staff, providers and community partners; focus groups with pregnant and postpartum Strong Start participants; and observations of Strong Start care delivery. Virtual visits will include phone-based key informant interviews with program staff and providers. In-person site visits will involve 18 awardees and 10 AABC sites, while phone interviews will be conducted with eight awardees and six AABC sites.
- We anticipate receiving a greater proportion of participant-level data forms for Strong Start enrollees next year, and we also anticipate continued need to provide assistance to awardees submitting data electronically as some awardees continue to iron out problems with their data collection and submission processes. By the end of the 2015-2016 contract year, we expect to have collected, compiled, and reported on participant-level data from Quarters 2, 3, and 4 2015, and Quarter 1 2016.

With regard to technical assistance, we will continue our work to secure written approval of agreements to access state data. We will develop timelines for the receipt of data from each agency and state and expect to begin receiving data in Year 3, which will include birth certificate and Medicaid data for births occurring in 2014. Some state agencies have less experience linking Medicaid and birth certificate data; therefore, we are prepared to provide individualized technical assistance to help state officials prepare, link, and transfer data files to the Urban Institute on an as-needed basis. And while it seems highly unlikely, should we identify any systemic issues related to linking and transferring the data, we will explore the usefulness of providing “global” technical assistance to state officials through, for example, webinars and “how to” guides for state agencies.

For the impact analysis, over the first three months of Year 3 of the evaluation, we will finalize our approach to selecting comparison counties and will select specific counties for each site that requires an out-of-county comparison group. We will also begin the process of creating a consistent set of variables across the states to build a consistent Strong Start database. We hope to be able to conduct a preliminary impact analysis for the first year cohort of births in time for the Year 3 Annual Report. However, some awardees and sites were slow in their start up, so it is not clear how feasible it will be to conduct awardee or site-specific analyses from the first complete calendar year

⁴ In October 2014, the CMMI Program Team decided to collect all further Program Monitoring data. The evaluation team will continue to evaluate quarterly program monitoring data.

of program operations. Moreover, our ability to conduct this analysis depends on the willingness and timelines of states to provide us with linked and/or unlinked birth certificate and Medicaid data.

In conclusion, this Year 2 Annual Report observes that the Strong Start for Mothers and Newborns initiative has matured and evolved in quite positive ways. Strong Start awardees and sites have: addressed many of the early implementation challenges they confronted; adopted strategies that permitted them to enroll eligible women at a faster rate, succeeded in collecting a large volume of data on enrollee risk factors, utilization, experiences with care, and outcomes; and provided a large volume of enhanced prenatal care services to a rapidly growing group of pregnant women. Preliminary evidence suggests not only very high levels of satisfaction with the care being provided, but also better birth outcomes—including lower rates of Caesarean section and, in some cases, preterm births—than the nation as a whole.

This evaluation of Strong Start will continue to closely monitor implementation and measure the process of care. Future years will be devoted to precisely analyzing Strong Start’s impacts on birth outcomes, prenatal care delivery, and costs.

Introduction

The Strong Start for Mothers and Newborns initiative,⁵ funded under Section 3021 of the Affordable Care Act, aims to improve maternal and infant outcomes for pregnancies covered by Medicaid and the Children’s Health Insurance Program (CHIP). The initiative funds services through three evidence-based prenatal care approaches: maternity care homes, group prenatal care, and birth centers. The initiative is currently supporting the delivery of enhanced services through 27 awardees and nearly 200 provider sites,⁶ across 30 states, the District of Columbia, and Puerto Rico. Four-year cooperative agreements, funded from a budget of \$41.4 million, were awarded on February 15, 2013 by the Center for Medicare and Medicaid Innovation (CMMI) of the Centers for Medicare and Medicaid Services.

CMMI has contracted with the Urban Institute and its partners, the American Institutes for Research (AIR), Health Management Associates (HMA), and Brilljent, to conduct an independent evaluation of the Strong Start for Mothers and Newborns Initiative. This five-year study is charged with evaluating the implementation and impacts of Strong Start on health care delivery, health outcomes, and cost of care; key research questions are displayed in Exhibit 1. To answer these questions, the evaluation includes three primary components: qualitative case studies; participant-level process evaluation; and impact analysis. In addition, the evaluation scope of work includes the analysis of numerous program monitoring measures collected by CMMI to support the oversight of Strong Start implementation; to the extent merited, we draw on these measures as well for the evaluation.

The purpose of this second annual report is to present interim findings from the evaluation, summarize the status of the evaluation’s research efforts, and present a plan for the next year of work. The remainder of this section describes, for background purposes, the three enhanced approaches to care supported by Strong Start; provides a brief overview of the characteristics of the Strong Start awardees and sites; and summarizes the evaluation design, its research components, and progress to date.

⁵ Strong Start II, which is the subject of this report, is one of two initiatives to improve birth outcomes that are being funded by CMS. The other initiative, Strong Start I, is designed to reduce early elective deliveries. In addition, the Mother and Infant Home Visiting program (MIHOPE) has a Strong Start component involving sites that provide care beginning in the prenatal period. The Strong Start II and MIHOPE-Strong Start programs are being evaluated separately. For the remainder of this document, references to Strong Start refer to Strong Start II.

⁶ The total number of sites are reported by awardees in the program monitoring reports, collected quarterly by the CMMI program team. Inconsistencies in reporting may occur, particularly for sites that have dropped out or recently begun offering Strong Start services.

EXHIBIT 1: EVALUATION QUESTIONS, BY EVALUATION COMPONENT

Qualitative Case Studies

1. What are the features of the Strong Start approaches operated by the study sites? What are the common features that define the approaches across sites? Are the approaches being implemented as designed? What are the variations in how the approaches are implemented? How similar/dissimilar are the content and delivery of prenatal care in the maternity care home, group prenatal care, and birth center approaches?
2. How do prenatal care and delivery in Strong Start sites differ from usual Medicaid or CHIP prenatal/delivery care in the same geographic areas? How does care in Strong Start sites differ from care provided in the same sites prior to the program's implementation?
3. What are stakeholder (e.g., awardee, state, provider, beneficiary) views of how Strong Start demonstrations are being implemented, and of the content and delivery of prenatal care under the three different approaches? What works best (for patients and providers) and what are the most challenging aspects of implementation? What are the most important factors in successful implementation of Strong Start demonstrations, both across approaches and approach-specific?
4. How generalizable are the Strong Start approaches to other Medicaid and CHIP care settings and other parts of the country? What features are critical for successful replication and scaling up of Strong Start?

Participant-Level Process Evaluation

1. What are the characteristics of Strong Start participants by approach, site, time period, demographic characteristics (age, race/ethnicity, family composition, income), eligibility group, risk characteristics (physical, behavioral, and socio-emotional), and prior pregnancy status?
2. How many Strong Start services are provided to participating women, of what type, by time period, site/approach, and participant characteristics?
3. What are participant outcomes (e.g. mode of delivery, gestational age, and birth weight) and how do they change over time?

Impact Analysis

1. What is the impact of Strong Start on gestational age, birth weight, and cost for women and infants during pregnancy and over the first year of life?
2. Does the impact differ across awardees and across the three Strong Start approaches? Does it vary by characteristics of mothers (e.g., race/ethnicity, health risks)? If so, how?
3. How does the implementation analysis explain the impact findings? For example, which features of the approaches led to the greatest impact of the program?

OVERVIEW OF STRONG START ENHANCED PRENATAL CARE APPROACHES

THE MATERNITY CARE HOME

Maternity care homes are designed to provide continuity of care for pregnant women and their infants during pregnancy, childbirth, and postpartum. The maternity care home is the most recently formalized approach to prenatal care among the Strong Start programs. However, the maternity care home concept of creating a central place where women receive high-quality, coordinated prenatal and postpartum care for themselves and their infants has existed for decades in a less formal way in many settings, such as Community Health Centers.

Nationally, the maternity care home approach builds on the similar concept of the patient centered medical home (PCMH). The PCMH was first defined for pediatric care in the late 1960s and has evolved to cover other forms of primary care. Strong Start promotes an array of practice enhancements for prenatal care providers to become a “maternity care home.” According to Childbirth Connection, the various components of the maternity care home approach may include a single clinician providing or coordinating care; continuous quality improvement; patient-centeredness; and timely access to care (Romano, 2012). In November 2010, North Carolina began to develop a list of core competencies for a Medicaid maternity care home (North Carolina Department of Health and Human Services, 2010). These competencies include providing all eligible pregnant women with a medical home and, for those identified as high-risk, with case management services to improve birth outcomes and continuity of care. It builds on a program begun in the state in 1987 called Baby Love, which provides care coordination services to Medicaid-eligible pregnant women (HCPHA, 2006).

Because the maternity care home approach is relatively new and not consistently implemented, there is little evaluation research documenting its effectiveness. Several studies from the 1990s showed a positive impact of similar programs on birth outcomes, such as the probability of having a low birth weight infant (for example, see Heins Jr, Nance, McCarthy, & Efid, 1990). Particularly relevant is an early evaluation of North Carolina’s Baby Love program suggesting that the program lowered low birthweight rates and Medicaid costs (Buescher, Roth, Williams, & Goforth, 1991). However, a recent comprehensive review of the literature on enhanced prenatal care services for Medicaid women found mixed results across settings (Anum, Retchin, & Strauss III, 2010). The national data from the Strong Start evaluation will further policy makers’ understanding of the impact of maternity care home approaches on Medicaid birth outcomes.

GROUP PRENATAL CARE

In place of individual appointments with a provider, pregnant women in group prenatal care meet together as a cohort to allow additional time for education and support from other pregnant women. This prenatal care approach provides health assessment, education, and support for

pregnant women through group visits to promote healthy behaviors and optimize birth outcomes. Groups of 8-12 pregnant women are brought together about 10 times, beginning mid-pregnancy, to have their prenatal care appointments, which also include discussions about health, nutrition, childbirth preparation, stress reduction, parenting, and personal relationships (among other topics). The most well-known group prenatal care approach is “CenteringPregnancy,” which was developed by Sharon Rising, a Connecticut-based nurse-midwife, formalized in 1998 through the Centering HealthCare Institute. Strong Start awardees implementing group prenatal care are not required to adopt a particular curriculum, but most have an affiliation with Centering.

A review of the literature on the effect of group prenatal care on birth outcomes identified 11 studies that report on its impact on birth weight and/or gestational age (Howell et al. 2014).⁷ Only four studies found a statistically significant reduction in the rate of preterm birth, however, and three showed a positive impact on birth weight. The current evaluation will further this research by expanding the analysis to a larger number of sites.

ENHANCED PRENATAL CARE OFFERED THROUGH BIRTH CENTERS

Freestanding birth centers are facilities, usually directed by midwives, that provide comprehensive prenatal, delivery, and postpartum care. While women receive their prenatal and postpartum care at a birth center, they deliver their infants either at the birth center (attended by a midwife) or at a hospital, where complicated deliveries may be overseen by midwives, physicians, or a mixed team. Many birth centers are accredited by the American Association of Birth Centers. Until recently not all states covered birth center care under Medicaid (Ranji, Salganicoff, Stewart, Cox, & Doamekpor, 2009). Although coverage of birth centers is now required by the ACA, many birth centers still have difficulties with reimbursement because specific insurance policies, particularly MCOs, may not have birth centers included in their networks.

The birth center and midwifery approaches to prenatal care are characterized as providing substantial education and psychosocial support along with low rates of medical intervention. For example, a study of three types of prenatal care (one offered through a birth center, one offered through a teaching hospital, and one offered through a safety net clinic) found that midwives in birth centers offered longer prenatal care visits than their counterparts in teaching hospitals and safety net clinics. Birth centers in this study also offered peer counseling in addition to individual education sessions with the midwife (Palmer, Cook, & Courtot, 2009). Induced labor and continuous electronic fetal monitoring are generally not used at birth centers (Stapleton, Osborne, & Illuzzi, 2013).

While research on the impact of birth centers is limited, there is substantial research on midwife-provided prenatal care both in birth centers and other settings, though results vary across

⁷ See Table A-1 in Appendix A of the final Strong Start Design Plan for detail on the 11 studies.

studies. For example, across nine studies (including one review) of the impact of prenatal midwifery care on birth outcomes, three found a significant reduction in preterm birth rates and four found a significant increase in birth weight (Howell et al., 2014; Sandall et al., 2015).⁸ However, none of these studies focused only on Medicaid-enrolled women. Thus, the current evaluation will contribute substantial additional information concerning the impact of birth center-provided prenatal care on women enrolled in Medicaid and their infants.

THE STRONG START AWARDEES AND SITES

The 27 Strong Start awardees are each adopting one or more of the Strong Start approaches of care. Specifically, 15 are implementing group prenatal care, 15 are implementing the maternity care home approach, and two are implementing birth center care. Included in these counts are four awardees that are implementing more than one approach. Though many awardees began implementing Strong Start in new sites during the second year of implementation, several sites also dropped out during the past year (discussed in more detail below). As a result of these changes, the total number of sites decreased from 213 sites in the first year of implementation to 199 sites in the second year.⁹ As shown in Figure 1, slightly more than one-half of Strong Start's provider sites are implementing maternity care homes (103 sites), approximately one-fourth offer group prenatal care (54 sites), and 21 percent provide Strong Start services in a birth center setting (42 sites).¹⁰

The awardees and sites are spread widely across the United States in 30 states, the District of Columbia, and Puerto Rico. The largest number of sites is in the South, followed by the Midwest. As seen in Table 1, the number of Strong Start provider sites per state ranges from just one site in six states, to 30 sites in a single state (Illinois).

The awardees also represent care delivery in a wide variety of organizations and health care settings, including hospital and health systems, health plans, and community-based organizations. There is similar diversity among the Strong Start provider sites; more than half of the sites are either Federally Qualified Health Centers (FQHCs) or clinics associated with a hospital or health center. The remaining sites include nationally-certified birth centers, Indian Health services clinics, local health departments, and physician groups.

⁸ More detail on the nine studies is contained in Table 2, Appendix A of the final Strong Start Design Plan.

⁹ In addition, in the Year 1 Annual Report, we reported that Meridian Health Plan had 48 total sites. However, given that the intervention is centered at one site, the awardee now reports only one participating site.

¹⁰ One awardee has implemented more than one Strong Start approach at the same provider site. For our analysis, however, we use their primary Strong Start approach.

TABLE 1: DISTRIBUTION OF STRONG START AWARDEES, BY STATE

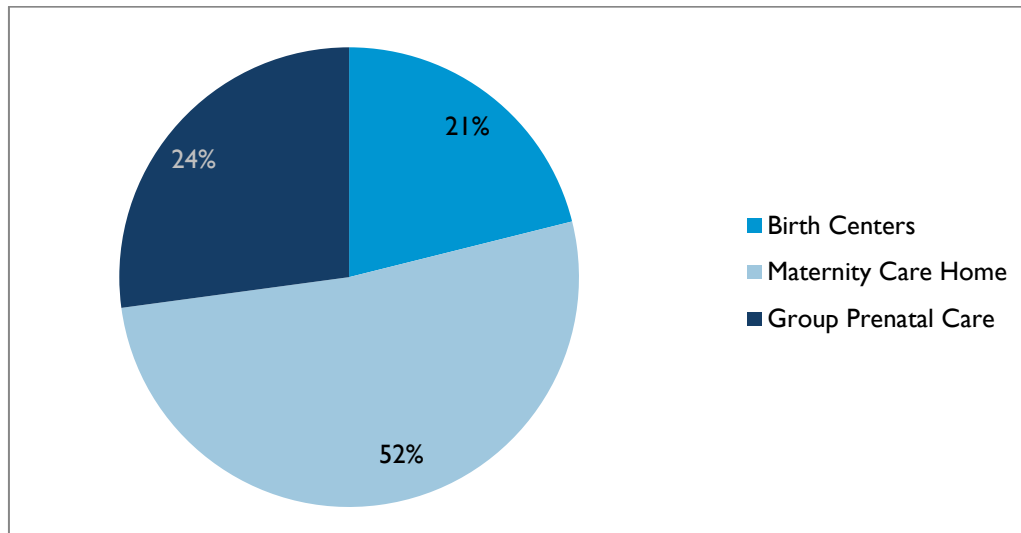
Awardee Name	State	Strong Start Approach
Access Community Health Network (ACCESS)	Illinois	Maternity Care Home
Albert Einstein Healthcare Network (Einstein)	Pennsylvania	Centering Pregnancy
American Association of Birth Centers (AABC)	19 states	Birth Center
Amerigroup Corporation (Amerigroup)	Louisiana	Centering Pregnancy
Central Jersey Family Health Consortium, Inc. (Central Jersey)	New Jersey	Centering Pregnancy
Florida Association of Healthy Start Coalitions (FAHSC)	Florida	Maternity Care Home
Grady Memorial Hospital Corporation DBA Grady Health System (Grady)	Georgia	Centering Pregnancy
Harris County Hospital District (Harris)	Texas	Centering Pregnancy
HealthInsight of Nevada (HealthInsight)	Nevada	Centering Pregnancy
Johns Hopkins University (Hopkins)	Maryland	Maternity Care Home
Los Angeles County Department of Health Services (LADHS)	California	Maternity Care Home
Maricopa Special Health Care District (Maricopa)	Arizona	Maternity Care Home
Medical University of South Carolina (MUSC)	South Carolina	Maternity Care Home
Meridian Health Plan (Meridian)	Michigan	Maternity Care Home
Mississippi Primary Health Care Association, Inc. (MPHCA)	Mississippi	Maternity Care Home
Oklahoma Health Care Authority (OKHCA)	Oklahoma	Centering Pregnancy
Providence Health Foundation of Providence Hospital (Providence)	Washington, DC	Birth Center, Maternity Care Home and Centering Pregnancy
Signature Medical Group (Signature)	Missouri	Maternity Care Home
St. John Community Health Investment Corp. (St. John)	Michigan	Enhanced Prenatal Care Support Group (Year 1) Centering pregnancy (Year 2)
Texas Tech University Health Sciences Center (Texas Tech)	Texas	Maternity Care Home
United Neighborhood Health Services, Inc. (United)	Tennessee	Maternity Care Home
University of Alabama at Birmingham (UAB)	Alabama	Maternity Care Home
University of Kentucky Research Foundation (UKRF)	Kentucky	Centering Pregnancy
University of Puerto Rico Medical Sciences Campus (UPR)	Puerto Rico	Centering Pregnancy
University of South Alabama (USA) ¹	Alabama	Maternity Care Home and Centering Pregnancy
University of Tennessee Health Sciences Center (UTHSC)	Tennessee	Centering Pregnancy
Virginia Commonwealth University (VCU)	Virginia	Centering Pregnancy

Note: AABC is operating in the following states: Alaska, Arizona, California, Florida, Illinois, Kansas, Maryland, Minnesota, Nebraska, New Mexico, New York, North Carolina, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, West Virginia, and Wisconsin.

Initially, Strong Start had a goal of reaching up to 80,000 women over a three-year period, and awardee-specific enrollment goals varied greatly (though most awardees proposed to enroll between 1,500 and 3,000 women over the entire initiative). Because of delayed implementation and challenges with enrollment, Strong Start awardees have had to develop new enrollment goals during the second year of implementation (CMS/CMMI, 2014), described in more detail below.

Now, the majority of awardees plan to enroll between 1,000 and 2,000 women over their period of operation (three to four years depending on whether the awardee received a no-cost extension of up to a year), with a modified enrollment goal of approximately 50,000 women across all 27 awardees.

FIGURE 1: STRONG START SITES, BY APPROACH



The state and local context within which Strong Start awardees are operating is likely to affect their operations and, potentially, their success. In particular, Medicaid and CHIP eligibility and coverage policies vary considerably across the states where Strong Start awardees are situated. The 30 states (and the District of Columbia and Puerto Rico) with Strong Start sites include those with some of the most, as well as least generous, Medicaid income eligibility limits and benefits packages. As shown in Appendix A, the combined upper Medicaid/CHIP¹¹ income eligibility limit for pregnant women in 2014 in the Strong Start states ranged from the federally mandated minimum of 138 percent of the federal poverty level (FPL) to 306 percent FPL. Notably, however, 29 states with Strong Start sites expanded Medicaid coverage for pregnant women over the last year, while only two states lowered their income eligibility limits. A table summarizing this information is presented in Appendix A.

Implementation of the ACA has changed the coverage landscape in every state. Starting in 2014, half of the Strong Start states (including the District of Columbia) had elected to expand Medicaid coverage to all adults with incomes up to 138 percent of poverty¹² (regardless of pregnancy or

¹¹ Pregnant women are eligible for CHIP in just three of the Strong Start states—DC, New Jersey, and Virginia. However, the following states have adopted the CHIP unborn child option, which permits states to consider the fetus a "targeted low-income child" for CHIP coverage: CA, IL, LA, MI, MN, NE, OK, OR, TN, TX, and WI.

¹² The ACA establishes a minimum income eligibility level of 133 percent of FPL for states that opt to expand Medicaid, and also establishes a standard 5 percent income disregard. Taken together, this means that the ACA's minimum income eligibility level for the Medicaid expansion is 138 percent of FPL.

parenting status).¹³ The remaining 16 states have chosen not to expand Medicaid as of this writing. Also, individuals with incomes between 138 and 400 percent of the FPL are now eligible for federal subsidies to buy private health coverage through newly-established federal and state health insurance exchanges. Most Strong Start states—20 of 30 states and the District of Columbia—also currently operate special Medicaid programs that cover family planning services for women who do not qualify for more comprehensive Medicaid coverage. (For detailed information regarding each Strong Start states' income eligibility threshold by coverage authority, please see Table A.2. in Appendix A.)

EVALUATION DESIGN AND DATA COLLECTION PROGRESS THROUGH YEAR 2

The Strong Start evaluation employs a mixed-methods research design, comprising case studies of implementation, the collection and analysis of participant-level process evaluation indicators, and a quantitative analysis of the impacts of Strong Start on birth outcomes and costs of care. There is also a large technical assistance component designed to acquire birth certificate and Medicaid data and/or to support states in developing their capacity to link these data so that the evaluation can assess program impacts. Finally, the evaluation's scope of work includes the analysis of certain program monitoring data collected from the Strong Start awardees by CMMI to support the oversight of awardee implementation. This section provides brief summaries of these research methods and our progress through Year 2 of the evaluation; additional detail can be found in the evaluation's Design Plan (Howell et al. 2014) and Comparison Group Feasibility Study (Dubay, Blavin, Howell, & Garrett, 2014).

CASE STUDIES OF IMPLEMENTATION

The evaluation's case studies occur during the first four years of the evaluation and provide an in-depth understanding of how Strong Start approaches are designed and implemented, document barriers or challenges awardees encounter during implementation, and describe perceived successes and factors that contribute to success. Our case studies include four components: document review, key informant interviews, focus groups with participating pregnant and postpartum women (as well as some groups with similar, non-participants), and observations of care. Because of resource limitations that preclude studying all service delivery sites, we are collecting case study data from all awardees and approximately one-third of the sites they operate. The intensity of qualitative data collection varies based on whether a site is included in the evaluation's impact analysis. During the Year 1 case studies—which occurred between March and November 2014—we conducted 35 site visits involving all four data collection components (in-person interviews, focus groups, observations, and document reviews) with most awardees and selected study sites; for one awardee and seven sites (mostly under the American Association of

¹³ This includes states (e.g. Michigan and Pennsylvania) that have expanded Medicaid through a Section 1115 waiver.

Birth Centers (AABC) award), however, we conducted interviews by phone. Together, all of these visits entailed the conduct of 200 key informant interviews, including some group interviews with multiple informants; 48 focus groups with pregnant and postpartum women, primarily with Strong Start participants, though 10 groups were held with pregnant women not enrolled in the program; and 35 structured observations of enhanced service delivery.

During the second year of the evaluation, the qualitative data collection was smaller in scope. With one exception (the University of Puerto Rico Medical Sciences Campus (UPR), which received a site visit¹⁴) it involved only telephone interviews with key informants. These “virtual site visits” were conducted with all 26 awardees and 14 selected AABC sites. Between March and June 2014, the evaluation team held 152 interviews with 207 key informants (including some group interviews with multiple informants) to learn about how implementation has progressed and whether any changes to the Strong Start program have occurred at the awardee and site-level.

PARTICIPANT-LEVEL PROCESS EVALUATION

The participant-level process evaluation is designed to give timely feedback to CMMI, the evaluation team, and Strong Start awardees and sites on key indicators of performance and interim outcomes. Detailed information is collected on the demographic and risk characteristics, service use, and outcomes of all Strong Start participants using four data-gathering instruments: an Intake Form, Third Trimester and Postpartum Surveys, all completed by participants (with or without assistance), and an Exit Form, which is completed by awardee staff. Strong Start awardees are required to collect participant-level data from their sites and transmit these data to the evaluation team on a quarterly basis. These data are being used to identify and track risk factors for preterm birth among participants, complications experienced by participants during pregnancy, enhanced and routine services provided during pregnancy and postpartum, and birth processes and outcomes for mothers and infants. Individual-level data are collected at quarterly intervals and summarized in quarterly reports.

In Year 1, participant-level data were collected through March 31, 2014 (Quarter 1 2014), using three of the four data collection instruments: the Intake Form and Third Trimester and Postpartum Surveys. The fourth and final form, the Exit Form, was launched in September 2014. During this time period, 22 awardees submitted data, including 3,777 Intake Forms, 569 Third Trimester Surveys and 346 Postpartum Surveys. For this Year 2 report, twenty-six of 27 awardees submitted participant-level process evaluation data through Quarter 1 2015, including 19,155 Intake Forms, 8,704 Third Trimester Surveys, 6,949 Postpartum Surveys, and 6,669 Exit Forms.

¹⁴ The Y2 site visit to University of Puerto Rico included eight interviews with 12 key informants, as well as two observations of prenatal care sessions and two focus groups, with a total of 20 Strong Start participants. The number of interviews and key informants for this visit are included in the Y2 totals.

IMPACT ANALYSIS

The impact analysis is designed to assess whether and to what extent Strong Start had an impact on three key outcomes: rates of preterm birth; rates of low birthweight births, and Medicaid/CHIP costs through pregnancy and the first year after birth. The impact analysis will assess whether these impacts vary by enhanced prenatal care approach, awardee, site (where feasible), and type of services offered and received. During Year 1, it was decided that the evaluation would focus on measuring the effects of Strong Start in comparison to the standard Medicaid maternity care practice, which requires the selection of comparison groups of women who do not receive services in maternity care homes, group prenatal care, or birth centers. Our approach uses a propensity score re-weighting method to select a well-matched comparison group of Medicaid women who deliver during the same time period, who reside in roughly the same geographic area as Strong Start participants, and who have similar risk characteristics.

The data for the analysis will come from birth certificates and, where feasible, Medicaid data matched to birth certificates. Obtaining and linking these data sources is a primary goal of the Technical Assistance and Data Acquisition task of the evaluation, and all efforts will be made to acquire these data from states with sufficient volume of Strong Start participants to merit the resource investment. At the time of this writing, the impact analysis was slated to be conducted in 20 of the 32 states where Strong Start sites are operating, though it is possible that one or more states will be unable to provide the required data because of legal barriers or resource limitations (see Table 6). In Year 2, the evaluation team began identifying comparison groups for each site included in the impact analysis (described in more detail below).

PROJECT REPORTS

Numerous reports are produced from each evaluation component. For example, for each case study during the first and second year, we produced short awardee memorandums that analyzed program implementation. We will continue to develop these reports for future case studies. The participant-level process analysis is included in quarterly reports on key findings related to participant risk factors, service use, outcomes and satisfaction, among other measures. Each year, an annual report will summarize and synthesize findings across awardees and enhanced prenatal care approach, using data from all evaluation components. A final report, delivered in Year 5, will synthesize evaluation findings across all years and make recommendations for improving birth outcomes and reducing costs for Medicaid women and their infants.

KEY FINDINGS FROM YEAR 1

During the first program year, Strong Start enrollment was lower than expected at 7,568, though it steadily increased throughout the year. It took some awardees considerable time to establish intake and enrollment processes and to hire staff; others awardees faced difficulties integrating eligibility

screening and enrollment into the clinic work flow. Some awardees also struggled with low take-up rates among women offered Strong Start enhanced services or experienced considerable attrition from the program.

We found that participants enrolled in Strong Start during the first year had high levels of emotional and psychosocial needs, including food insecurity, unemployment, unstable housing, lack of reliable transportation, unmet behavioral health needs, and low health literacy. However, all three enhanced prenatal care approaches are designed to help mothers address such needs, particularly through emphasizing relationship-centered care. The maternity care home and birth center approaches emphasize the relationship between participants and care providers, while the group prenatal care approach emphasizes both peer relationships and relationships with the group provider-facilitators. These relationships reportedly provided valuable social and emotional support for Strong Start participants, and were also described as important vehicles for providing education on pregnancy, preterm risks, and self-care, and for facilitating connections to external resources in the community. Despite this common element, consistency in implementation varied considerably across approaches and among sites, including their approach to enrollment; Strong Start staff qualifications; and the content, mode, and frequency of the enhanced services.

Across all three approaches, awardees faced common implementation challenges, including establishing a consistent and effective process for identifying and enrolling eligible patients; integrating enhanced services into existing approaches of care; retaining women in the Strong Start program; and complying with Strong Start data collection and submission requirements. At the same time, many awardees shared common promising practices, including the development of “opt out” enrollment processes that succeed in higher rates of enrollment; improved messaging for patients to promote higher enrollment; strategies to improve relationships between providers and other site staff; flexibility to adapt to the needs of the patient population; and the development of dedicated, skilled and resourceful program staff.

Preliminary data from Year 1 suggested some positive trends in Strong Start’s effects. Participants had rates of Cesarean section that were lower than the national average. In addition, data indicated that breastfeeding rates might be at least as high as the national average, and potentially much higher for birth center participants. Participants receiving care at birth centers or group prenatal care sites reported lower preterm birth rates than the national average, and birth centers also reported rates of very low and low birth weight significantly below the national average.

Strong Start participants expressed overwhelming satisfaction with their prenatal care, with 90 percent of participants reporting that they are either “very satisfied” or “extremely satisfied” with the care they received. Satisfaction with delivery was slightly lower than satisfaction with prenatal care for all Strong Start approaches, particularly among participants enrolled in group prenatal care and at maternity care homes.

ORGANIZATION OF THE YEAR 2 ANNUAL REPORT

This Year 2 Annual Report presents findings from the second year of the Strong Start evaluation and concentrates on data and information gathered through case studies of implementation, and through participant-level data collection through calendar Quarter 2015. Volume I of the Annual Report presents cross-cutting findings across awardees and enhanced prenatal care approaches based on case study and participant-level process evaluation data, while an accompanying Volume II of the Annual Report presents awardee-specific findings from both data sources.

Year 2 Findings and Progress

A summary of findings from Year 2 of the evaluation are presented below. Case study findings from the second round of data collection come first, followed by findings from the participant-level process evaluation component. The evaluation team's efforts to contact states and begin the process of acquiring birth certificate and Medicaid data are then summarized, followed by a discussion of the Impacts team's work to identify comparison groups (among other efforts) in preparation for next year's analysis of linked outcomes data. The chapter concludes with a presentation of our cross-cutting observations and analysis of the evaluation's first two years of findings.

CASE STUDIES

This case study analysis provides a comprehensive summary of awardees' experiences implementing the Strong Start program. More specifically, it examines common program features, progress with implementation, the successes and challenges that Strong Start awardees have experienced, and their early thoughts on program sustainability. Importantly, this analysis includes data collected across all 27 Strong Start awardees, unlike the evaluation's first annual report, which (because of data collection delays) was based on a subset of case studies with just nine awardees. Findings are presented by approach type and in the following order: maternity care home, group prenatal care and birth center care.

MATERNITY CARE HOME APPROACH

Strong Start maternity care homes build on the concept of a patient-centered medical home, providing a woman with high-quality, coordinated prenatal and post-partum care for herself and her infant. CMMI's Strong Start guidelines for the enhanced prenatal care package provided by maternity care home awardees include services that: 1) expand access and provide continuity; 2) assure care coordination; and 3) provide enhanced content of care during visits.

Description of Awardees:

Fourteen awardees are implementing the maternity care home approach under Strong Start.¹⁵ Year 1 evaluation findings showed that though maternity care home awardees comprise different types of providers (e.g., large hospital systems, community health centers, private physician practices)

¹⁵ At the time of Y2 data collection, only 14 awardees had active maternity care home approach sites and are included in this analysis. During the Y2 case study interviews, the evaluation team learned of another awardee—the Oklahoma Health Care Authority—had plans to implement a maternity care home approach at two sites (in addition to existing group prenatal care approach sites). In addition, as this report was being published VCU was revising its Strong Start operational plan to offer both group prenatal care and a maternity care home services. With these two additions, the maternity care home awardees will number at 16.

with unique approach designs, a common key feature across awardees was the addition of new staff to provide care coordination and support to eligible pregnant women. One year later, with case study data from the full set of maternity care home awardees participating in Strong Start, this is still true. Maternity care home awardees use different job titles for this Strong Start-funded position, but the role is consistent across the projects: individuals in this position provide care coordination and referrals, education, and personal support. For simplicity, we use the single term “care manager” to refer to these individuals.

Strong Start Implementation:

The fourteen maternity care home awardees have each taken a distinct approach to implementing Strong Start. The next sections summarize both commonalities and differences in various implementation areas.

Care coordination and referrals: Strong Start care managers assess needs, coordinate services, and support women whose needs cannot be met by a clinician alone. The care manager role begins with a standardized intake process—the Strong Start Intake Form—to assess unmet physical and psychosocial needs. Some maternity care home awardees use the Intake Form to replace or complement their own screening tools. Some do not cover all the intake questions at the first encounter out of concern that participants find them too personal. Strong Start participants are not required to answer any questions that make them uncomfortable.

Care managers, after assessing needs, typically develop a “care plan” for each woman. Sometimes, but not often, the manager identifies health needs that should be addressed by medical personnel (e.g., a prescription for prenatal vitamins). Most often, the care manager identifies services that are not provided during the medical visit, such as smoking cessation, nutrition counseling, mental health services, and drug treatment. In cases where the care manager is not a social worker herself, referrals to social workers are also common. While clinicians sometimes make referrals like these within a traditional prenatal visit, some care managers believe their referrals in the Strong Start context may be more effective for a number of reasons. First, Strong Start staff have good rapport with patients and sometimes schedule a visit to the referred agency/resource for the patient. Further, Strong Start staff often have greater working knowledge of community-based service providers who accept Medicaid patients. For example, the University of South Alabama’s (USA) Strong Start program has partnered with a community provider who has agreed to provide discounted behavioral health services for women enrolled in Strong Start. Meridian Health Plan (Meridian) care managers help Strong Start participants schedule appointments with community-based providers, home visiting programs, and transportation services. Further, social workers at Meridian will follow up to remind patients to get the recommended support services, improving the likelihood of a successful referral.

In general, maternity care homes in urban areas have had more success identifying and connecting women to community resources than those in rural areas. This is likely, in part, because

more heavily-populated areas attract more service providers, and patients in rural areas are more likely to experience difficulty with transportation. In particular, travel distances are often shorter in urban settings and individuals have access to more reliable public transportation. Indeed, during Y1 data collection, some awardees related stories of ineffective transportation options in rural areas, including several-hour waits for pickup (sometimes causing missed appointments), or drivers who fail to show up. Awardees in Florida and Michigan reported food access problems in rural areas, including among patients who receive WIC or SNAP benefits. Some sites in rural areas addressed such challenges by soliciting food donations and baby supplies such as diapers that could be handed out by Strong Start staff. These sites also subsidized gas for women who could drive or be driven by family or friends to their appointments.

Often, Strong Start participants are unaware of their eligibility for public benefits and social service programs or do not understand the scope of services they can access. For example, Medicaid often confers access to dental coverage, behavioral health, prescription drugs, and non-emergency transportation. Pregnancy confers access to nutrition support through WIC for women receiving Medicaid. Community supports exist for domestic violence, housing, and food insecurity (e.g. food pantries). A large part of the care manager's role involves addressing this lack of knowledge and ensuring that participants are taking advantage of available resources. Managers often follow up with patients to learn whether they were able to access referred services, though sometimes they lose contact with patients. No care managers, however, follow up with the referred service providers directly (i.e., to inquire about whether the patient received the service), as is expected in a traditional patient-centered medical home.

Health Education and Preparation for Labor, Delivery, and Beyond: Strong Start care managers typically teach participants what to expect at each stage of their pregnancy, prepare them for discussions with their clinician (e.g., reviewing questions), and help them interpret information provided by the clinician. They have accumulated materials they believe participants will find useful during pregnancy, birth, and beyond; some reported updating their collection as the award period progressed with newer or more informative materials.

Care managers' educational efforts focus on various topics, and the way information is delivered also varies. One awardee (Florida Association of Healthy Start Coalitions (FAHSC)), for instance, acquired samples of contraceptives for a "hands-on" discussion of family planning choices and is training its care manager to provide diabetes education when requested by the patient's OB/GYN. Some care managers perform home visits during which they help participants prepare for a newborn. A few offer video-based education, though they did not believe many participants were actually using the videos and therefore had doubts about the effectiveness of this educational tool. One maternity care home awardee (USA) has begun touring women with substance abuse problems through the NICU for education on the neonatal drug withdrawal process. The awardee observed that participants were appreciative of this effort and felt it was valuable learning opportunity. Another incorporates instruction on when pregnancy concerns necessitate a doctor's visit (e.g.,

conducting a fetal kick count and analyzing results to determine whether medical attention is warranted).

One awardee, Meridian Health Plan (Meridian), is adding a nurse educator in one of its site's emergency departments this summer to promote ambulatory prenatal care and discourage patients from seeking care at the ED unnecessarily. The awardee considers this ED placement as more valuable than group education services (as had been described in their original Strong Start proposal). The hospital that is partnering with Meridian on this effort has identified at least one key topic for the nurse educator: how to recognize the signs of preterm labor and options.

Support for Psychosocial Health and Stress Reduction: All care managers provide one-on-one support to reduce stress related to pregnancy and other life events. Most awardee-level staff hold care managers' skills in this area in high regard, specifically managers' ability to connect with their patients, bolster their confidence, and improve their self-efficacy. One awardee added that their care manager services improve patient "resiliency." Most Strong Start care managers have a relationship with their patients throughout the pregnancy. This may allow for increased understanding of patients' needs and improved trust. From the awardee perspective, Strong Start participants are very appreciative of this individualized attention.

Recruitment: Most maternity care home awardees continue to use a combination of externally-focused outreach and "in-reach" (identifying eligible women among the awardee's existing patient base) to recruit for Strong Start. Two awardees that rely solely on in-reach are their regions' primary safety net health systems, so their OB clinics serve a sufficient number of women eligible for Strong Start. At least one awardee has found that as the maternity care home becomes more established over time, clinicians are increasingly likely to refer patients and endorse their patients' use of Strong Start enhanced services. Two awardees are using their electronic medical records (EMR) system to identify potentially eligible women based on a provider claim for a pregnancy test or a prescription for prenatal vitamins.

Outreach strategies used by various awardees include advertisements on public transportation and radio, partnerships with community organizations, and (for USA) a web page (www.strongstartmobile.com/) and Facebook presence. In general, MCH awardees find these social media more effective for communication (e.g., sending reminders for visits) than for program outreach. One awardee has expanded their participation in community events. Another reported that after they expanded outreach, their internal referrals fell off, so they are reverting to using in-reach as a primary strategy.

Enrollment Approach: Nine of the 14 maternity care home awardees use an opt-in enrollment approach exclusively, offering Strong Start support as an option to augment traditional obstetrical care. Four use an opt-out approach exclusively, making Strong Start enrollment the default option for all women. Finally, two use different approaches at different sites. Two awardees specifically mentioned that their Institutional Review Board requires that they use opt-in because personal

health information is shared with the evaluation (i.e., because this type of information is collected, participants must actively choose to join the program). One awardee still plans to shift its enrollment approach from opt-in to opt-out, with the hope of boosting and simplifying enrollment. Regardless of which approach they've adopted, many key informants reported that enrolling patients into Strong Start has become a more routine and successful part of their clinic workday.

Program Eligibility: In July 2014, the eligibility criteria for enrollment were modified by CMMI to eliminate the requirement that women have multiple risk factors for preterm birth. However, about half the maternity care home awardees continue to require at least one additional risk factor (besides Medicaid eligibility) to qualify women for their Strong Start programs. One awardee, USA, reported modifying its eligibility criteria following the CMMI decision, but also noted that most women present with multiple risk factors anyway, so the population they enroll has not changed in any notable way. Another awardee, Access Community Health Network (ACCESS), still uses multiple risk factors because they have a constrained supply of resources and want to be sure care managers are providing support to patients with the greatest risks. A third awardee stratifies the intensity of its intervention based on risk factors, but all Strong Start participants receive basic telephonic care management.

The majority of awardees modified their gestational age criteria after CMMI adjusted this policy in mid-2014 as well. About half of the maternity care home awardees use a cutoff of 24 to 28 weeks and about half use cutoffs of at least 30 weeks. One reported that it did not use a gestational age cutoff at all. Moreover, within a single awardee, criteria can (and do) vary across sites—for instance, one awardee uses a strict 20-week cutoff for one site while enrolling women of any gestational age at another. Many awardees reported that regardless of looser criteria, they do not actively seek out women in their third trimester for recruitment.

A few maternity care awardees made other changes in eligibility criteria during the second year of implementation in an effort to boost enrollment. FAHSC retained its eligibility policy requiring two risk factors, but added several factors so that an expanded population is now eligible for the program.¹⁶ Two other awardees reported that they have begun recruiting women with pending Medicaid applications. Another, Texas Tech University Health Sciences Center (Texas Tech), extended the geographic limit on how far a participant could live from a Strong Start site and modified the intervention for participants who live far away so they receive phone or clinic-based encounters with care managers rather than home visits.

Care Manager Qualifications: About half of the awardees use clinically-trained care managers such as registered nurses and social workers. Some use community health workers (CHW). When key informants discussed their choice of the two, some with clinical care managers noted that their

¹⁶ Risk factors added in Year 2 are: multiple gestation, unintended pregnancy, adolescent pregnancy, first pregnancy, and BMI greater than 30.

maternity care home is particularly focused on wrap-around services for women with high levels of medical need. Others who have elected to use CHWs noted that this type of staff had the interpersonal style that matches well to their patient population. Sites affiliated with at least two awardees Johns Hopkins University (Hopkins) and Meridian match patients with clinical needs to the nurse care managers and patients with psychosocial needs to community health workers.

Number and Mode of Encounters: The average number of encounters between a care manager and Strong Start participant ranges from one to eight across maternity care home awardees. At least one awardee emphasizes frequent phone calls to assure that care managers maintain contact and continually assess needs. About half the awardees use (or plan to use) texting with participants, though generally just for appointment reminders and not as a primary means of communication. Over the past year there has been an increased emphasis among some awardees' sites on making sure women return for their postpartum visits. This visit provides a chance to review the pregnancy and delivery, check-up on maternal health, and discuss family planning choices; in addition, it is an opportunity for Strong Start staff to complete the program's final data collection requirements.

Number of Sites: About half of the maternity care home awardees increased the number of sites participating in Strong Start during the second year of implementation, with some reporting that they did so specifically to reach their enrollment goal. Only a small number have reduced sites; one awardee had a site drop out due to low enrollment, and another had two sites merge during the past year. One awardee anticipates a closure in 2015 because of the Strong Start administrative burden.

Retention in Prenatal Care: More than half of awardees reported that they have been able to retain very high proportions of enrollees in their programs throughout their pregnancies, and postpartum visit attendance rates (a major challenge at some sites for their whole patient population) are on the rise. Two awardees, FAHSC and Maricopa Integrated Health System (Maricopa), attributed increased postpartum visit attendance to patients' satisfaction with their prenatal care. For instance, Florida Healthy Start recently estimated an 80 percent attendance rate for Strong Start postpartum visits, compared to 50 percent among Medicaid beneficiaries who are not in the program. A third awardee, United Neighborhood Health Services (United), has increased postpartum visit attendance through a broader change in its care approach, separate from Strong Start. This awardee no longer transfers women to various delivering providers early in the third trimester, but now keeps women in care until delivery, transferring them to a single provider with a shared EMR. Women then transfer back to United clinics for postpartum care and are more likely to attend visits than before.

Medicaid-Related Changes Affecting Strong Start Services: Some maternity care home awardees report recent Medicaid and WIC changes that occurred over the past year and have had a positive impact on achieving Strong Start goals:

- During the first round of evaluation case studies, Strong Start participants in Michigan (where the Meridian maternity care home is located) described problems accessing the type of automatic breast pump many felt they needed to maintain their milk supply. The state's Medicaid program revised its coverage policy so now the more powerful pumps are accessible to beneficiaries. Michigan Medicaid also dropped the prior-authorization requirement for long-acting reversible contraceptives (LARCs).
- In July 2014, Florida introduced managed care for most Medicaid populations, including pregnant women. Some awardees report that access to transportation services (reported as problematic during the Year 1 Florida Healthy Start case study) has improved as a result of the managed care plans organizing transportation services for their members.

Challenges:

During the second year of implementation, nearly all maternity care home awardees are struggling to increase enrollment and improve integration of their services with the medical side of the maternity care home. Virtually all awardees are concerned about challenges that directly or indirectly affect enrollment and retention, and a majority is also dissatisfied with the heavy reporting burden. More specifically, common challenges for the maternity care home awardees include:

Staff Turnover: Six maternity care home awardees reported Strong Start staff turnover over the past year, and three of them stressed that this caused enrollment “dips” and delays. One key informant pointed out that high turnover is common in grant-funded programs because the jobs are viewed as temporary.

Lack of Provider Support: Although provider buy-in to Strong Start has improved since initial implementation at some sites, a few maternity care home awardees continue to lack provider support. This problem translates into few referrals to Strong Start, as well as little coordination of Strong Start services with medical services. Medical residents in particular have been a difficult group to coordinate with at some awardees' sites, and program staff report doing more to educate residents about Strong Start. Providers affiliated with some awardees, including Medical University of South Carolina (MUSC) and USA, feel that Strong Start is too time-consuming, impedes their workflow, or that data about enhanced service encounters “clog” the patients' charts. On the other hand, at least one awardee feels that office staff have become more accepting of Strong Start and now facilitate better information-sharing between doctors and Strong Start care managers.

Strong Start Data and Documentation Requirements: Strong Start data collection and evaluation requirements remain a major challenge to maternity care home awardees. Specifically, they noted frustration with the “exceptionally long” Intake Form, and difficulty obtaining information for third trimester and postpartum surveys as well as the Exit form (particularly for sites with different EMRs). One awardee, USA, only includes one prenatal care encounter in its intervention; by the time that the third trimester and postpartum data collection is required, it can be very hard to track

down enrolled patients. Key informants also voiced concerns that paperwork demands reduce the time that care managers can spend with participants and limit the number of women who can be enrolled. Relatedly, some awardees expressed concern that, with pressure to increase enrollment, data burdens will only increase.

At the same time, one key informant pointed out that data reports from the evaluation team are helping their site track implementation progress and identify problems. At least one awardee (Meridian) has made changes in emphasis in its services due to information about patients garnered through the data analysis.

Attendance and Retention: Many awardees did not report specific challenges related to retention, but those that did believe that the burden of a double appointment (prenatal care visit and encounter with a care manager) is too long for some women. Other participants are hard to reach because their phone numbers change (though one maternity care home site asks for an updated phone number at every prenatal visit) or they run out of minutes on their phones. When participants do not attend educational or counseling visits, care managers cannot always tell whether the reason involves competing demands, dissatisfaction with of services, or logistical barriers like transportation and childcare. Most care managers attempt to follow up with patients and, once they make contact, will work with the medical team to fit patients into the schedule for a make-up visit as soon as possible.

Some key informants pointed out that resource constraints allow for a limited number of contacts per Strong Start enrollee and that, as a result, care managers are not able to build a strong enough relationship with participants to effectively encourage continued participation. One site adjusted scheduling to increase the likelihood of face-to-face contact that could be piggy-backed onto prenatal care visits.

Large Caseload and Lack of Community Resources: At least two awardees, including Texas Tech and Providence Health Foundation at Providence Hospital (Providence), reported challenges associated with large caseloads and/or inability to meet the needs of high-risk enrollees. Lack of community resources such as affordable housing and mental health services also frustrates many Strong Start care managers across awardees.

Promising Practices:

Maternity care home awardees have reflected on their initial implementation experiences, compared early data on participant outcomes to other awardees and sites, and felt increased pressure from CMMI to meet project goals. Many have employed enrollment-boosting strategies that appear to be successful. Specific promising practices related to enrollment and other program areas are described more below.

Addition of Enrollment and Administrative Staff: Using Strong Start funding, five maternity care home awardees hired additional staff in the second year of implementation to help with outreach,

enrollment and paperwork. One other awardee intends to hire a vendor to assist with data collection. Some report that hiring a data entry person reduces the burden on care coordinators who can instead spend more time delivering Strong Start services. In the large, multi-site projects, having a single data manager across sites is also beneficial for consistency.

Face-to-Face Recruitment: Five maternity care home awardees have enhanced enrollment by increasing in-person outreach at OB clinics. Strong Start care managers use daily clinic schedules to identify women likely to be eligible for Strong Start, and approach them directly – reducing the need for clinic physicians and nurses to refer women. One awardee (Texas Tech) now places both of its Strong Start CHWs in the OB clinic on Fridays, which is the day for new OB visits. At another awardee’s maternity care home (Providence), prenatal care providers approach women who initially decline Strong Start to ask about their concerns, which has resulted in some women enrolling at their next clinic visit.

Electronic Medical Records: Two awardees (Maricopa and Meridian) reported using the EMR to identify eligible women to approach for enrollment, as well as to track outcomes, evaluate program services and facilitate a multidisciplinary team approach to supporting Strong Start participants. Another awardee (ACCESS) instituted an electronic referral process that facilitates provider referrals through the EMR, contributing to better use of services.

Texting: Many programs have had positive experiences with texting patients to remind them of appointments. A care manager from MUSC has been “amazed” by the response rate to text messages. Some key informants have noted that participants “won’t answer their phones because they are afraid it is a bill collector” but they will respond to texts. In addition, while participants might run out of minutes on their phone (and thus be unable to accept or make calls) they might have unlimited texting capabilities. Texas Tech believes an increase in texting has contributed to an increase in encounters because texting can remind patients to attend scheduled encounters.

Participant Motivation and Incentives: Patients are highly motivated to get the best care for their babies. Care managers report that when women are feeling very constrained by time and competing responsibilities, it is helpful to talk to them how continuing to work with the care manager will benefit their baby. This message has been instrumental in recruiting and assuring regular visit attendance. Two awardees, University of Alabama at Birmingham (UAB) and Providence, have also had greater success enrolling patients into Strong Start when they are informed that their participation can benefit other women. A key informant remarked that, “People are more likely to say ‘yes’ if they feel that they are a part of something big or something revolutionary that will help others.”

Incentives may also help enrollment and/or retention. United and Hopkins give gift bags (not funded by Strong Start) to women when they enroll. Texas Tech provides a package of diapers at Strong Start participants’ postpartum visit and also gives gift cards to clinic nurses who refer patients to Strong Start.

Integration of Care Coordinators in Practices: Over time, clinic nurses and physicians are becoming more comfortable with the Strong Start program. Awardees report that some providers are viewing Strong Start care managers as valuable resources who can help address patients' needs and who often relay important information about their patients. Clinic staff and care managers interact more as comfort with one another increases, which improves patient care. For instance, one awardee noted that care managers sometimes remind clinicians of missing prescriptions or referral forms.

Transportation: Several awardees have become more deliberate about organizing transportation for Strong Start participants. Some schedule the transportation a few days prior to the visits. At least one provides transportation vouchers.

Sustainability:

Most awardees suggest that they would continue Strong Start enhancements in some form after program funding ends if they could. However, financial sustainability is an area of concern for many. Some have started making specific plans to transition to other funding sources, shift to programs with similar approaches, or adapt their own to better attract funding within or outside their organizations. Among several awardees, upcoming budget discussions are expected to include Strong Start, and potential cost savings have been a key consideration. For example, Hopkins' managed care partner has recognized that there are savings associated with Strong Start (e.g., from reductions in neonatal NICU admissions per the awardee's own analysis) and expressed plans to continue the program. Key informants at Meridian mentioned that they are still assessing the return on investment of Strong Start, but if results are positive as expected, would spread the approach to additional sites and to non-pregnant patients with other conditions. Medicaid programs or health plans may be potential funding sources for a few awardees, while others reported that their options for financially sustaining the enhanced services are very limited.

Some awardees may retain or adapt elements of Strong Start within and outside prenatal care, for example, by incorporating aspects of the screening process into their existing care coordination services. Some key informants viewed medical home certification as a strong foundation for continuing a maternity care home approach, while others such as Los Angeles County Department of Health Services (LADHS) and ACCESS, see Strong Start as a pilot program for developing a broader care coordination approach for prenatal or high-risk patients. Indeed, ACCESS has already begun an organization-wide care coordination effort across more than 40 Chicago health centers, targeting high-risk patients that builds largely off of Strong Start. At least one additional awardee is considering a similar approach, with the rationale that enhanced services benefiting a broader population would be more feasible to promote as a priority for funding. Mississippi Primary Health Care Association (MPHCA) plans to encourage its sites to start or increase participation in a preexisting state program that offers services similar to Strong Start (e.g. integrated care coordination, home visiting) when funding ends. The awardee believes that referrals to and

coordination with an existing state-funded program would be more sustainable than maintaining Strong Start separately.

Conclusion:

More than two years into the implementation period, the Strong Start programs among the fourteen maternity care home awardees have become more established in many respects—screening and enrollment processes have become more routine, for instance, and care managers have adapted their service delivery approach to better fit Strong Start patient populations. The awardees are still working through myriad challenges related to enrollment and service integration, but have identified a growing list of promising practices that address some of these challenges.

Most awardees feel that Strong Start has improved outcomes for pregnant patients and their babies. More specifically, they have observed positive trends such as better birth outcomes (including below-local-average preterm birth rates and rates of low birth weight), increased breastfeeding rates, reduced NICU admissions, fewer unnecessary emergency department visits, reduced smoking, positive changes in nutrition, lower levels of stress, more use of community resources (e.g., WIC, Healthy Start, assistance with diapers or baby supplies, workforce training, GED classes, and prenatal or parenting classes), and lower rates of miscarriage.

In addition, virtually all key informants remarked on the strength, trust, and value of the relationships that develop between participants and care managers. Care managers were often praised for their ability to elicit information about risk factors that women may be reluctant to share with their obstetrical provider, such as depression or exposure to domestic violence. Two awardees, ACCESS and Signature Medical Group (Signature), highlighted psychosocial health as the area where Strong Start has had the greatest impact, and attributed improved psychosocial health to support from care managers. Several other awardees noted the important role that psychosocial support played in their Strong Start program and also highlighted sites' progress in addressing psychosocial needs.

Finally, key informants have observed a higher level of self-activation among enrollees. Strong Start-enrolled patients reportedly recognize and manage signs of preterm labor, are more confident when they get to labor, and show greater interest in managing their delivery than patients who are not part of the program. Several maternity care home awardees feel that enrollees are gaining knowledge and skills that can have lasting benefits, and that feedback from the participants themselves suggests the additional support is helping them “make long-term changes that will follow them into the future.”

GROUP PRENATAL CARE APPROACH

Group prenatal care is an approach whereby patients receive prenatal care from health care providers in a group setting, typically with other women of similar gestational age. The approach

emphasizes the building of supportive peer relationships and involves a series of facilitated, face-to-face sessions covering three components: health assessment (the medical component of the prenatal care appointment), education, and support.

Description of the Awardees:

Fifteen Strong Start awardees are implementing the group prenatal care approach, and nearly all are following the Centering Healthcare Institute’s (CHI) model, called CenteringPregnancy, to some degree.¹⁷

Under the Centering approach, two trained facilitators lead each session and groups meet ten times over a seven-month period. Group sessions are scheduled for two hours, and take place in a private space large enough to accommodate patient members and support people in the proscribed circular seating arrangement. Sessions begin with time for socialization while individual health assessments occur in a screened-off area in the corner of the room. At the start of the session group members also participate in self-care activities (taught at the start of the Centering cycle) like weighing themselves and taking their own blood pressure, which they record in their own charts. The second half of the Centering session involves a facilitated discussion about a particular topic, based on core content developed by CHI. Centering materials available through CHI include facilitator guides with suggested session content and activities, discussion aides, and notebooks that patients use throughout pregnancy.¹⁸

Though a large majority of Strong Start sites are following the CenteringPregnancy content and standards closely, individual sites affiliated with about one-third of the awardees have adopted a group prenatal care approach that departs significantly from the Centering model. These sites may have fewer or more sessions than CHI’s suggested ten, for instance, or conduct individual health assessments in separate exam rooms rather than a private area within the group space. One major departure from both CHI’s model and from the Strong Start definition of group prenatal care involves providing group sessions alongside traditional prenatal visits so that group visits are a supplement, rather than an alternative, to traditional care. This approach is practiced by only a few

¹⁷ For most awardees, all Strong Start sites have either already obtained recognition as a CHI-approved site or are currently pursuing or planning to pursue certification in the future. For six awardees, all Strong Start sites are CHI-approved. For another six awardees, all sites are currently pursuing or planning to pursue certification in the future. Two awardees’ sites have mixed status—for instance, some of HealthInsight of Nevada’s sites are CHI-approved while others are not using the CHI approach and thus have no plans to pursue the designation. Only one awardee, Oklahoma Health Care Authority, currently has no sites with CHI certification or with current plans to seek it.

¹⁸ CenteringPregnancy is rooted in these thirteen essential elements: (1) health assessments occur within the group space; (2) participants are included in self-care activities; (3) a facilitative leadership style is used; (4) the group is conducted in a circle; (5) each session has an overall plan; (6) attention is given to the core content, though emphasis may vary; (7) there is stability of group leadership; (8) group conduct honors the contribution of each member; (9) the composition of the group is stable, not rigid; (10) group size is optimal to promote the process; (11) involvement of support people is optional; (12) opportunity for socializing within the group is provided; and, (13) there is ongoing evaluation of outcomes. The CHI approval process (usually completed within 2 years of beginning group prenatal care) is official recognition that a Centering site has met the standards that are specific to the approach and its 13 essential elements.

sites affiliated with two awardees—St. John Community Investment Corporation (St. John) and Virginia Commonwealth University (VCU).

Twelve of the fifteen Strong Start awardees had at least some experience with group prenatal care prior to implementing Strong Start. In some cases, this experience was limited to small pilot programs that were discontinued (e.g., at Albert Einstein Healthcare Network (Einstein) and USA), but other awardees began their Strong Start award period with a group prenatal care program already in place. They used Strong Start funds to enhance their programs through means such as expanding the approach to new sites, training additional facilitators in the group prenatal care approach, bolstering outreach and recruitment to increase the number of Medicaid-enrolled patients in group care, or adding social worker or community health worker services to augment group care.

One awardee—VCU—is a group prenatal care awardee but some of its participants do not receive group care. VCU patients who enter the program later in pregnancy (after 24 weeks gestation) are not enrolled in group prenatal care but instead receive individual visits and other enhanced services (e.g., care coordination and referrals). Accordingly, at the time this report was being published VCU was in the process of revising its Strong Start operational plan to implement both the group prenatal care and maternity care home approach.

Strong Start Implementation:

Strong Start awardees' group prenatal care programs share many common features, mainly because they are based at least partially on CenteringPregnancy, which provides guidelines for how to conduct the groups, including suggested curricula and materials for each session. At the same time, awardees' implementation approaches differ in several notable ways, as discussed below.

Recruitment and Outreach: Most awardees recruit Strong Start-eligible women from their existing patient base, and only a handful have invested significantly in community outreach. Some have recently boosted efforts in this area to increase enrollment— Grady Memorial Hospital Corporation DBA Grady Health System (Grady) for instance, has focused more on recruiting through community partners, and HealthInsight of Nevada (HealthInsight) plans to increase community advertising (e.g., at WIC offices and at bus shelters) and is considering targeted radio ads. Einstein experienced a significant reduction in patient volume (around 30 percent) when its advertising campaign ended; the awardee plans to launch another in the near future.

Program Eligibility: Most, but not all, awardees adjusted eligibility criteria for Strong Start in mid-2014, in response to guidance from CMMI that allowed such modifications. Specifically, they modified requirements so that Medicaid eligibility alone qualifies pregnant women for Strong Start. The enrollment process has become simpler as a result of such adjustments, though some key informants observed that nearly all their pregnant Medicaid patients have additional risk factors for preterm birth, so the demographic profile of program enrollees has not significantly changed. Four

awardees (Einstein, HealthInsight, Central Jersey Family Health Consortium (Central Jersey), and Grady) still require a second additional preterm risk factor for program eligibility.

Some awardees chose to modify their gestational age cutoffs for group prenatal care in mid-2014, also in response to CMMI guidance. Sites operating under at least a couple awards do not use a cutoff at all, and five use a cutoff in the third trimester, between 27 and 32 weeks gestation. Of the remaining awardees, most use a cutoff of either 20 weeks or 24 weeks gestation.¹⁹[CHI's CenteringPregnancy approach suggests that group prenatal care sessions begin when participants are between 12 and 18 weeks gestation.] Some awardees tailor Strong Start services for participants who enter the program in their third trimester, for instance by providing highlights from missed sessions, or "catching them up" during individual appointments if necessary.

Enrollment Approach: Eight of the fifteen group prenatal care awardees use an opt-in enrollment approach for all Strong Start sites, meaning that patients are offered a choice of enrolling in group or traditional prenatal care. Only two (Einstein and UPR) have adopted an opt-out approach whereby all patients are enrolled in group prenatal care by default at all Strong Start sites. The remaining five awardees have some sites that use opt-in and other sites that use an opt-out approach.

Group Facilitators: Group prenatal care sessions are usually facilitated by two individuals, at least one of whom is a clinician (though in many cases, both are). Only one awardee, UPR, uses at least three facilitators for each session. The most common type of facilitator is a Certified Nurse Midwife, though sites also assign the role to Family Nurse Practitioners, OB/GYNs, family practice physicians, registered nurses, and medical assistants. Less commonly, facilitators include social workers and community health workers.

Group prenatal care participants generally have consistent group facilitators throughout their pregnancies; indeed, several awardees suggested that this was a "significant departure" from their previous traditional care approach. At sites affiliated with a few awardees, group participants must transfer care to their delivery provider (i.e., the prenatal site does not handle deliveries) in the last month of pregnancy. If the transfer occurs before the session cycle has completed, participants are encouraged to continue attending the group meetings.

Several awardees are working proactively to incorporate residents into group prenatal care, including the UPR, Amerigroup Corporation (Amerigroup), University of Kentucky Research Foundation (UKRF), VCU, and Grady. Though it can be challenging to work with resident rotation schedules (e.g., some can only be involved with group prenatal care for as little as one month before rotating to another clinical area), these awardees noted that residents are typically very interested and enthusiastic about the approach and felt that training new doctors in the group care approach

¹⁹ One of these awardees, Virginia Commonwealth University, uses a 24-week cutoff for group prenatal care but enrolls some participants in their third trimester into Strong Start and provides other services as described earlier in text.

has been an important contribution of Strong Start. One awardee, UKRF, noted that some of its residents had expressed interest in becoming certified as CHI facilitators, and described plans to engage a “residency expert” to help identify ways to better incorporate residents into group sessions.

Group Size and Composition: The average group size for most awardees is 8-12 participants, though some awardees’ sites have created groups anywhere from 3 to 16 women (see Table 2). Texas Tech and Harris County Hospital District (Harris) have experienced an increase in sites’ average group size as a result of increased program enrollment, and Texas Tech has used a waiting list for some groups.

Generally, sites assign patients to groups based on gestational age, but there are some notable exceptions. Awardees have established a variety of groups targeting specific populations of pregnant women, including groups for women who share a medical risk factor (e.g., gestational diabetes, substance abuse, HIV, or tobacco/psychosocial issues) and groups for women who share demographic features (e.g., teens, Hispanic or Black women). Table 2 shows which Strong Start awardees are operating such groups. Often these specialized groups include women with a greater range of gestational ages. In addition, UPR allows participants who miss their regular group session to make it up by attending another session on a “drop-in” basis; this policy contributes to a more fluid group composition, with groups that often include a greater range of gestational ages.²⁰

More than half of group prenatal care awardees have at least one site that offers Spanish-language groups (including one Oklahoma Healthcare OKHCA site where the group is facilitated in English with a Spanish translator). At least three others have recognized a need for groups in Spanish but have not been able to hire bilingual facilitators due to lengthy certification processes or budget constraints.

Number and Duration of Group Sessions: For the majority of awardees, the group prenatal care intervention comprises ten sessions over a roughly seven-month period (see Table 2). But UPR provides twelve sessions, and UKRF’s substance abuse group offers additional sessions to align with participants’ addiction treatment schedules (e.g., Subutex administration every two weeks). Several awardees also offer more condensed series of sessions. Specifically, the University of Tennessee Health Sciences Center (UTHSC) and OKHCA use an 8-session program while some sites at HealthInsight and VCU have both created 6-session programs. Nearly all sites schedule sessions for two hours, but sites affiliated with a few awardees (Grady, HealthInsight, and OKHCA) conduct 90-minute sessions.

²⁰ During evaluation Y2 focus groups with pregnant and postpartum Strong Start participants at the University of Puerto Rico site indicated that they did not mind the fluidity of the groups, and felt comfortable sharing within the group even with this type of arrangement.

Group Prenatal Care Content: For all awardees, group prenatal care session content is based on the Centering curriculum, which is tailored to the gestational age of participants. Facilitators often invite guest speakers such as pediatricians, labor and delivery nurses, doulas, WIC staff, and representatives from home visiting or other maternal and child health programs to attend groups and participate in the discussion.

All awardees described breastfeeding education and support as a key component. At least one session is devoted to breastfeeding, but the topic often comes up and is discussed at other sessions. Several awardees include certified lactation consultants or WIC breastfeeding peer counselors among the guest speakers at group prenatal care sessions and also make referrals to these services. Three awardees affiliated with large health and hospital systems—Grady, Einstein, and Providence—noted that their Strong Start breastfeeding education efforts were bolstered by their hospitals’ recent decision to pursue Baby Friendly status (a global designation that recognizes hospitals and birth centers that offer an optimal level of care for infant feeding and mother/baby bonding).²¹

TABLE 2: KEY FEATURES OF STRONG START GROUP PRENATAL CARE PROGRAMS

Awardee	Number of Sessions	Average Group Size (number of women)	Targeted Groups (population targeted)
Einstein	10	12-14	None
Amerigroup	10	6-12	None
Central Jersey	10	8	Women with gestational diabetes, Black women
Grady	10	8-12	None
Harris	10	10	None
HealthInsight	10 (2 sites) 8 (1 site) 6 (1 site)	8-10	None
OKHCA	8	3-5	None
Providence	10	8-12	None
St. John	10	8-10	None
Texas Tech	10	14-16	None
UKRF	10 (biweekly for substance users group)	6-10	Women with substance use disorders, women with psychosocial issues or tobacco use, women with gestational diabetes or obesity, Hispanic women
UPR	12	10-12	Women with HIV
USA	10	5	None
UTHSC	8	10-12	Women with or at risk for gestational diabetes
VCU	10 (7 for high-risk pregnancy group)	5-10	Women with high-risk pregnancies

²¹ The Baby Friendly Birthing Initiative recognizes and awards birthing facilities that successfully implement the Ten Steps to Successful Breastfeeding, which include: 1. Have a written breastfeeding policy 2. Train all health care staff in the skills necessary to implement this policy. 3. Inform all pregnant women about the benefits and management of breastfeeding. 4. Help mothers initiate breastfeeding within one hour of birth. 5. Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants. 6. Give infants no food or drink other than breast-milk, unless medically indicated. 7. Practice rooming in - allow mothers and infants to remain together 24 hours a day. 8. Encourage breastfeeding on demand. 9. Give no pacifiers or artificial nipples to breastfeeding infants. 10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or birth center.

Family planning is also a common area of focus. At least one session covers contraceptive choices. (Though for the small number of sites with a religious affiliation, this session may be substituted with a discussion of natural family planning.) Some awardees provide additional family planning counseling through social workers or community health workers, and two have incorporated the CDC's Reproductive Life Plan into their group prenatal care curriculum. Awardees in Georgia, Louisiana, and Texas noted their concerns and frustration with limited Medicaid contraceptive coverage, which obstructs patient access to these services even when women have knowledge about their family planning options.

Other topics commonly discussed in the group sessions include stress, preparation for labor and delivery, newborn care, social services (such as the WIC program), domestic violence, nutrition, preterm birth prevention, oral hygiene, infant safety, and smoking. Some sites include additional content in their group care program that is tailored to their patient population. For instance, two of OKHCA's sites incorporate *The Coming of the Blessing*, a March of Dimes initiative for American Indian and Alaska Native families. USA's pregnant patients include a large proportion of morbidly obese women, so the awardee has incorporated dietician services into group prenatal care and includes an additional focus on nutrition. Awardees that operate targeted high-risk groups (described earlier) include information that is especially relevant for that population—for instance, more time spent on glucose monitoring and nutrition for groups of gestational diabetics, or special sessions focused on administration of prophylactic antiretroviral drug therapy for infants in groups for women living with HIV.

Challenges:

The group prenatal care awardees have experienced a range of challenges in the first two years of Strong Start program implementation. Common challenges include those related to enrollment, stakeholder support, session attendance, Strong Start program and evaluation data collection, group meeting space, and scheduling.

Lagging Enrollment: Lagging program enrollment has plagued a number of group prenatal care awardees throughout both years of Strong Start implementation. Much effort has been devoted to improving enrollment processes and, many awardees have revised originally proposed enrollment goals downward.

Reasons for low enrollment include lack of support for the approach from administrators and obstetrical providers (which is particularly problematic if the latter are responsible for identifying eligibles or introducing them to the group care approach); very late entry into prenatal care; lower than expected Medicaid patient volume; and high proportions of patients who are undocumented (and therefore not eligible for Medicaid/CHIP or Strong Start in most states). In addition, at some sites using opt-in enrollment, a substantial proportion of eligible patients decline to participate in group prenatal care; for instance, UKRF reports that the take-up rate at one of its sites is just 50 percent. At this site and others, the most commonly-cited reasons that eligible patients decline

enrollment include inconvenient meeting times that conflict with school or work, lack of childcare, transportation issues, desire to meet with a specific provider who is not involved in the group approach, or reluctance to participate in group care.

Poor Session Attendance: About half of the group prenatal care awardees report challenges with group attendance and completion of the program. Average group attendance at some sites is only around 30 percent, though some key informants noted that attendance rates are low for traditional prenatal care too, and in some cases group attendance is better in comparison. Attendance and retention problems are often related to the same issues that challenge enrollment—namely, childcare and transportation barriers. One awardee noted that many patients drop out of group prenatal care between screening/enrollment and their first session (sometimes more than a month later, for women who present early for prenatal care). Other common reasons for dropping out of Strong Start include moving or changing prenatal care providers.

Lack of Stakeholder Support: Providers' (and in some cases, administrators') resistance to the group prenatal care approach has been an ongoing challenge for many awardees. In some cases, this resistance is rooted in concerns about the cost-effectiveness of the group approach and belief that traditional, one-on-one visits are more profitable. Providers may also be concerned about "losing" patients to the new approach or may be resistant to change more generally. One awardee (St. John) noted that providers' disapproval of the CHI approach in particular prompted them to create their own, modified version of the model which involves group support sessions that are offered as a supplement to traditional (one-on-one) prenatal care visits.

Difficulties with provider support are exacerbated at sites with frequent provider turnover, including community health centers and teaching hospitals that have a steady rotation of residents, as they must continually educate and train new providers on the approach. Though provider buy-in continues to be a struggle for some, other awardees indicate that the situation has improved over time as programs become more established, familiarity with the approach increases, and positive patient outcomes become apparent.

Strong Start Data and Documentation Requirements: Strong Start program and evaluation data collection requirements continue to challenge program staff at many group prenatal care sites. About half of the awardees described the data collection forms as cumbersome or burdensome (or both), others felt that reporting requirements changed too frequently which makes it hard for sites to "keep up," and several expressed frustration that they were not aware of the full scope of data collection earlier and could not adequately plan for it when they designed their programs. Regarding the latter point, it is notable that some awardees mentioned that hiring data specialists with Strong Start carry-over funds has been very helpful.

Some awardees also suggest that Strong Start participants dislike filling out the evaluation forms and that the Intake form in particular is lengthy, which cuts down on time for discussion during the

session in which it is administered. Some also feel that some questions on the forms are ambiguous and could be interpreted in many different ways.

Meeting Space: Most group prenatal care sites have been able to secure adequate group meeting space, but others have struggled with this aspect of the approach. Some do not have a dedicated space; for instance, a site affiliated with Central Jersey relies on a shared multipurpose space that requires set-up and break-down for each session, a UKRF site uses a space that doubles as a patient waiting room, and one of the OKHCA sites has held sessions in a staff kitchenette/break-room. For other sites, it has been difficult to secure a space that is large enough to accommodate group members and their support people, as well as individual health assessments in a separate (but within the same room) area.

Scheduling Difficulties: Establishing group prenatal care often requires major changes to how appointments are scheduled, and some sites have struggled with this. For instance, when one site implemented its program, front-desk staff (who did not fully understand the approach) scheduled patients for both group and individual prenatal care appointments. One awardee with a diverse set of sites noted that hospital-based sites are “much more rigid” with scheduling and have more challenges with accommodating group sessions as compared to sites at community health centers.

Promising Practices:

The group prenatal care awardees shared a number of promising practices related to implementation including building stakeholder support, improving recruitment methods, and boosting session attendance.

Building Stakeholder Support: Awardees took many similar approaches to building support for the program among prenatal care providers, health care administrators, and other key stakeholders. Several noted the importance of identifying and engaging group prenatal care “champions,” ideally in leadership positions. For Central Jersey, these champions are providers who work to educate administrators concerned about resources and profitability on the approach’s benefits including improved maternal and child health outcomes, greater job satisfaction for staff, and good publicity for the site. For UPR, champions include the hospital administrator himself, whose support for group prenatal care was a key factor in the awardee’s decision to extend group care clinic-wide as the new standard of prenatal care.

One of awardees’ most common approaches to building support for group care is to invite providers to observe and participate in sessions. Most have also made staff presentations on group prenatal care, with one awardee suggesting that conducting these information sessions early (prior to implementation) was very valuable. Other practices that were reported to increase stakeholder support include making facilitator training mandatory for all prenatal care providers, mid-implementation “re-training” for facilitators and new providers, and reporting on Strong Start implementation progress at every department staff meeting. Amerigroup organized a “Learning

Collaborative” between sites, which involved providers and partner organizations, to help spread information and promising practices. Key informants felt that this had boosted support for the program. Finally, Harris praised its Centering Steering Committee (required as part of the CHI approval process) for promoting communication between providers and Strong Start program staff.

Improving Recruitment Methods: Particularly in light of lagging enrollment, awardee efforts to improve Strong Start recruitment have been substantial. Though most awardees are not using an opt-out enrollment approach, those who are generally feel that this practice has been their most effective recruitment tool. In addition, in-person recruitment works best, using a well-practiced “elevator speech” about the approach’s major advantages over traditional prenatal care. Awardees described some common effective messages such as little or no waiting time for sessions, more time with providers, a consistent prenatal care provider, peer support, and snacks at each session. Often Strong Start program staff encourage hesitant patients to “just try a session out” with the belief (supported by anecdotal evidence) that once they attend their first session and experience the advantages for themselves they are likely to return.

Other recruitment tools in use by the group prenatal care awardees include distributing postcard-sized session invitations to participants (with instructions to pass them on to friends and family); conducting trainings with providers using mock scripts and role-play on how to introduce the program; adjusting schedules for new OB days so that providers who are especially supportive of group care introduce the program to pregnant patients; providing tours of the group meeting room as part of the enrollment process; showing a promotional video (with testimonials from previous patients) in clinic waiting rooms; and providing new enrollees with Centering promotional materials (e.g., baby bottles) or donated incentives (e.g., car seats, T-shirts from a local sports team, maternity or baby clothing and supplies, toiletries).

Boosting Session Attendance: Many group prenatal care awardees have identified group attendance rates as an area that needs improvement. Strategies to boost attendance include providing a full schedule of session dates upon program enrollment (so that women can plan ahead); reminding participants of the next meeting date at the end of each session (some sites ask group members to take out their smart phones or calendars on the spot and record the meeting information); making reminder phone calls and texts, including using Text4Baby’s built-in appointment reminder feature; and following up with members who miss sessions. In some cases, group members are asked to follow up with one another—for instance, an Amerigroup site instituted a “Centering Buddy” program that pairs members of the same group cohort and requests that they share contact information and remind one another about upcoming sessions. Texas Tech and Harris both use CHWs to keep participants engaged and work on reminders and follow-up. Similarly, Einstein has added a patient navigator to its Strong Start team for this purpose. At Harris, the CHW created a professional Facebook profile and a Google voice number (which can receive/send texts) to facilitate easy communication with participants. Amerigroup’s sites create a

Facebook page for each group cohort; participants are invited to join the page and can get to know their fellow group members this way.

Since attendance at postpartum sessions can be particularly challenging, some sites have developed specific strategies to help women keep postpartum appointments; for instance, one Grady site hosts “birthday party” for the cohort’s newborns at the session and collaborates with a community partner called the Pregnancy Resource Center, which provides “Baby Bucks” (to be used on baby supplies) to participants as a reward for attending the postpartum session. Similarly, other awardees use non-Strong Start-funded incentives to encourage patients to continue with the program until delivery. Einstein gives participants a pack of diapers for attending the first group and enters participants with at least a 70 percent attendance rate into a raffle for a Target gift card. Staff at a site affiliated with HealthInsight collaborated to purchase a crib, which they displayed in the clinic waiting room, that group prenatal care participants have a chance to win once they have attended five sessions. Though such raffle items and incentives are valuable tools for both recruitment and retention, several awardees noted that they are not always reliable strategies because they depend on the availability of donations or non-Strong Start grant funds, since Strong Start funding cannot be used for incentives. The awardees felt strongly that CMS should consider allowing them to use Strong Start funds for incentives so that these tools could be incorporated more consistently into their programs.

Finally, to address transportation barriers (common barriers to both recruitment and retention), HealthInsight uses separate grant funding to purchase bus tokens for participants. Key informants associated with this awardee also report that they have engaged a Medicaid managed care organization about ways to improve transportation for patients.

Sustainability:

Awardees’ views on sustainability varied. Virtually all expressed a desire for group prenatal care to continue at the Strong Start sites. Some (particularly those that had implemented group prenatal care before Strong Start) feel certain that the approach will be sustained after Strong Start is over, though they acknowledge that it might take a modified form. For instance, UKRF expects that its group prenatal program could be scaled-back, perhaps to focus solely on groups for substance abusers. Harris is unsure of whether the enhanced components of its group program, the social worker and CHW staff funded under Strong Start, will be sustained if other dedicated sources of funding are not identified. Other awardees echoed concerns that group prenatal care would not be sustained without additional funding. Key informants from HealthInsight felt that group prenatal care would be sustained at sites that had previously trained providers in Centering and invested in CHI certification, but that at other newly-established group care sites, enhanced Medicaid or other funding would be needed to support continuation of group care. Some awardees have identified community partners (e.g., the March of Dimes) that are supportive of group prenatal care, but few had identified funding sources for sustainability. One awardee, Einstein, indicated that

complementary grants (e.g., through the state Department of Health and the Healthy Start program) would cover some of the costs of sustaining group prenatal care, and specifically CHI certification, after Strong Start.

Conclusion:

Despite basing their group prenatal care programs on a common approach (CenteringPregnancy), the implementation experiences of the awardees have been diverse. Some have modified the approach so that it is a unique program that fits the needs of their provider sites or patient populations. In addition, while most awardees experienced similar challenges related to enrollment, stakeholder support, and group attendance, strategies they have adopted to address these program issues are distinct. Importantly, though all group prenatal care awardees are now fully operational (which was not the case when the evaluation’s first annual report was published) they continue to be at various stages of implementation. Some of their Strong Start programs, particularly those at sites with pre-existing group care and significant patient volume, are quite well established while others have enrollment numbers so low that they have difficulty creating group cohorts.

What all awardees share is a strong belief in group prenatal care’s potential to improve maternal and newborn health outcomes among Medicaid and CHIP beneficiaries. Two years into implementation, they observe many improvements that they attribute to group care, such as better breastfeeding rates, positive changes in nutrition, exercise, and smoking cessation, improvements in prenatal and postpartum visit attendance rates (including newborn follow-up care), reduced stress, increased knowledge and confidence about labor and delivery, lower rates of preterm birth and low birth weight, improved glucose control, fewer inductions, increased access to contraception, reductions in repeat short-interval pregnancies, fewer unnecessary visits to the emergency department for false labor, better-prepared partners or support people, and greater awareness of resources in the community or at the provider site. Most of these effects were reported by several awardees and some—particularly improvements related to breastfeeding—were mentioned by virtually all of them.

Besides these observations on program outcomes, group prenatal care awardees praised the approach’s ability to strengthen relationships. They shared examples of peer relationships that began in group care and have extended far beyond the prenatal period, including stories of participants sharing child care and celebrating their children’s birthdays together, and one anecdote about group members collaborating to throw a baby shower for a fellow participant who had no family support. In addition, provider-patient relationships are stronger: because most groups meet with the same provider for two-hour increments over a seven-month period, providers get to know members better than they would in a traditional care environment, and vice versa. Many key informants noted that this fostered a comfortable environment where patients are more likely to discuss sensitive topics with their provider (e.g., experiencing violence or trauma, substance abuse, homelessness, or hunger). Providers also reportedly benefit from increased job satisfaction since

group prenatal care sessions are “more fun and engaging” than traditional care. Relatedly, some providers feel that they are better communicators in group prenatal care sessions because the format is less monotonous (i.e., they cover information twice a day in group sessions, versus ten or more times a day in brief individual visits).

BIRTH CENTER APPROACH

The Strong Start approach of enhanced prenatal care at birth centers involves a team of health professionals, including midwives and peer counselors, who provide comprehensive prenatal care to Medicaid and CHIP beneficiaries in a birth center setting. According to the AABC (the Strong Start awardee operating nearly all sites implementing the birth center approach), a birth center is a homelike facility existing within a healthcare system that provides family-centered care for healthy women before, during and after normal pregnancy, labor and birth.

Description of the Awardee:

The birth centers included in this analysis are listed in Table 3 and²² belong to the AABC, which is a national trade organization for birth centers in the United States. At the time of Y2 case study data collection in spring 2015, AABC was overseeing the operations of 41 Strong Start sites in 18 states across the country that, as of May 2015, had enrolled 3,902 women in Strong Start. The awardee expects three sites to leave the program in the near future (in Juneau and Fairbanks, AK and Brooklyn, NY) primarily because of changes in leadership and management, a reportedly common occurrence among these small, independently-owned and operated businesses. In addition, two sites ceased Strong Start operations during the first year of the evaluation—a site in Anchorage felt that the program was not a good fit since its Medicaid-enrolled patient population was generally low-risk, and a site in rural Minnesota that lost accreditation and was therefore no longer eligible to participate in Strong Start. AABC continues to actively recruit sites at professional meetings, and anticipates the addition of nine sites upon approval of the awardee’s request for a no-cost extension. New sites include birth centers in Pennsylvania, Florida, Oregon, Minnesota, Missouri, Idaho, and Connecticut; the latter three states are new to the Strong Start initiative.

AABC’s Strong Start project has two key components—the midwifery model of care and support provided by a peer counselor. Strong Start funds support the addition of peer counselor services at AABC sites (midwifery care is already a mandatory covered service under Medicaid) and thus this discussion of program implementation focuses on the peer counselor element and how it complements and augments the midwifery approach of care. The midwifery approach to care, an inherent feature of AABC’s birth centers, involves a holistic and wellness approach to pregnancy and

²² AABC oversees 41 sites (as of March 2015) participating in Strong Start and implementing the birth center approach, a subset of which are included in the evaluation case studies. One additional awardee—Providence Health—includes one site that is implementing the birth center approach. The Providence birth center site was not among those studied in evaluation Y2 and is not part of this analysis (though the site was included in Y1 data collection and will also be studied in Y3).

birth. The approach combines medical care with comprehensive education about pregnancy, labor, delivery, and postpartum care using a patient-centered process designed to empower women to take control of their health. Because birth center prenatal visits are generally at least 30 minutes (compared to 10 or 15 minutes for a typical prenatal care visit at an OB/GYN practice) the midwives that provide care to Strong Start participants are praised as being better able to build a relationship with patients and for spending more time identifying and addressing their medical, psychosocial, or educational needs. Patients often receive extensive printed materials to supplement and reinforce the education that occurs during the prenatal appointment. In addition, midwifery practices often host classes that offer a “deep-dive” into topics such as labor and birth, breastfeeding, newborn care, prenatal yoga, and postpartum support.

TABLE 3: AABC SITES INCLUDED IN THE EVALUATION Y2 CASE STUDY ANALYSIS

Birth Center	Location (City, State)
Mat-Su Midwifery & Family Health	Wasilla, AK
El Rio Birth & Women's Health Center	Tucson, AZ
Best Start Birth Center	San Diego, CA
Women's Health & Birth Center	Santa Rosa, CA
Birth & Beyond	Grandin, FL
Rosemary Birthing Home	Sarasota, FL
New Birth Company	Overland Park, KS
Women's Birth & Wellness Center	Chapel Hill, NC
Dar a Luz Birth & Health Center	Los Ranchos, NM
The Midwife Center for Birth & Women's Health	Pittsburgh, PA
Charleston Birth Place	Charleston, SC
Lisa Ross Birth & Women's Center	Knoxville, TN
North Houston Birth Center	Houston, TX
FamilyCare Women's Health & Birth Center	Hurricane, WV

Most birth centers limit birth services—and often, but not always, prenatal care—to women who have low medical risk of adverse pregnancy outcomes. Common risk factors that exclude women from care at many birth centers include body mass index greater than 35, gestational diabetes (though some birth centers accept patients with controlled or non-insulin dependent gestational diabetes), hypertension, and substance abuse. Midwives do sometimes work in tandem with collaborating physicians to screen and monitor patients’ risks in order to continue to provide birth center care in these cases.

Strong Start Implementation:

Peer Counseling Services: Under the Strong Start program, participating birth centers provide peer counseling services as an enhanced service for Strong Start enrolled patients. Peer counseling services are designed to enhance the midwifery approach of care by providing additional support to Strong Start participants during and after pregnancy. Peer counselors at the sites implementing the birth center approach are typically responsible for:

- Educating participants about nutrition, exercise, stress management, what to expect during labor and delivery, and breastfeeding;
- Providing emotional support regarding personal or family issues;
- Referring participants to health care services, typically dental and behavioral health care;
- Connecting participants to community and social services to help with issues surrounding food security, housing, and transportation; and
- Communicating with midwives about developments in participants' risks and needs learned through peer counselor visits.

For example, a peer counselor at the Sarasota, Florida birth center learned that though food scarcity was a common problem, Strong Start participants did not apply for nutrition assistance or use food banks because of stigma. She worked with the patients to address their apprehensions and as a result, the patients increased their use of these resources. A birth center in Alaska commonly refers Strong Start participants to a community-based nonprofit organization that offers prenatal care education, parenting classes, a diaper bank, mentoring, and additional referrals. And at the site in South Carolina, the peer counselor creates individualized sets of educational materials for women with specific medical conditions; for instance, she distributes a wallet-sized blood pressure tracking sheet to hypertensive participants that allows them to assess whether their condition is improving as they make lifestyle changes.

Number, Timing, and Mode of Peer Counselor Encounters: AABC requires that peer counselors meet with Strong Start participants at least four times over the course of their prenatal and postpartum care. In most cases, peer counselors visit with participants once per trimester and once postpartum; however, peer counselors at some birth centers (e.g., in California (the San Diego site), Wisconsin, and West Virginia) meet with participants more frequently, such as after every prenatal care appointment. The timing of peer counselor encounters is also influenced by gestational age at enrollment; participants who enroll in the second or third trimester may have more frequent encounters.

Most peer counselor visits currently occur in person at the birth center. This represents a shift over the course of the Strong Start initiative for some birth centers that began their programs by conducting visits by phone, in the participants' home, or in local restaurants and coffee shops. Some sites made this shift because peer counselors became more available (e.g., the birth center in South Carolina's peer counselor became full-time staff) and others found that it was more convenient for participants if encounters took place at the birth center either before or after their prenatal care appointment. In between these formal visits, peer counselors are typically available to participants via phone and email. Some peer counselors also communicate with participants via text messages and have found this to be an effective way to maintain contact.

Peer Counselor Qualifications: While a few peer counselors have similar demographic characteristics or maternal experiences as the participants (e.g., young, previous Medicaid enrollment, parents of young children, or experience with birth center care) the prevalence of counselors with clinical and professional training suggests that the individuals serving in these roles are often not actually “peers” per se, in the traditional sense of the term. For example, many peer counselors are registered nurses, licensed practical nurses, licensed clinical social workers, medical assistants, nursing assistants, or midwifery assistants. In addition, several peer counselors are certified lactation consultants, health educators, childbirth educators, or doulas.

Recruitment: Participating birth centers recruit almost exclusively from the pool of women who present at the birth center for care rather than conducting external outreach to identify eligible participants. The birth centers focus on internal recruitment primarily because they are at capacity and unable to accommodate increased patient loads. In addition, some birth centers (e.g., in South Carolina and Kansas) are reluctant to increase the number of Medicaid-enrolled patients that they care for due to low reimbursement rates. Over the last year, AABC has developed marketing materials, including flyers, brochures, and a website to help birth centers recruit for Strong Start. However, the sites have generally not made significant use of the materials to recruit participants.

Program Eligibility: In response to CMMI guidance in mid-2014 that modified Strong Start eligibility criteria, AABC’s sites have eliminated the requirement for a second preterm risk factor, meaning that Medicaid or CHIP eligibility alone qualifies a pregnant woman for Strong Start services. Birth centers still complete the AABC-developed risk assessment form when patients are enrolled in the program; this information is needed for Strong Start program monitoring reports and is also generally used by peer counselors to identify patient needs and prioritize education and supportive services.

Also in response to the mid-2014 revision of Strong Start enrollment criteria, Strong Start birth centers no longer use a cutoff of 24 weeks gestational age for program eligibility.²³ Though most sites no longer use any cutoff, some report that they will not enroll patients who present for care late in the third trimester (34 to 36 weeks gestation); they reason that beyond that point it would be difficult to complete the required number of peer counseling visits (though centers that do not have such a policy enroll very few women that late). If a woman enrolls in Strong Start later in pregnancy, peer counselor encounters are more frequent to adhere to the requirement that all participants have at least four encounters while they are enrolled in the program. AABC expects that all prenatal peer counselor visits will occur before 37 weeks gestation, but key informants acknowledged that

²³ At the end of evaluation Y2 (and after case study data collection was completed) AABC informed the case study team that it had reinstated a gestational age cutoff for Strong Start, in response to CMMI request. AABC now uses a gestational age limit of 28 weeks or less, though women up to 32 weeks gestation may also be enrolled in the program in special (undefined) situations. AABC has proposed in its Operational Plan that women with advanced gestational ages will not comprise more than 10 percent of its Strong Start population.

this was not always possible because of late enrollment or other scheduling problems. Peer counseling services may occasionally be provided between 37 weeks gestation and birth, but this is not the usual scenario for a Strong Start birth center participant.

AABC has informed sites that they are allowed to enroll a patient whose Medicaid eligibility is pending into Strong Start, but only around half of participating sites have chosen to do this. In some instances, the birth centers have personnel on site to assist women with completing a Medicaid application.

Enrollment Approach: Overall, most birth centers are using an opt-in enrollment approach for their Strong Start program. That is, Strong Start is being offered as an option to women who are seeking prenatal care at the birth centers. The typical approach involves describing the Strong Start program and its enhanced peer counseling at the patient's first prenatal care and asking the woman if she would like to participate. As a strategy to increase enrollment, some birth centers (e.g., in Santa Rosa CA, West Virginia, Kansas, and New Mexico) have switched to an opt-out approach over the course of program implementation, meaning that Strong Start enrollment occurs for all Medicaid beneficiaries unless women explicitly say they do not want to participate. This shift is consistent with AABC's encouragement to present Strong Start as part of a birth center's standard approach of care and "just another helpful service" that it provides to eligible patients.

Regardless of sites' chosen enrollment approach, few women decline to participate in Strong Start. One site reported that a patient has yet to turn down Strong Start participation, and others indicate that only a handful of patients have ever declined. According to key informants, those who decline generally do so because they feel they do not need the additional support of the peer counselor or are unwilling to make the extra time commitment. Less commonly, patients choose not to enroll in Strong Start because they do not want to participate in or share personal data with a government-sponsored program.

Retention: Retention has not been problematic for most birth center sites. Once participants agree to participate in Strong Start, they tend to complete the full program. In instances where participants do drop out, it is most often because they have transferred care entirely to another provider. A small number of birth centers offer incentives (supported by other, non-Strong Start funding), such as gift cards and breastfeeding pillows, for completion of Strong Start evaluation forms.

Maternity Neighborhood Care Guides and AABC Maternity Surveys: AABC recently launched two new web-based initiatives for birth center clients Maternity Neighborhood Care Guides and AABC Maternity Surveys. Strong Start participants must sign up for both. The Guides are a set of educational resources that women can access via the AABC's Strong Start website, and include peer-reviewed journal articles, information from organizations like Childbirth Connection and Lamaze International, and materials the awardee created expressly for Strong Start. The Surveys are a method to collect more comprehensive data about client experiences, with detailed questions

about satisfaction with birth center services. Peer counselors sign participants up for the survey component when they enroll in Strong Start, after which they receive invitations (emails with links) to complete surveys at different points throughout their pregnancy and postpartum. AABC has the ability to link Maternity Care Survey data to outcomes data collected through the Perinatal Data Registry.²⁴

Challenges:

Though many birth centers' Strong Start programs have become well established over time, many sites continue to experience implementation challenges, including those related to enrollment, disengaged staff or turnover among staff, Strong Start program and evaluation data collection, and Medicaid policies.

Lagging Enrollment: A number of AABC sites have struggled with low enrollment, and the number of patients ever enrolled in the program (as of May 2015) ranges from fewer than five to more than 450 across the awardees' dozens of sites. Enrollment challenges stem from a variety of sources. Some sites have not been able to effectively incorporate the enrollment process into the workflow of their birth center, though many other sites overcame this obstacle. In addition, some birth centers have low overall patient volume, or a low proportion of Medicaid-enrolled patients.

Disengaged Providers and Other Birth Center Staff: Key informants in many birth center sites reported that commitment to Strong Start has sometimes been low among non-program staff, such as midwives and receptionists. This lack of commitment has been most problematic for the enrollment process. It is often the midwives' responsibility to introduce Strong Start to eligible women, secure participation and consent, and complete the evaluation's Intake form. But at some sites, midwives' recruitment efforts are inconsistent, which has resulted in failure to capture all eligible women.

Staff Turnover: Many Strong Start birth centers have experienced high turnover over the course of the award period. This turnover has occurred at the leadership level, as well as among midwives and peer counselors. For example, at the West Virginia site all four of the center's midwives left between rounds of case study collection, representing a complete turnover of the site's prenatal care providers. Though turnover among Strong Start funded staff is occasionally related to the program itself (e.g., the peer counselor's skill set is a 'bad fit' or a counselor found a more permanent, non-grant funded position) it is more often due to personal reasons or work factors unrelated to Strong Start. Regardless of the reason, turnover is challenging because enrollment and

²⁴ AABC's Strong Start sites are required to use the Perinatal Data Registry (originally called the Uniform Data Set) that was developed by AABC a few decades ago and includes patient demographic, utilization and health outcome data. The registry is web-based and comprehensive, including data from a patient's initial prenatal visit until six weeks postpartum. AABC modified the PDR to include data necessary for the Strong Start quarterly monitoring reports and the national evaluation,

provision of enhanced services often suffers while new staff are introduced to and trained on the program.

Strong Start Data and Documentation Requirements: The data collection requirements associated with the Strong Start evaluation and program monitoring continue to be challenging for participating birth centers. Key informants observed that data collection is burdensome as it takes a long time to enter the data required into the Perinatal Data Registry (the reporting system promoted by AABC, which has been modified for Strong Start sites to include program reporting requirements). Delayed implementation of and changes to data collection processes have posed additional burden and increased frustration among program staff. In addition, some key informants noted that there are sensitive questions on the forms that participants are sometimes reluctant to answer. Encouraging these participants to complete the evaluation forms has been difficult.

Medicaid Policies: Current reimbursement policies create barriers and limit birth centers' ability to participate in the Medicaid program. Some birth centers continue to struggle with low or delayed Medicaid reimbursement. Key informants reported that Medicaid reimbursement does not adequately cover the cost of birth center care. For example, one birth center noted that its state Medicaid agency (in Florida) limits the number of reimbursable visits to 10, but the birth center conducts 14 visits as its standard approach of care.²⁵ Another birth center noted that Medicaid reimbursement for the center's facility fee (for labor and delivery services) in its state was \$400, which would not even cover the costs associated with a birth assistant. Though not an apparent problem across study sites, low reimbursement undermines birth centers' willingness to care for a greater proportion of Medicaid enrollees, and thus limits their ability to increase Strong Start enrollment.

Another challenge reported by some birth center sites is lengthy Medicaid eligibility determination. Birth centers that do not accept women until they are officially enrolled in Medicaid (despite allowance by CMMI and encouragement by AABC to enroll "pending" applicants) find these delays problematic because sometimes the center is at capacity by the time the Medicaid determination has been made. At the same time, key informants from at least one site in Alaska that reported extensive Medicaid processing delays in 2014 shared that the state's application processing time is now much faster.

Promising Practices:

Sites implementing Strong Start's birth center approach of care have identified a number of promising practices related to program implementation, including those related to peer counselor skills and availability and to their enrollment approach.

²⁵ Florida's Medicaid program will pay for extra visits on a case by case basis (if medically indicated). The evaluation team was unable to identify what would be a qualifying circumstance for extra prenatal visits beyond the 10-visit limit.

Regular Peer Counselor Presence: Having a peer counselor available and on-site at all times that a birth center is open has been helpful to the Strong Start program. Peer counselors can take a more active role in the enrollment process, introduce themselves to eligible or newly-enrolled participants right away, and initiate the scheduling process for peer counselor visits. In addition, increased in-person availability of the peer counselors improves communication between the peer counselors and midwives and makes it more convenient for participants to attend their peer counseling visits. Some birth centers had full-time peer counselors from the start of the program, while others have only recently integrated their peer counselors more fully into daily operations.

Opt-out Enrollment Approach: Some birth centers (e.g., sites in New Mexico and Santa Rosa CA) have shifted from an opt-in to an opt-out enrollment approach, an adjustment they feel has made a positive impact on enrollment. These centers have integrated the Strong Start paperwork (e.g., the consent form and evaluation Intake form) into the general intake process of the center.

Successful Enrollment Messages: Birth center program staff identified common, successful “pitches” that they use to encourage patients to participate in Strong Start. Over time, they have tailored these messages so that they are responsive to common concerns about enrollment. These successful messages include assuring patients that peer counseling can happen on the same day (just before or after) the prenatal visit; explaining to patients that they are at-risk for preterm birth and how the program is meant to address this; emphasizing that the peer counselors will provide (non-Strong Start funded) snacks; and emphasizing that patients can dis-enroll from Strong Start at any time. The peer counselor at one site (in San Diego, California) has found the most effective way to describe the program to potential participants is to say that she will act as their “personal assistant” during pregnancy.

Skilled and approachable Peer Counselors: Many birth centers believe that a key strength of their Strong Start program is the particular skill set that their peer counselor possesses. Clinical training is helpful, but generally key informants praised peer counselors’ interpersonal skills and their ability to build strong connections with participants. Key informants described effective counselors using terms such as “relatable,” “motherly,” and “friendly.” These traits reportedly help participants feel comfortable sharing personal information during peer counselor encounters, and strengthen participants’ connection to the birth center more generally.

Increasing Public Awareness of Strong Start: AABC used Y1 Strong Start carryover funds to increase its Internet and social media presence, to build support for and enrollment in Strong Start. The awardee created a website (www.strong-start.org) and blog that is updated on a regular basis, developed a Facebook page, created YouTube videos (available on the website, and played in the waiting rooms of some centers), and began using Twitter. Key informants felt these activities had stimulated interest in Strong Start among birth centers and their clients, with one noting: “It takes time to build an audience, but it’s showing a difference now.”

Sustainability:

The core component of the birth centers' enhanced prenatal care approach, the midwifery approach of care, existed pre-Strong Start and will continue once the award period has concluded. But centers' interest in sustaining peer counseling services once Strong Start funding ends is mixed. Many birth centers are interested in sustaining the service but are unsure of how to support it financially. Key informants expected that it would be easier to sustain peer counseling in cases where a Medical Assistant or other birth center staff has combined the role with other duties. AABC hopes to engage the Centers for Medicare and Medicaid Services in dialogue about positive outcomes related to supportive services during pregnancy (such as health education, or peer counseling, or childbirth education) and pathways for reimbursement for these services under Medicaid and CHIP.

There is less interest in continuing to collect patient data and make use of the Care Guides. Several birth centers (e.g., in South Carolina and Grandin, Florida) have indicated that they do not plan to sustain either the peer counseling services or additional data collection. Several centers who do intend to sustain peer counseling have indicated that it will likely be more limited in scope, for example focusing on the last trimester or as-needed referrals to community resources. The center in Knoxville is considering transitioning its peer counselor, a masters-level social worker, to a full-time mental health therapist role that might be funded through reimbursable behavioral health visits.

Conclusion:

AABC's Strong Start sites are diverse, operating in different states and Medicaid environments with varying staffing approaches and service provision, and often very different patient populations. Accordingly, Strong Start implementation experiences have been very different from one site to the next. Perhaps the best indicators of this variation are sites' enrollment numbers (as noted above) but sites have had varying levels of success with establishing the program's peer counselor component as well.

A common theme across sites, however, was confidence that the midwifery approach of care leads to improved outcomes for birth center patients. Clinical outcomes associated with birth center care, even prior to Strong Start implementation, are typically very good.²⁶ Thus many key informants note that it is unlikely that Strong Start itself will lead to improvements in the rate of preterm births, low birth weight and breastfeeding (e.g., some sites report that before Strong Start they had near-universal breastfeeding initiation among patients). In addition, many key informants were reluctant to attribute any improvements in birth outcomes to the peer counselor services in isolation. However, the South Carolina birth center noted that, since implementing peer counseling, it has observed a decrease in the number of Medicaid-enrolled patients who transfer to the hospital

²⁶ See, as one example: Henderson, J., & Petrou, S. (2008). Economic Implications of Home Births and Birth Centers: A Structured Review. *Birth*, 35(2), 136–146.

during labor, as well as an increase in the number with spontaneous vaginal births and who breastfeed for a longer duration.

The birth centers were more certain that peer counseling services had improved psychosocial outcomes among Strong Start participants. At this point in program implementation, more participants have given birth, and key informants have observed that program participants seem more prepared for labor and delivery and more informed about proper postpartum and newborn care. They attributed these improvements to two components of the enhanced services: (1) the additional education and emotional support that peer counselors provide to participants; and (2) the identification, and subsequent addressing, of needs and risks during peer counselor encounters (i.e., such needs may have gone unidentified, and unmet, in the absence of the encounters). In addition to increased preparation, key informants highlighted participants' connections to helpful wrap-around services as important outcomes of Strong Start. In particular, the connections to behavioral health services and nutrition assistance were cited as important outcomes of Strong Start participation.

PARTICIPANT-LEVEL PROCESS EVALUATION

INTRODUCTION

Participant-level process evaluation data are used to track several process indicators including the number of prenatal and enhanced visits a patient has over the course of her care, patient demographic and risk characteristics, satisfaction with care received, and a limited number of birth outcome variables that are not available elsewhere. Participant-level process data are being collected at four points as women progress through the Strong Start program:

1. Program intake (Intake Form);
2. Third trimester (Third Trimester Survey);
3. Postpartum (Postpartum Survey); and
4. Program discharge (Exit Form).

The first three sources of data are participant reported, and instruments are available in both English and Spanish. The Exit Form, also available in both English and Spanish, was launched in September 2014, and draws information from the participant's medical record and/or program record. (Brief summaries of each form are presented in Exhibit 2. Final versions of all four instruments can be found in Appendix B).

With the exception of the Exit Form, the participant-level process evaluation data collection system was rolled out in January 2014. Data included in this Year 2 Annual Report includes all Intake Forms, Third Trimester Surveys, Postpartum Surveys, and Exit Forms submitted through March 31, 2015 (Quarter 1 2015). These data are presented in this chapter as well as in Appendix C.

EXHIBIT 2: PARTICIPANT-LEVEL PROCESS EVALUATION DATA

Intake Form. The Strong Start Intake Form was developed by CMMI and implemented with Strong Start awardees prior to the launch of the evaluation. The form, which is six pages in length, includes questions pertaining to the participant's socio-demographics, pregnancy history, delivery intentions, and risk factors for premature birth. Screening tools for depression, anxiety, intimate partner violence, substance abuse, and food security are included on the form. Intake Forms can be submitted electronically or on a scannable paper form.

Third Trimester and Postpartum Surveys. Each two-page survey, designed by the evaluation team, captures information on select measures of health and well-being (e.g., smoking and depression), as well as delivery and postpartum intentions and client satisfaction. Some measures were included to be consistent with the Intake Form, so participants can be tracked over time. Surveys were developed and piloted during the fall of 2013 and launched along with scannable Intake Forms in January 2014. These surveys can be submitted on scannable paper forms.

Exit Form. This form documents clinical and program data from the medical chart or the Strong Start program record following discharge. These data are being completed for participants who are followed through delivery as well as for those who disenroll from Strong Start prior to delivery. Data will be used to quantify clinical pregnancy risks, clinical outcomes, and the intensity of the intervention. Awardees were polled prior to development to determine what data would be available. An initial version was piloted with four awardees in January 2014. Additional revisions were made in the spring of 2014 based on feedback from awardees and CMMI program and evaluation staff. Exit Forms can be submitted electronically or via scannable paper forms.

Additional information on the quantity and the quality of the data collected through Quarter 1 2015 are included in Appendix D (Data Quality Report).

DATA THROUGH QUARTER 1 2015

Twenty-six out of 27 Strong Start awardees submitted participant-level process evaluation data through Quarter 1 2015.²⁷ According to quarterly program monitoring data submitted to CMMI, a total of 23,547 women were enrolled in Strong Start through Quarter 1 2015 (since the program's inception). Intake Forms were submitted in Quarter 1 2015 for 19,155 of these participants, or 82 percent of women enrolled. Across awardees, the proportion of Intake Forms submitted for enrollees ranges from 45 percent to more than 120 percent²⁸ (one awardee submitted forms for more women than they reported enrolling through Quarter 1 2015). Along with other program requirements implemented mid-2014, completion of the Intake Form became a requirement for enrollment, and women are now considered Strong Start participants once they have been risk assessed, given consent and completed the Intake Form.

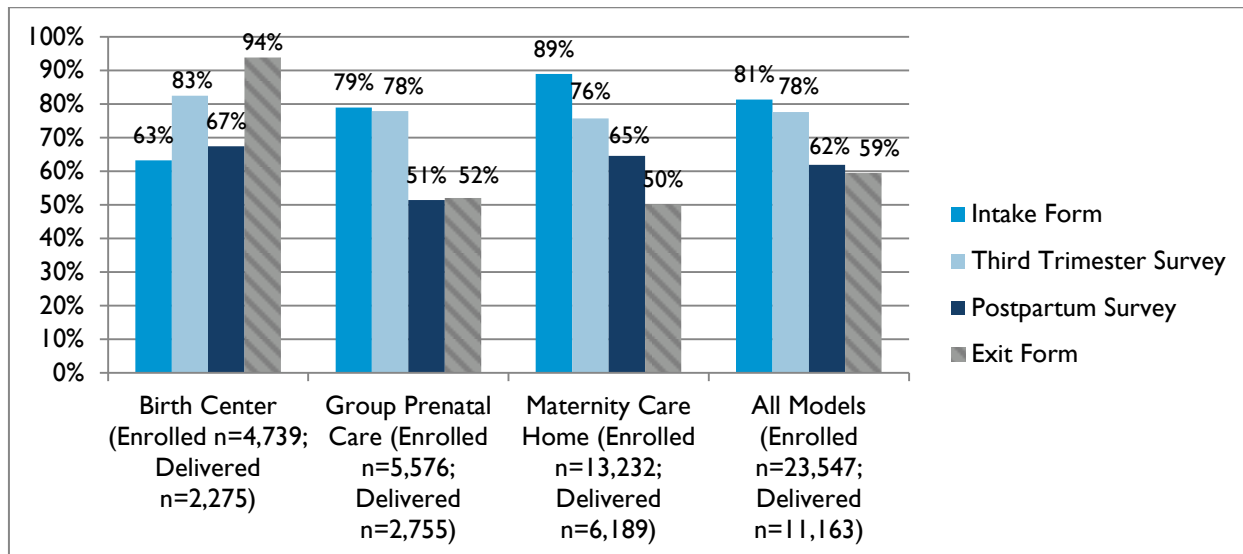
Third Trimester and Postpartum Surveys have been submitted for 76 percent and 61 percent (respectively) of women who had delivered through Quarter 1 2015. By awardee, these rates range from a low of 15 percent to a high of 167 percent for Third Trimester Surveys and from 10 percent to 174 percent for Postpartum Surveys. Exit Form data were submitted for approximately 58 percent of women who had delivered as of the end of Q1 2015²⁹. Figure 2 shows awardee compliance with participant-level process evaluation form submission by approach and overall. Importantly, we have fewer than 7,000 Exit Forms (out of a possible 11,163 deliveries). Therefore measures on clinical risk factors and pregnancy outcomes should be interpreted with caution.

²⁷ One awardee, University of Tennessee Medical Group, was in the process of transferring its award to another organization, University of Tennessee Health Science Center. As a result of this transition, this awardee did not submit new participant-level process evaluation or program monitoring data for Quarter 1 2015, but UTMG data submitted through Quarter 4 2014 are included in these analyses.

²⁸ Enrollment totals are based on awardee reports in their Quarterly Program Progress Reports.

²⁹ Estimates of submission for Third Trimester, Postpartum, and Exit Form data are based on awardee reports of the number of women who had delivered through the end of Quarter 1 2015 in Quarterly Program Progress Reports. Submission rates greater than 100 percent for Third Trimester Surveys are likely due to more women having reached their third trimester than delivered. Submission rates greater than 100 percent for Postpartum Surveys could be due to delays in reported number of deliveries in Quarterly Program Progress Reports.

FIGURE 2: ESTIMATED RATES OF FORM SUBMISSION, BY APPROACH AND OVERALL



Notes: Estimated rates of submission are calculated from the number of forms processed divided by the expected number of forms. The denominator for expected Intake Forms is enrollment through March 2015 as reported on awardees' Quarterly Program Progress Reports. The denominators for expected Third Trimester and Postpartum Surveys and Exit Forms are based on deliveries through March 2015 as reported on awardees' Quarterly Program Progress Reports.

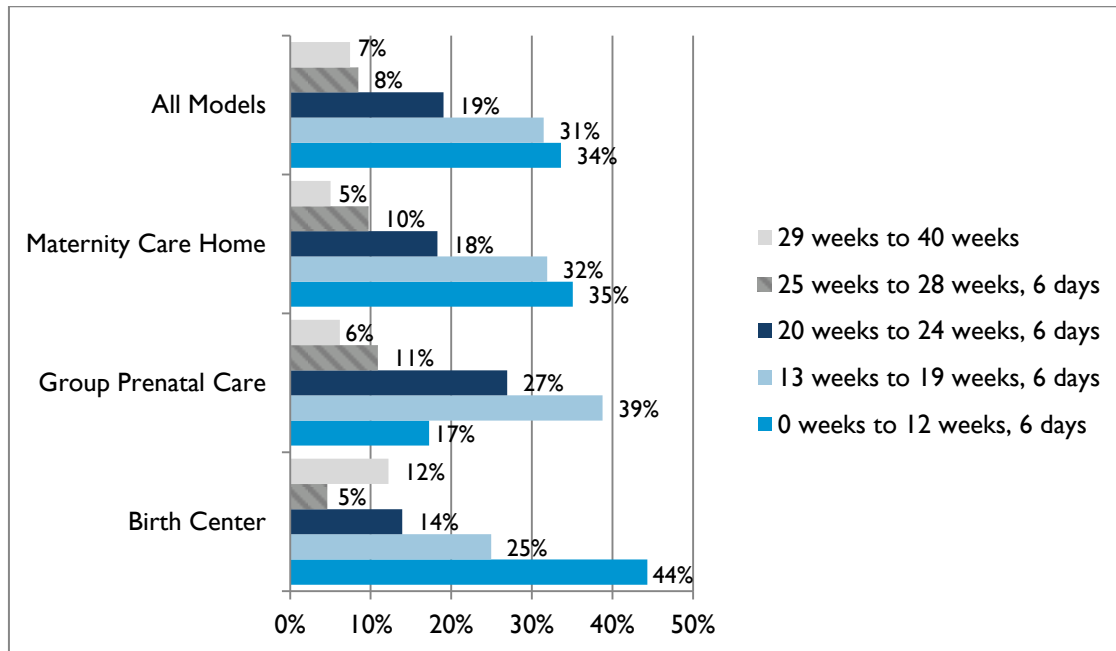
PARTICIPANT RISK PROFILES

Strong Start participants are targeted because they are at increased risk for preterm birth and delivering babies who are low birth weight because they are low-income women who qualify for Medicaid and often experience significant social, economic, and health challenges. Eligibility criteria for Strong Start enrollment were being Medicaid eligible, possessing at least one additional risk factor for preterm birth or low birth weight, and being less than 28 weeks gestational age³⁰. As discussed in more detail in the Case Studies section above, CMMI modified enrollment criteria to eliminate the requirement that women be identified with additional risk factors prior to enrollment. In addition, some awardees are enrolling a limited number of women past 28 weeks gestation based on risk status and potential interventions available. According to data collected through Quarter 1 2015, approximately seven percent of women enrolled in Strong Start have enrolled after 28 weeks gestation. Birth center sites are most likely to enroll women late in their pregnancies, with about 12 percent of their participants enrolling after 28 weeks. Group prenatal care and maternity care home sites have enrolled about six percent and five percent of their participants, respectively, beyond 28

³⁰ The original program goal was for all women enrolled to be under 20 weeks gestation. However, many awards got exceptions, some for up to 24 weeks gestation and others for up to 28 weeks gestation. Initially the parameters were that no more than 25% of participants could enroll after 20 weeks gestation, with no more than 10% after 24 weeks gestation. In practice, however, awardees ended up setting enrollment parameters individually.

weeks gestation. The gestational age of Strong Start participants at enrollment, by approach, is shown in Figure 3.

FIGURE 3: GESTATIONAL AGE AT ENROLLMENT IN STRONG START, BY APPROACH AND OVERALL



Many possible risk factors exist among this population of pregnant women, including demographic, psychosocial, and medical risk factors. The risk profiles of Strong Start participants enrolled through Quarter 1 2015 are discussed below.

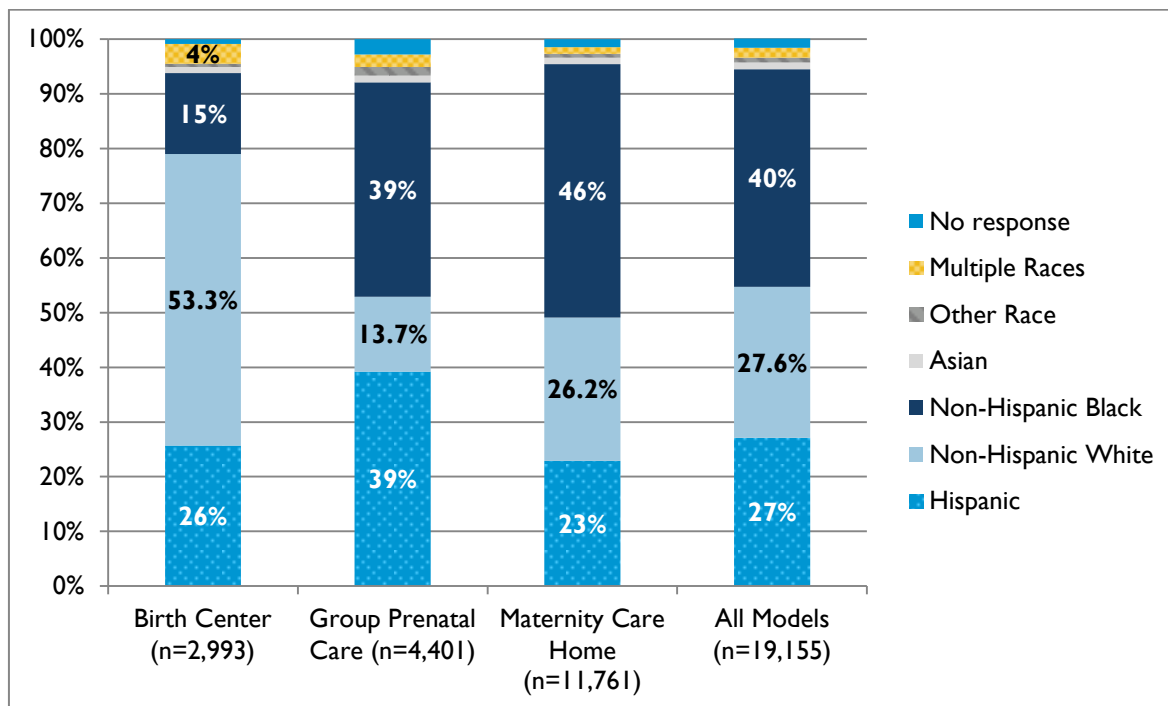
Demographic Characteristics:

Demographic characteristics of Strong Start participants reported on Intake Forms are described below to provide an understanding of who is receiving Strong Start services and how and whether patterns differ by approach. These elements help us understand whether Strong Start is targeting women who may be at greater risk of experiencing poor birth outcomes, as evidence indicates that certain demographic characteristics are associated with increased risk. In this section we present descriptions of the racial and ethnic make-up of the sample, the educational background of women enrolled, and women’s relationship status.

Overall, nearly 40 percent of women enrolled in Strong Start through Quarter 1 2015 are non-Hispanic black women. This is much higher than national estimates of the racial breakdown of pregnant Medicaid beneficiaries; analyses of the Centers for Disease Control and Prevention’s (CDC) 2013 National Health Interview Survey indicate that just over one-quarter of pregnant women receiving Medicaid are black (26.3 percent), while 40 percent identify as non-Hispanic white (National Health Information Survey, 2013). Among Strong Start enrollees we see slightly fewer than 30 percent of participants are Non-Hispanic whites and the same proportion of enrollees are

Hispanic. The remaining six percent report being either Asian, mixed race, or “other” .^{31,32} The over-representation of black women in the Strong Start population is relevant given evidence that black women of all income levels are more likely to experience adverse pregnancy outcomes than comparable white or Hispanic pregnant women (Zhang, Cardarelli, Shim, Ye, Booker, & Rust, 2013, Martin et al. 2015).³³ Racial breakdowns do vary by approach, however, with significantly more white women being served in birth center settings than the other two approaches, significantly more Hispanic women being served by group prenatal care sites, and significantly more black women receiving care in maternity care home settings. These data are shown in Figure 4.

FIGURE 4: COMBINED RACE AND ETHNICITY OF STRONG START PARTICIPANTS, BY APPROACH AND OVERALL



Note: Values of three percent or less are not labeled.

Among women who identify as Hispanic, more than 50 percent are of Mexican descent. The next largest group of Hispanic origin is Puerto Rican, accounting for approximately 13 percent of the Hispanic Strong Start population. These breakdowns are displayed in Figure 5. This finding is

³¹ Race and ethnicity data are collected through two separate questions on the Intake Forms, but combined categories have been created for reporting purposes

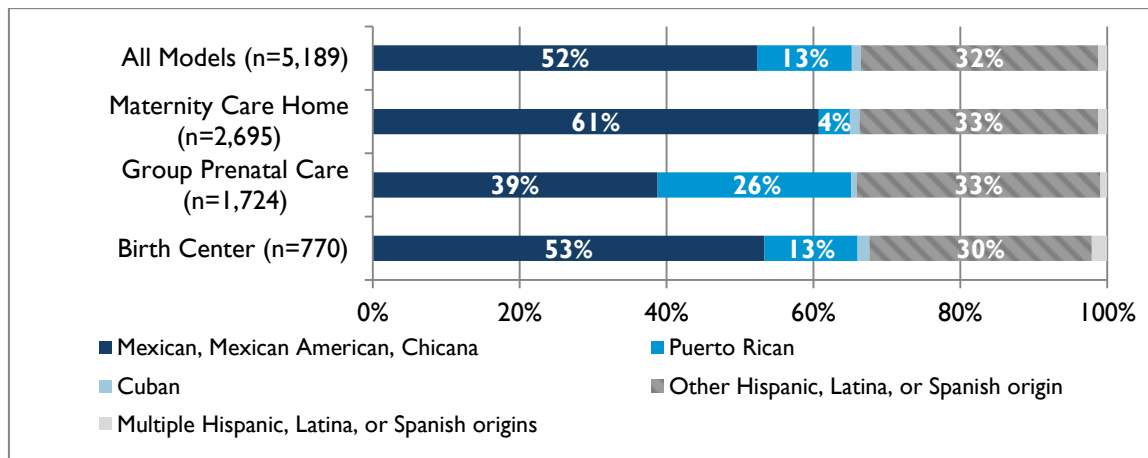
³² Some participants did not report a race, but did report an ethnicity, and vice versa. For the purposes of this analysis, all women who indicated they were Hispanic were included in the Hispanic race/ethnicity category. Thus, Hispanic participants can be any race. Nearly half of those indicating they were Hispanic (49 percent) did not indicate a race (43 percent indicated they were white). Among participants who indicated a race, some of these did not indicate an ethnicity (12 percent). In these cases, the women were assumed to be non-Hispanic and were assigned to the non-Hispanic category for the indicated race.

³³ One awardee considers being African American a risk factor that qualifies women for Strong Start. This could contribute to the larger proportion of black women enrolled in Strong Start.

meaningful given evidence that native born and immigrant Mexican American women typically have better outcomes than other racial and ethnic subgroups (Martin et al. 2015). There are a larger proportion of Puerto Rican women enrolled in group prenatal care than the other approaches, but that is likely a function of the fact that group prenatal care is being implemented at Strong Start sites located in Puerto Rico.

The vast majority (over 80 percent) of women enrolled in Strong Start are 18 to 34 years old. Approximately six percent of women are younger than 18 and another six percent are 35 or older.

FIGURE 5: ETHNICITY AMONG HISPANIC STRONG START PARTICIPANTS AS PERCENT OF TOTAL, BY APPROACH AND OVERALL



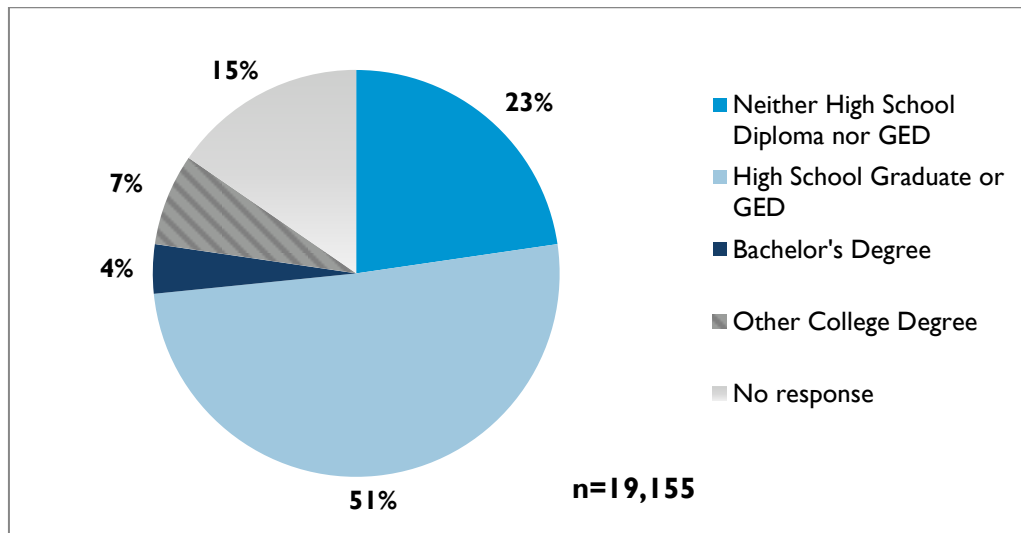
Notes: Values of two percent or less are not labeled.

Socioeconomic Profile of Strong Start Participants:

Consistent with the case study analyses, which indicate that Strong Start enrollees experience high levels of need (Hill et al., 2014), Intake Form data through Quarter 1 2015 suggest enrollees continue to experience low levels of educational attainment, high rates of unemployment and persistent food insecurity.

As shown in Figure 6, education levels are low overall among Strong Start participants; three-quarters of women have a high school degree or less (23 percent of women enrolled in Strong Start have less than a high school degree, and about 50 percent have completed high school or received a GED). Four percent of women have a Bachelor’s degree, and another seven percent have completed some other form of college (such as an Associate’s Degree). Low educational attainment is a risk factor for poor birth outcomes, including low birth weight and preterm birth, and is likely to operate through a number of complex mechanisms (Institute of Medicine, 2007).

FIGURE 6: HIGHEST LEVEL OF EDUCATION COMPLETED BY STRONG START PARTICIPANTS



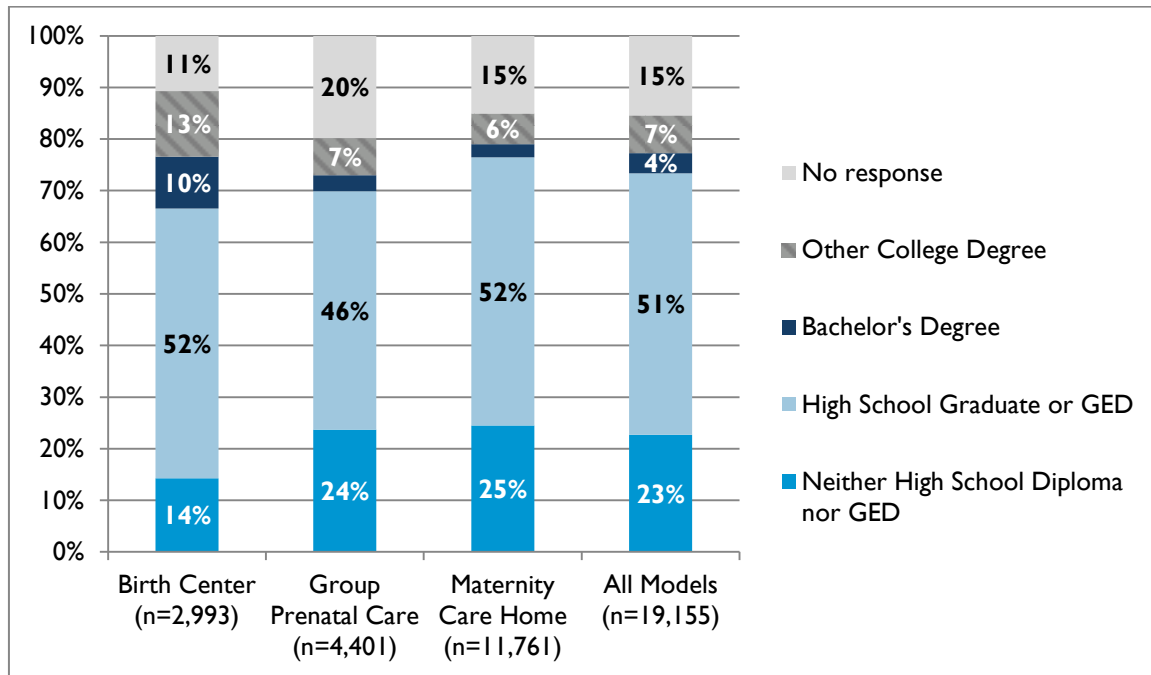
Educational attainment rates do vary significantly by approach, with birth center enrollees being significantly more likely to have a Bachelor’s degree than women enrolled in either of the other two approaches.³⁴ Ten percent of birth center enrollees have a Bachelor’s degree compared with three percent of women enrolled in group prenatal care and 2.5 percent of women enrolled in maternity care homes. Corresponding differences exist among women without a high school education (14 percent of women enrolled in birth center care compared with 24 percent of group prenatal care participants and 24 percent of maternity care home enrollees). These findings are consistent with general perceptions that birth centers serve a larger proportion of more highly education women (Walsh & Downe, 2004). A sizable number of participants also chose not to answer this question (15 percent overall); though reasons for this relatively high rate of missing responses are unknown, case study informants suggested that some women found the question offensive or did not understand how it related to their prenatal care. Education levels of Strong Start participants by approach and overall are presented in Figure 7.

Furthermore, as shown in Figure 8, more than half of women (60 percent) enrolled in Strong Start report not having a job³⁵. These high rates of unemployment could indicate underlying health concerns or may simply be a function of high levels of disadvantage experienced by this population. We do not know whether this high level of unemployment is due to health concerns related to pregnancy or simply the circumstances of the women in these settings. About 20 percent of women in the sample who do not have a job are in school, but 80 percent are not. These rates do not vary much by approach.

³⁴ Significant differences were established using t-tests ($P < .01$).

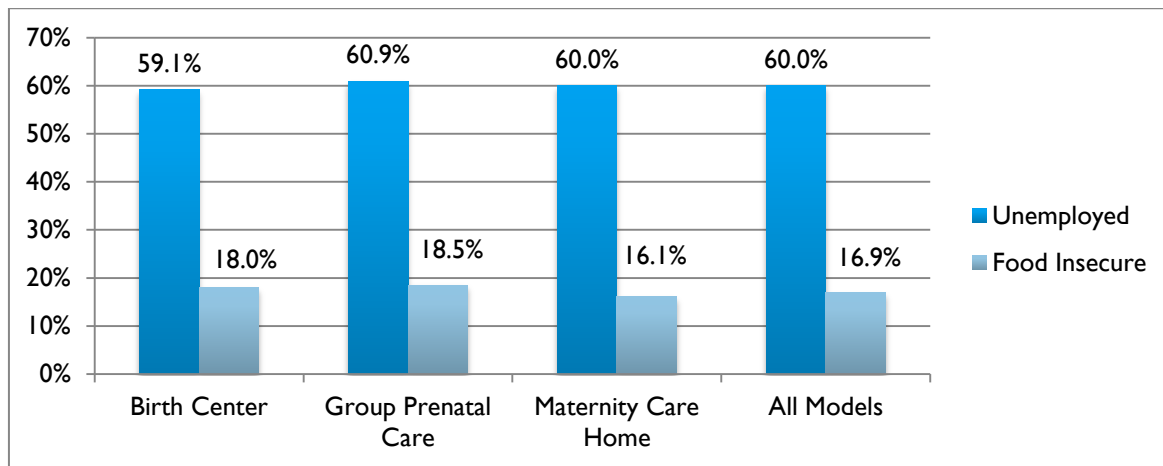
³⁵ Question asks “Do you have a job right now?” Women who report “no” may be caring for children or in school.

FIGURE 7: HIGHEST LEVEL OF EDUCATION COMPLETED BY STRONG START PARTICIPANTS, BY APPROACH AND OVERALL



Note: Values of less than four percent are not labeled.

FIGURE 8: RATES OF UNEMPLOYMENT AND FOOD INSECURITY AT INTAKE, BY APPROACH AND OVERALL



Despite high levels of unemployment and incomes low enough to qualify women for Medicaid coverage, a surprisingly low proportion of women reported experiencing food insecurity (approximately 17 percent overall). Nonetheless, awardees frequently indicate in case study interviews that linking women with WIC and other resources providing free or subsidized food is an important part of the services they are providing. This is something worth exploring further, and

may be achievable by linking awardee-level case study analyses and awardee-level PLPE data. Interestingly, Maternity Care Home participants were significantly less likely to report experiencing food insecurity (16 percent) than women enrolled in the other two approaches of care—18 percent and 19 percent of birth center participants and group prenatal care participants, respectively.

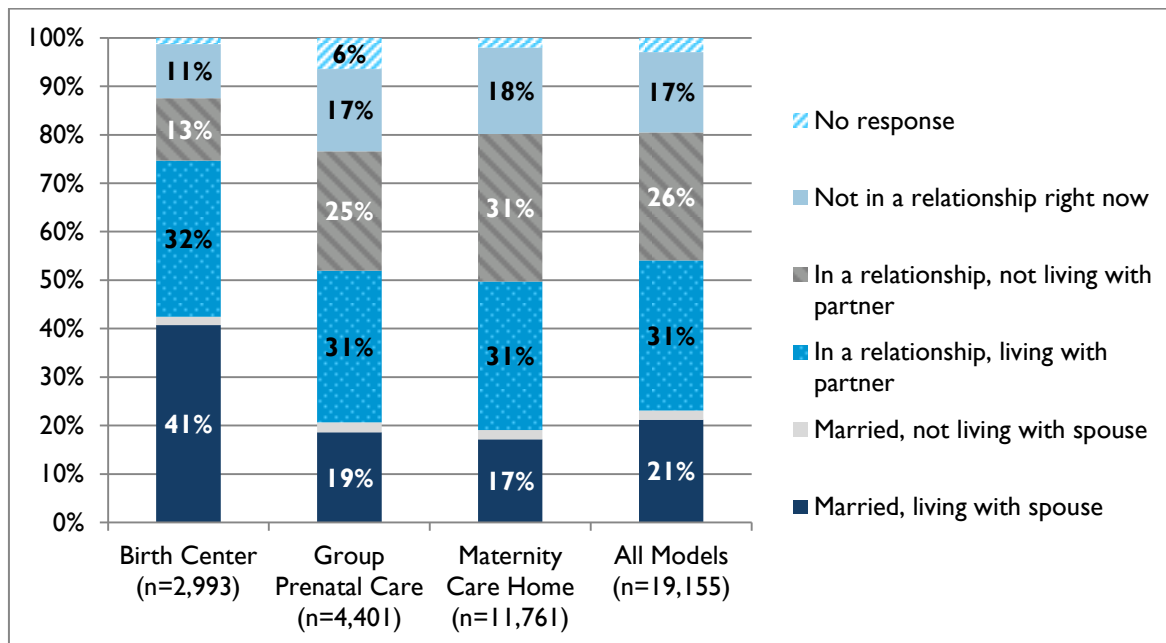
According to data collected at intake, just 21 percent of all Strong Start participants report living with a spouse. The proportion of married Strong Start participants is substantially lower than indicated in findings from a large study of randomly selected parents of newborns, where approximately 60 percent of babies overall are born to married couples (Donahue, Garfinkel, Haskings, McLanahan, & Mincy, 2010; Child Trends Database, 2015). Similarly, the proportion of Strong Start participants who are married and living with a spouse is lower than estimates from NHIS data indicating that 38 percent of pregnant Medicaid Beneficiaries are married and living with a spouse.³⁶ Analyses of data collected through the American Community Survey, also indicate that pregnant women with household incomes less than 10,000 per year are more likely to be married than Strong Start participants—74 percent of Strong Start participants are unmarried compared with 68.9 percent of women in a 2013 analysis by Shattuck & Krieder, 2013. Notably, being unmarried was a risk factor that a small number of awardees used initially for Strong Start eligibility, during the period that CMMI still required an additional risk factor for enrollment into Strong Start.

Thirty one percent of Strong Start participants report living with a partner, and another 25 percent of participants are in a relationship but not living with their partners. Research indicates that many low-income women who are partnered at the time of their child's birth do have plans to marry but delay marriage because of financial instability (Gibson-Davis, Edin, & McLanahan, 2005). Relationship status and stability is an important factor that can contribute to healthy pregnancy and positive birth outcomes. Several studies have demonstrated that both the type and quality of the relationship can have bearing on maternal and infant outcomes around pregnancy (Bloch, Webb, Matthew, Dennis, Bennett, & Culhane, 2010; Fairley & Leyland, 2006; Forssas, Gissler, Sihvonen, & Hemminki, 1999; Butler & Behrman, 2007).

By approach, there is substantial variation in the share of enrollees who are married. In particular, birth center participants are more likely to be married than women enrolled in group prenatal care or maternity care homes (41 percent compared with 19 percent and 17 percent, respectively). Similarly, women enrolled in group prenatal care or maternity care homes are more likely to have a non-resident partner than birth center participants (25 percent and 31 percent, respectively, compared with 13 percent of birth center participants). Fairly equal numbers of women across approaches are living with a partner (approximately a third of women enrolled in each approach of care). These patterns are shown in Figure 9.

³⁶ 2014 NHIS analysis

FIGURE 9: RELATIONSHIP STATUS OF STRONG START PARTICIPANTS AT INTAKE, BY APPROACH AND OVERALL



Note: Values of three percent and less are not labeled.

Birth center participants do depart from the standard profile of other Strong Start participants, with a larger proportion of white, married, and college-educated women than women enrolled in either group prenatal care or maternity care homes, suggesting they may benefit from some social and institutional circumstances that put them at lower risk for poor birth outcomes.

Psychosocial and Behavioral Risk Factors:

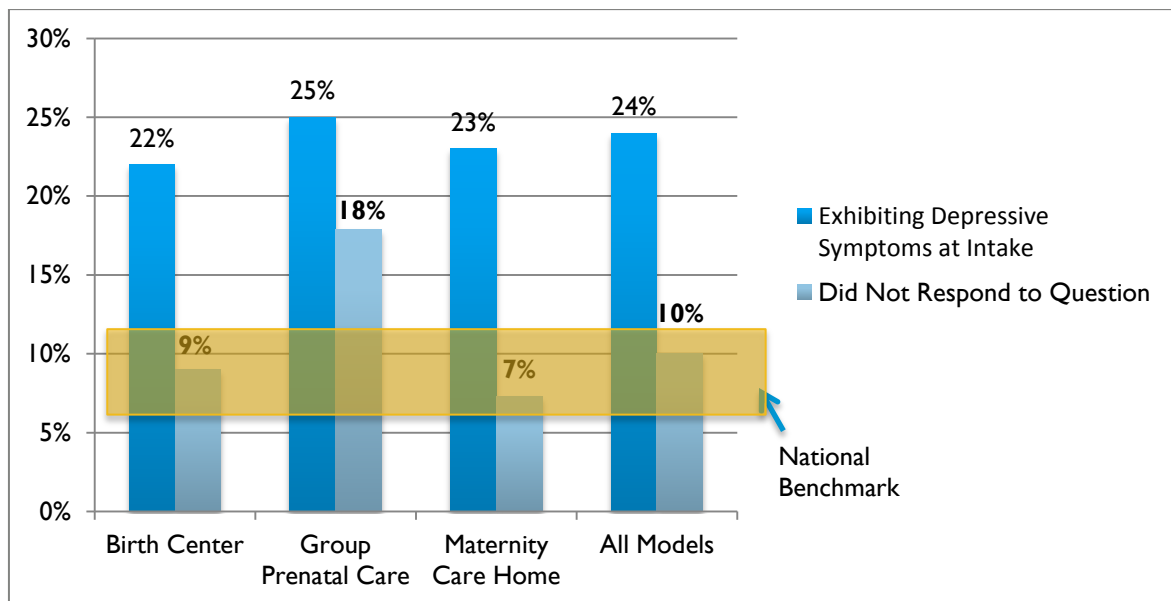
Strong Start is designed to provide enhanced prenatal care to women at greater risk of preterm birth and delivering babies who are low birth weight. Therefore, it is not surprising that women report having a variety of psychosocial and behavioral health conditions that would put them at risk for experiencing these outcomes. In this section we present data on two such risk factors: smoking behaviors and depression.

Twelve percent of all Strong Start participants report smoking at the time of intake. Maternity care home enrollees were the most likely to smoke (14 percent), compared with 10 percent of birth center participants and eight percent of group prenatal care participants. Both maternity care home and birth center participants are significantly more likely to smoke than group prenatal care enrollees. Nonetheless, participants in all approaches report lower rates of smoking than the overall Medicaid population. CMS estimates that approximately 20 percent of pregnant Medicaid beneficiaries smoke during pregnancy, and another study reports rates as high as 26 percent (Holtrop, Meghea, Raffo, Biery, Berkowitz, & Roman, 2010). Group prenatal care participants—

reporting the lowest rates of smoking—were also the most likely to skip the questions about smoking—approximately 20 percent—indicating these approach differences may be somewhat unreliable.

Depression, a common mental health condition among pregnant women, has been associated with smoking, other forms of substance abuse, and poor birth outcomes independent of concomitant unhealthy behaviors. As shown in Figure 10, 24 percent of Strong Start participants overall exhibited depressive symptoms at intake through Quarter 1 2015, as measured by a shortened 10-item version of the CES-D scale.³⁷ Individuals who score eight or higher (out of 10 items) are categorized as exhibiting depressive symptoms. Similar proportions are observed within each of the Strong Start approaches (as shown in Figure 9), though the differences are relatively small, group prenatal care participants are significantly more likely to exhibit depressive symptoms (25 percent) than either maternity care home (23 percent) or birth center participants (22 percent). Again, group prenatal care participants skipped these questions at a higher rate than the other two approaches (18 percent have missing data). Depression among Strong Start participants appears to be substantially higher than what has been cited in the peer-reviewed literature, where prevalence rates of antenatal depression are estimated to range from about seven percent to 13 percent, but are generally measured using a different screener (PHQ-9) (Bennett, Einarson, Taddio, Koren, & Einarson, 2004; Katon, Russo, Gavin, Melville, & Katon, 2011).

FIGURE 10: PROPORTION OF STRONG START PARTICIPANTS EXHIBITING DEPRESSIVE SYMPTOMS AT INTAKE, BY APPROACH AND OVERALL



³⁷ The version of the CES-D used on the Intake Form is a hybrid of two validated shortened versions of the scale, and is referred to as the MIHOPE-10. This version is also being utilized in the Strong Start MIHOPE evaluation.

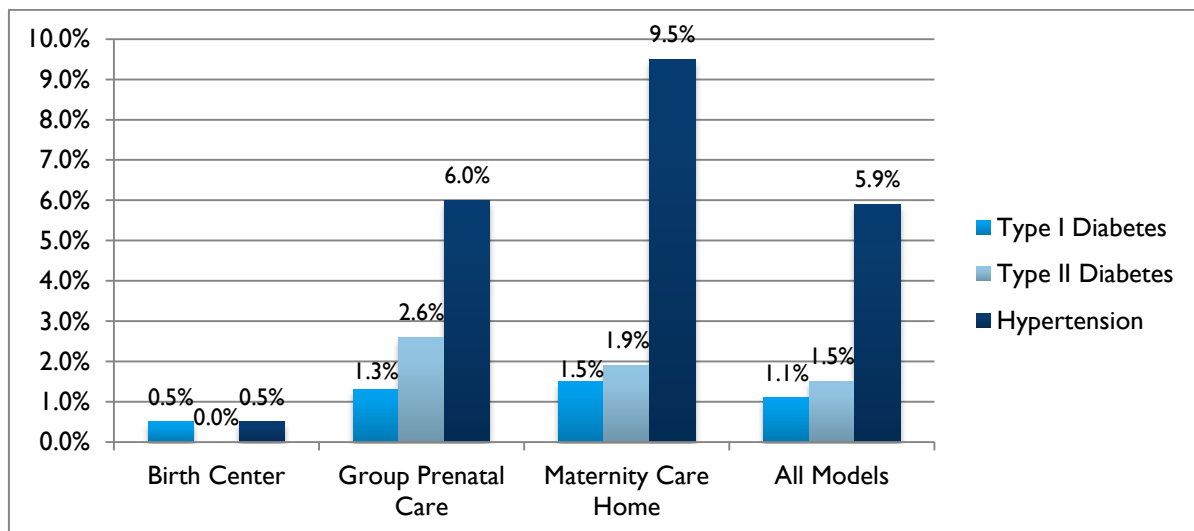
Medical Risk Factors:

A number of medical risk factors can put women at greater risk of poor birth outcomes. Such factors are measured on the evaluation’s Exit Form and include having had a prior preterm birth, having had a previous low-birth weight baby, having a pre-pregnancy diagnoses of diabetes or hypertension, and displaying extreme obesity (BMI>40), as measured at the first prenatal visit.

Rates of pre-pregnancy diagnosis of type I diabetes, type II diabetes, and hypertension are relatively low overall among Strong Start participants. Across all approaches, 1.1 percent of women have type I diabetes, 1.5 percent have type II diabetes, and six percent have hypertension. Proportions of Strong Start women with these medical risk factors are presented by approach and overall in Figure 10. A study of low-income women of reproductive age (18-44) found higher rates of these risk factors than the Strong Start population, with approximately three percent having diabetes, and 12 percent being hypertensive (Robbins et al., 2013). Despite relatively low rates of chronic conditions that are highly associated with weight, obesity rates among Strong Start participants are high, with nearly a third of women being obese (BMI 30-39) or very obese (BMI>=40).

The incidence of these risk factors does vary somewhat by approach. Birth center participants are the least likely to have diabetes or hypertension, and are also most likely to be a healthy weight. Maternity care home participants, on the other hand, are most likely to have hypertension and be overweight or obese, but group prenatal care participants have higher rates of diabetes. These data are presented in Figure 11.

FIGURE 11: PRE-PREGNANCY DIAGNOSIS OF DIABETES AND HYPERTENSION, BY APPROACH AND OVERALL



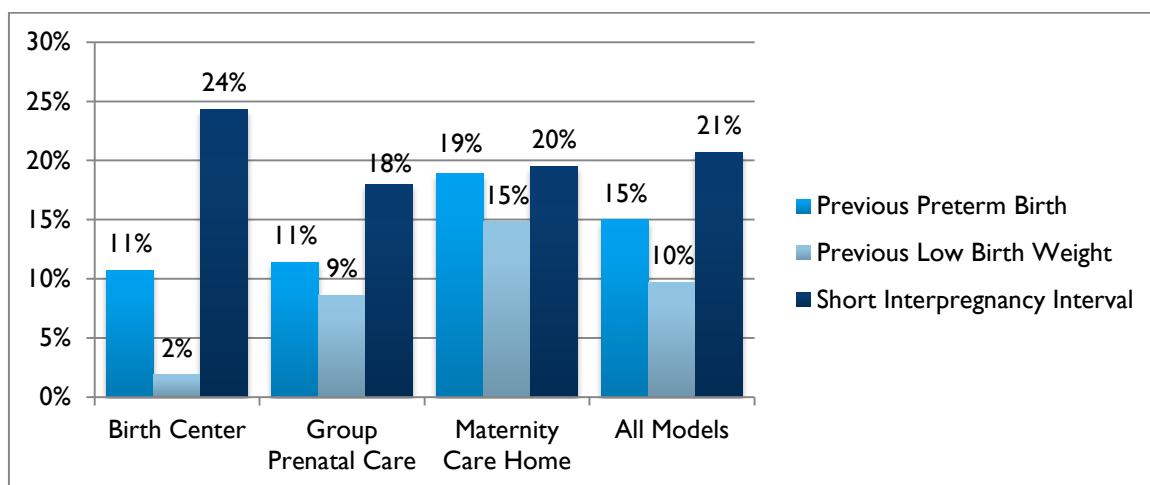
Approximately half of women for whom Exit Forms were submitted through Quarter 1 2015 had given birth prior to this Strong Start pregnancy (3,741 out of 6,669). Fifteen percent of these women

had previously given birth to a preterm baby, the most significant predictor of having a subsequent preterm birth. According to CDC final birth data for 2013, the preterm birth rate was 11.39 percent, down from 11.55 percent in 2012 (Martin, et al., 2015). These rates are quite a bit lower than those reported by Strong Start participants but, importantly, rates of preterm birth have been declining since 2007 and we do not know the timing of the previous preterm births being reported on the Exit Form. Moreover, these rates are for all U.S. women independent of income or insurance status. Rates of previous preterm birth do vary somewhat by approach, where 19 percent of maternity care home enrollees with a prior birth had delivered preterm, while 11 percent of multiparous women enrolled in group prenatal care and 11 of multiparous women enrolled in birth center care had a prior preterm birth.

Though we might expect reported rates of previous low birth weight babies to closely track with rates of preterm delivery, rates of previously having had a low birth weight baby are slightly lower than rates of having previously delivered preterm (15 percent of maternity care home participants, nine percent of group prenatal care participants, and two percent of birth center participants had prior low birth weight babies). Notably, there are considerably more missing data associated with this measure—information on prior preterm births is missing for approximately 14 percent of Strong Start participants, while information on prior low birth weight deliveries is missing for about 18 percent of participants. These data are being pursued and may be updated in future reports.

Lastly, nearly half of women who had previously been pregnant had an interpregnancy interval of less than 18 months. Short interpregnancy intervals are associated with poor birth outcomes due to reduced nutrient stores to benefit the fetus. Potential associated risks include low birth weight, preterm birth, and neonatal death (Copen, Thoma, & Kirmeyer, 2015). Women enrolled at birth centers were most likely to have a short interpregnancy interval, while group prenatal care participants were the least likely. Data on medical risk factors present in multiparous Strong Start participants is presented in Figure 12.

FIGURE 12: MEDICAL RISK FACTORS IN MULTIPAROUS WOMEN, BY APPROACH AND OVERALL



STRONG START SERVICE USE

Exit Form data submitted through Quarter 1 2015 can be used to quantify prenatal care and enhanced service use to characterize the intensity of the intervention. Importantly, however, we have fewer than 7,000 Exit Forms (out of a possible 11,163 deliveries) from which these measures are being calculated, so results reported below should be considered preliminary.

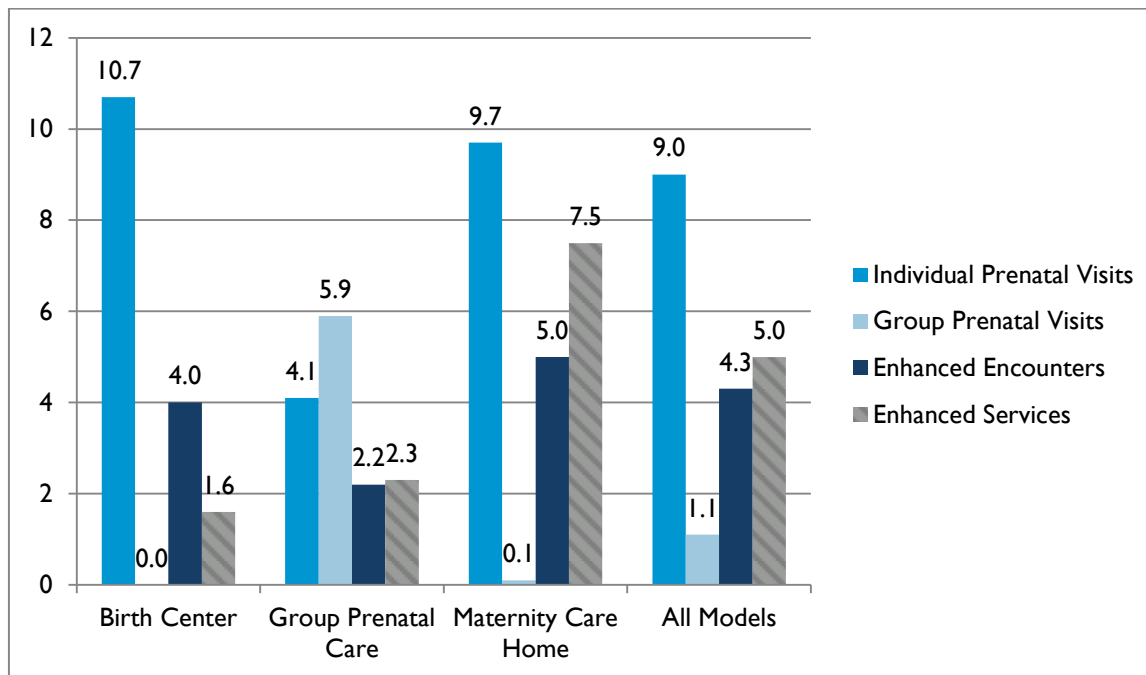
Birth center and maternity care home participants received approximately 10 individual prenatal care visits during their pregnancies, on average. On average, group prenatal care participants received about four individual prenatal care visits, in addition to six group prenatal care visits, during their pregnancies. These data indicate that while the content of the prenatal care administered across approaches may vary substantially, the frequency is fairly consistent across all three approaches of care.

In addition to these standard, approach-specific prenatal care visits, women enrolled at birth centers received, on average, four additional encounters from peer counselors, and women enrolled in maternity care home settings had an average of five additional encounters with care coordinators. The timing and nature of these additional encounters, considered “enhanced encounters” in the context of Strong Start, varies considerably by approach and even by awardee. In the case of group prenatal care, for instance, the Strong Start enhancements occur during the group sessions, and therefore women tend to have fewer additional encounters than participants in maternity care homes or birth centers. Additional detail regarding the nature of these interactions is presented in the case study analyses.

Consistent with these approach differences, and by design, group prenatal care participants received fewer enhanced encounters on average (approximately two) than participants in the other two approaches. Again, this is to be expected given that the intervention in group prenatal care is centered on the provision of enhanced prenatal care services in a group setting and does not typically include separate staff providing guidance outside of primary prenatal care services as do the other two approaches.

“Enhanced services” are distinct from enhanced encounters; they are services offered to Strong Start participants beyond their regular prenatal care visits, enhanced encounters with care coordinators or peer educators. Enhanced services include nutrition counseling, substance abuse treatment, smoking cessation counseling, or health education, and are offered and utilized most often in the maternity care home setting. Participants enrolled in maternity care homes received on average 7.5 additional services throughout the course of their pregnancy, compared with 2.3 additional services for group prenatal care participants, and 1.6 enhanced services for birth center participants. These trends, by approach and overall, are displayed in Figure 13.

FIGURE 13: MEAN NUMBER OF PRENATAL VISITS AND ENHANCED ENCOUNTERS AND SERVICES FOR STRONG START PARTICIPANTS, BY APPROACH AND OVERALL



Notes: Individual prenatal visits include routine clinical prenatal visits. Group prenatal visits include group visits, such as those for centering. Enhanced encounters include care coordinator, mental health, and doula encounters. Enhanced services include other services, such as health education, home visits, self-care, nutrition counseling, and substance abuse services not covered during enhanced encounters. Evidence gathered during case study interviews indicate that some birth centers do offer group care as well, but that has not been reflected in the data to date. This will be explored further in future quarters. Ns for each item vary by approach and are presented in Appendix C.

STRONG START OUTCOMES

The outcomes that Strong Start has the potential to impact are numerous and diverse. For instance, they include rates of pregnancy complications such as gestational diabetes and hypertension, which might be impacted by nutrition counseling or behavioral health interventions; pregnancy management, such as progesterone injections and vaginal progesterone administration to prevent preterm birth; and outcomes directly tied to the program’s ultimate goals of preventing preterm birth and low birth weight overall. Preliminary findings related to Strong Start’s effects on participant outcomes are summarized below.

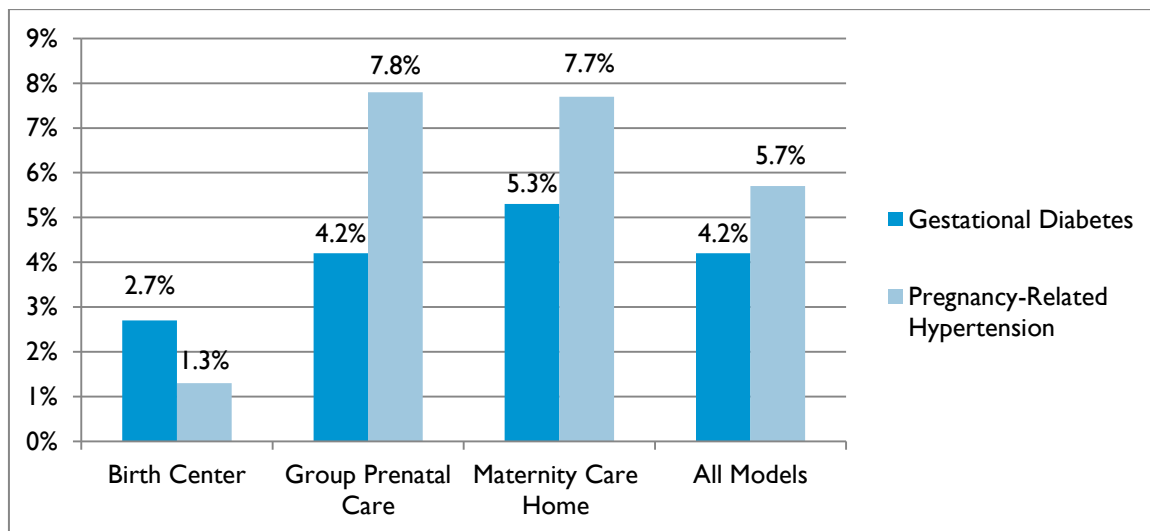
Pregnancy Conditions:

On the evaluation’s Exit Form, four percent of Strong Start participants were reported, to have developed gestational diabetes. These rates may be lower than reported rates of gestational diabetes in a comparable population. Findings from a study of Pregnancy Risk Assessment Monitoring System (PRAMS) data and birth certificates, where available, suggest that the incidence

of gestational diabetes among women enrolled in Medicaid is nearly 10 percent (DeSisto, Kim, & Sharma, 2014). Other studies suggest lower incidence, consistent with that observed among Strong Start participants (Kim et al. 2010). Importantly, some Strong Start awardees are enrolling women specifically because they have developed gestational diabetes during their pregnancy. Rates of gestational diabetes vary by Strong Start approach somewhat, with three percent of birth center enrollees having developed gestational diabetes during their pregnancies, compared with four percent of group prenatal care enrollees, and five percent of maternity care home participants. Data on this measure are missing for 20 percent of group prenatal care participants for whom Exit Forms were submitted, so even less data is available for group care participants than participants in the other two approaches.

Pregnancy-related hypertension rates for Strong Start participants are about six percent—higher than those reported in the literature for low-income women, which hover around three percent (Bateman et al., 2012). Strong Start rates do vary more by approach than they do for gestational diabetes, however, with only one percent of birth center enrollees developing hypertension compared with eight percent of both group prenatal care and maternity care home participants. At this time, these data are purely descriptive, and additional analyses controlling for risk factors will be conducted in the future to assess if different approaches are associated with better outcomes. Rates of gestational diabetes and hypertension by approach and overall are presented in Figure 13.

FIGURE 14: RATES OF GESTATIONAL DIABETES AND PREGNANCY-RELATED HYPERTENSION, BY APPROACH AND OVERALL



Pregnancy Interventions:

Progesterone injections, also referred to as 17P, are indicated for women with singleton pregnancies that have a history of preterm birth. As discussed above, only about 15 percent of all Strong Start participants have had a previous preterm birth, so that limits the number of women

eligible for this intervention. Administration of 17P is weekly, starting in the second trimester, and often requires gaining pre-approval from managed care plans. Several Strong Start awardees have specifically indicated that administration of 17P is part of their Strong Start program. Nonetheless, very few women have received this intervention, only approximately two percent of Strong Start participants overall and 16 percent of women with previous preterm births. Data on this measure, however, are missing for nearly all birth center participants (99 percent).

Rates of vaginal progesterone administration are even lower, with fewer than one percent receiving vaginal progesterone, which is indicated for women with a short cervix or women with a previous preterm birth who refuse 17P injections. Again, data on this measure are missing for 99 percent of birth center enrollees. Virtually no group prenatal care participants received vaginal progesterone (0.1 percent), and only slightly more than one percent of maternity care home participants received this treatment.

Pregnancy Outcomes:

Through Quarter 1 2015 the evaluation team received Exit Forms with valid birth information for 5,968 women who delivered 6,054 babies, representing approximately 60 percent of all deliveries occurring through the end of the reporting period. The vast majority of these babies were born alive (95.6 percent), with a small number of still births (1.2 percent), and a few babies for whom birth status was missing (3.5 percent). As presented in Table 4, some slight variations in birth status occur by approach.

TABLE 4: STRONG START PARTICIPANT BIRTH STATUS

Births ³⁸				
Data Elements	Birth Center % (N)	Group Prenatal Care (N)	Maternity Care Home % (N)	Total % (N)
Live births	99.4 (2115)	94.0 (1140) ³⁹	93.43 (2617)	95.6 (5872)
Stillborn infants	0.5 (11)	1.9 (23)	1.4 (38)	1.2 (72)
Birth status missing	0.1 (2)	4.5 (53)	5.7 (161)	3.5 (217)

As shown in Figure 15, 12 percent of Strong Start participants across all approaches delivered infants prior to 37 weeks, suggesting that the rate of preterm delivery may be slightly higher among Strong Start participants than the national preterm birth rate of approximately 11 percent for all births (Hamilton et al., 2015). At this point, however, there is a great deal of variation across approaches in the proportion of infants missing estimated gestational age (EGA) data, which makes it difficult to draw even preliminary conclusions about which approaches have the highest rates of infants delivered preterm. Notably, among participants enrolled in birth center care—where missing data are also lowest (0.4 percent missing)—the rate of preterm delivery is lowest (five percent). On

³⁸ The sum of the proportions of live births, still born infants and those with missing birth status add up to more than 100%. This may be due to data quality issues with the number of reported live fetuses.

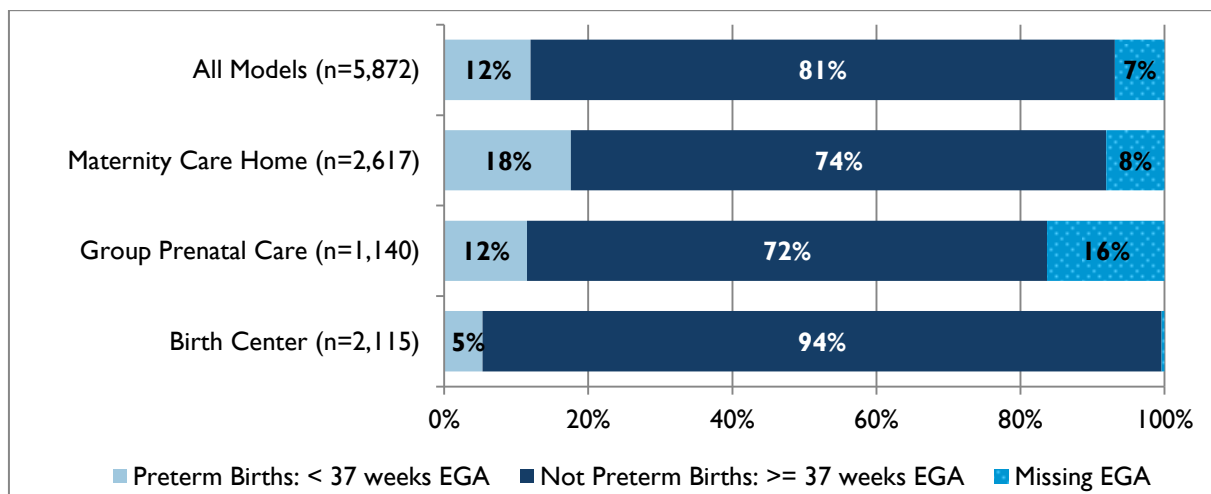
³⁹ The percentage of live births for the group prenatal care approach is above 100%. This is possibly due to data quality issues with the number of reported live fetuses.

the other end of the spectrum, 18 percent of maternity care home participants delivered preterm, and data on gestational age at birth are missing for eight percent of women with Exit Forms. Twelve percent of women enrolled in group prenatal care delivered preterm and 16 percent had missing data for this measure. These are absolute rates and do not account for demographic or medical risk differences among awardees or care approaches.

Early term deliveries, which occur between 37 and 39 weeks gestational age, account for about one-quarter of all births to Strong Start participants. These rates are consistent with the baseline rates of other studies that have investigated early term delivery (Donovan et al., 201) (Oshiro et al., 2009). Rates of early term delivery do not vary widely by approach, but are lowest for birth center participants (20 percent), and slightly higher for group prenatal care (23 percent), and highest among those who received care in maternity care home settings (25 percent). Twenty-seven percent of Strong Start participants across all approaches experiencing early term deliveries were either induced or had a scheduled C-section. However, at this time we do not know if there were medical indications for early term delivery in these cases.

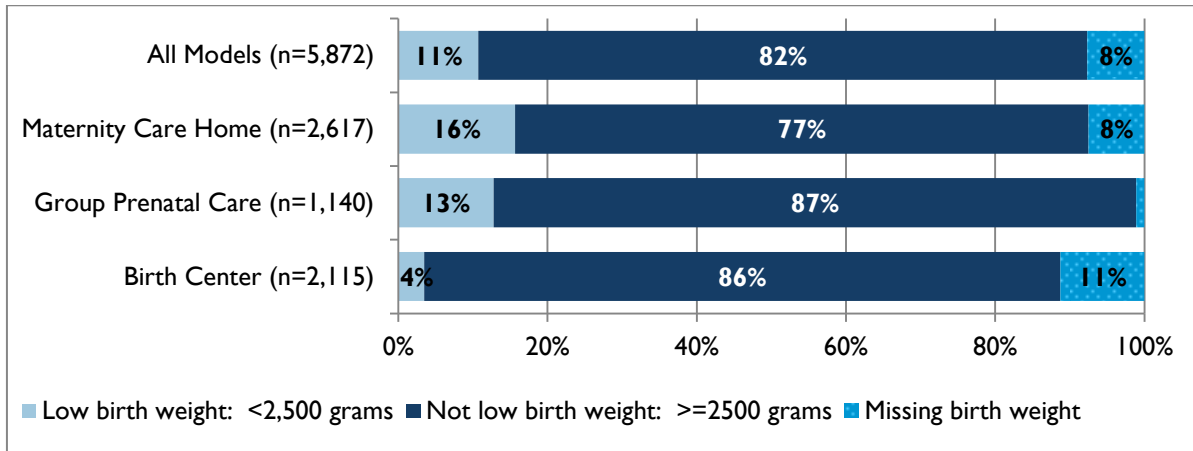
As shown in Figure 16, across all approaches, 11 percent of all Strong Start participants delivered infants who were low birth weight, tracking closely with rates of preterm delivery. The percentage of low birth weight infants nationally is about eight percent, suggesting that the rate of low birth weight among Strong Start participants is slightly higher than the national average (Hamilton et al., 2015). Again, rates of low birth weight varied by approach, and track with rates of preterm delivery—with maternity care homes reporting the highest rate of low birth weight babies (16 percent), and birth centers reporting the lowest rate (four percent). Group prenatal care approaches report that 13 percent of babies delivered were low birth weight.

FIGURE 15: INFANT ESTIMATED GESTATIONAL AGE (EGA) AT BIRTH, BY APPROACH AND OVERALL



Note: EGA is calculated using the infant birthdate reported in the crosswalk file and the estimated due date reported in the Exit Form. If either of those dates is missing, EGA is missing. Awardees are correcting crosswalk data quality issues at this time, so the percentage of missing EGA is anticipated to decrease.

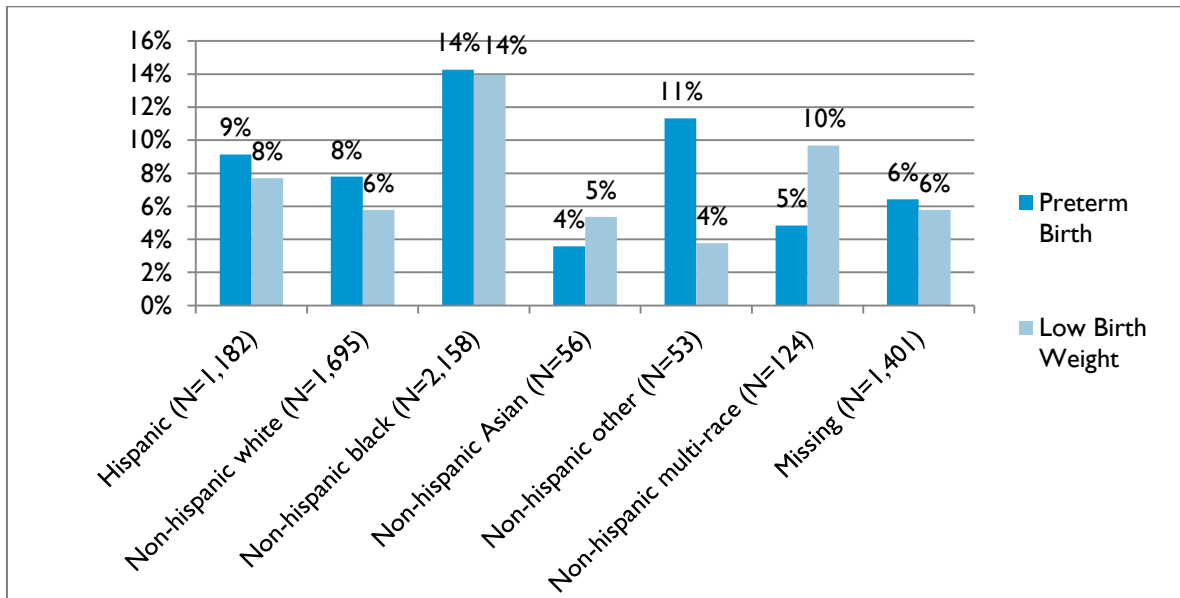
FIGURE 16: INFANT BIRTH WEIGHT, BY APPROACH AND OVERALL



Note: Values of one percent and less are not labeled.

We do observe some differences in these central outcomes by race and ethnicity whereby black women enrolled in Strong Start are more likely to have a preterm birth and deliver a low birth weight baby than other racial/ethnic subgroups, as displayed in Figure 17. Furthermore, additional subgroup analyses indicate that women who are depressed according to the scale included on the Intake Form are significantly more likely to deliver a low birth weight baby than women who are not depressed.

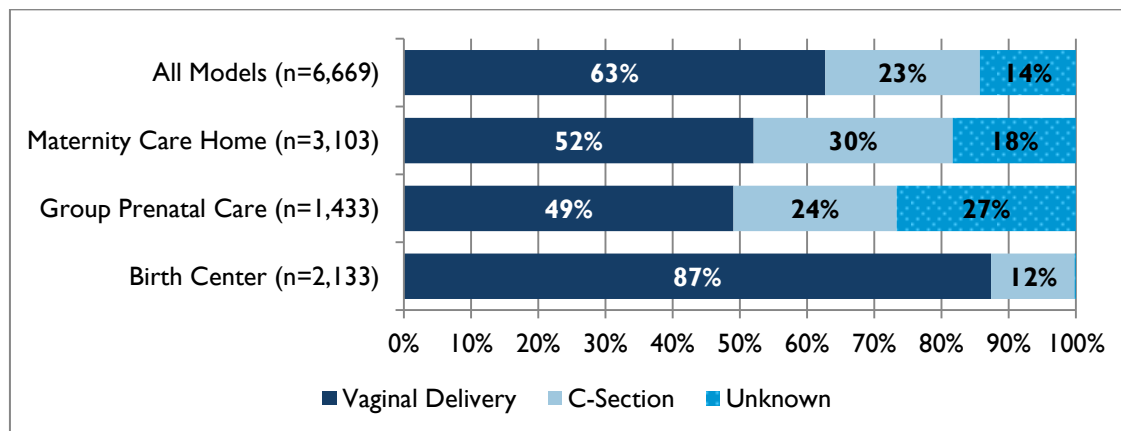
FIGURE 17: PRETERM BIRTH AND LOW BIRTH WEIGHT, BY RACE AND ETHNICITY



Delivery Method:

The C-Section rate for Strong Start participants overall was 23 percent—lower than the national average of nearly 32 percent (Hamilton et al., 2015). This appears to be largely driven by particularly low rates of Cesarean among women enrolled in birth center care (12 percent), but the other two approaches also have rates of C-Section that are lower than those reported for the nation as a whole—24 percent for group center participants and 30 percent of maternity care home participants⁴⁰; however, rates of missing data are very high for group care and maternity care home participants (27 percent and 18 percent, respectively). The data for these approaches must thus be interpreted with particular caution. When missing values are excluded from delivery method calculations, the Cesarean rate increases moderately to 27 percent across all approaches. Data on delivery method of Strong Start participants are presented by approach in Figure 18.

FIGURE 18: DELIVERY METHOD AMONG STRONG START PARTICIPANTS, BY APPROACH AND OVERALL



Notes: Values of less than one percent are not labeled.
Delivery method was assessed through the Exit Form.

Among women who did have C-sections, approximately 26 percent were scheduled prior to delivery. The reasons driving the scheduled C-section rate are not indicated on the Exit Form, but the majority (74 percent) of those who reported having scheduled C-sections were repeat C-sections, with 24 percent of C-sections being primary. Scheduling information was unavailable for all birth center participants, but nearly 40 percent of group prenatal care C-sections and 30 percent of maternity care home C-sections were scheduled.

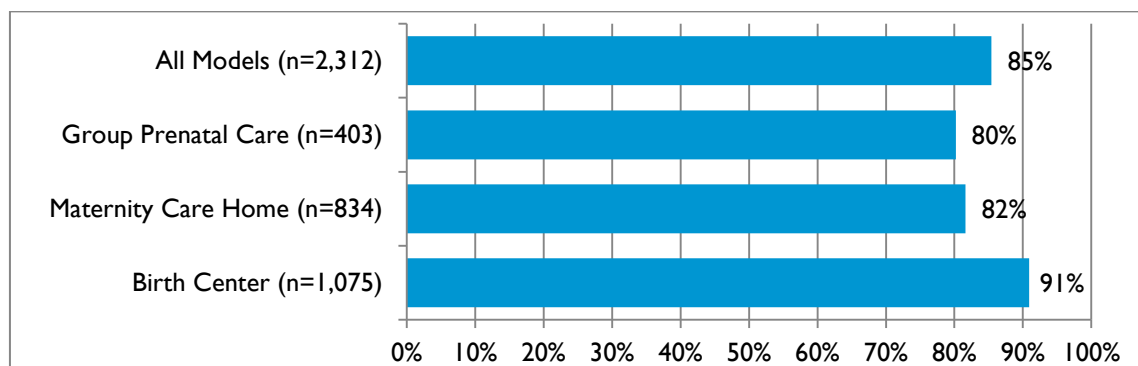
Linked data between Third Trimester Surveys and Exit Form data indicate that while most women who planned to have a vaginal delivery were able to follow through on this intention (85 percent), about 15 percent of women ended up having a C-section despite their original intentions. C-sections are necessary, at times, for protecting the health of mother and child, but are increasing at a rate that is not consistent with clinical determinations of necessity. A recent World Health

⁴⁰ Missing values are included in the denominator of the proportions calculated for rates of Cesarean among Strong Start women.

Organization release suggests that reducing Cesarean rates has benefits for women and infants until rates are as low as 10 percent (World Health Organization, 2015). Further, a scholarly review conducted within the last decade finds that C-section rates above 10 percent have been associated with an increase in maternal and neonatal mortality and morbidity (Althabe, Sosa, Belizán, Gibbons, Jacquerioz, & Bergel, 2006).

As presented in Figure 19, rates vary slightly by approach. Women in group prenatal care and maternity care homes appear to be more likely to have unplanned C-Sections than women receiving birth center care.

FIGURE 19: PERCENTAGE OF REPORTED VAGINAL DELIVERIES AMONG STRONG START PARTICIPANTS PLANNING TO DELIVER VAGINALLY, BY APPROACH AND OVERALL



Note: Plans to have a vaginal delivery were assessed through the Third Trimester Survey and reported vaginal deliveries were assessed through the Exit Form. The results shown here only represent women for whom both of these forms were available, and they may not be representative of the entire study population.

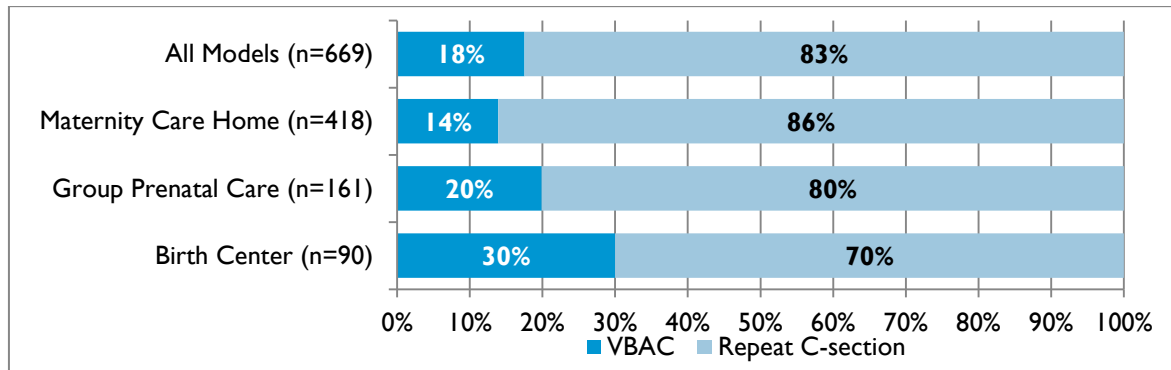
Participants who, prior to Strong Start, had delivered babies via C-section could have either a repeat C-section or a vaginal birth after Cesarean (VBAC). Based on data from the Exit Form, 82.5 percent of these women had repeat C-sections, and 17.5 percent had VBACs. VBACs were notably higher among birth center participants (30 percent), than group prenatal care enrollees (20 percent) or maternity care home participants (14 percent). Many women specifically seek out birth center care because they are interested in having a VBAC, on the other hand, some may screen out women who have previously had a C-section. Notably, VBAC rates for all approaches are higher than the national rate, which hovers around eight percent (ACOG & SMFM, 2014). These rates are presented in Figure 20.

Overall rates of induced labor for Strong Start participants are approximately 18 percent⁴¹. National rates of induction are estimated to be 23 percent (Osterman & Martin, 2014). This national rate is for singleton deliveries only, and may include induction by a variety of means (from Pitocin administration to artificial rupture of the amniotic sac). Furthermore, national data are derived from

⁴¹ Women with scheduled C-sections were excluded from this calculation.

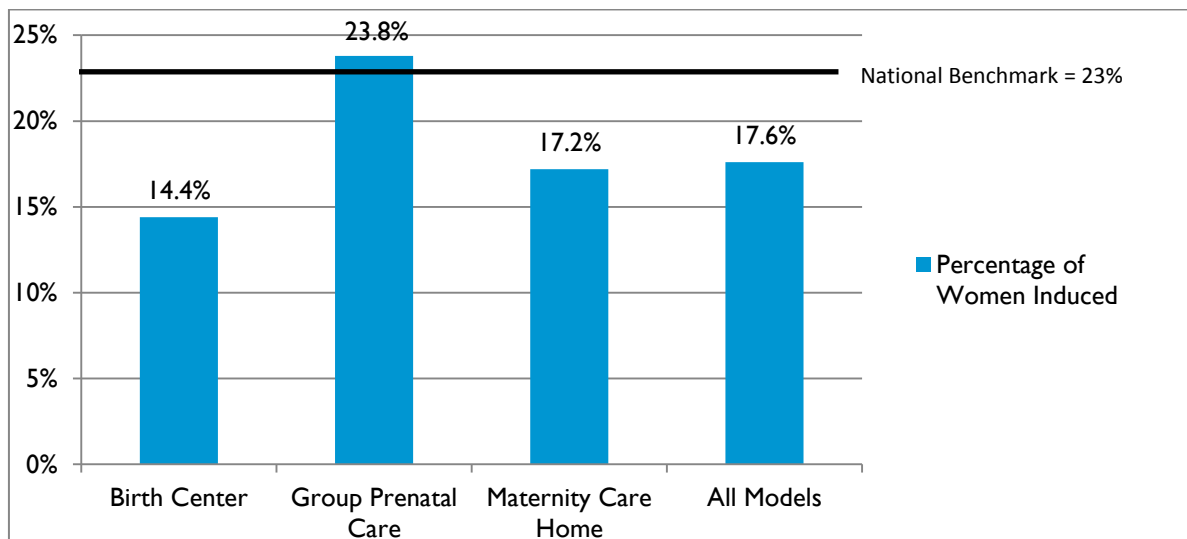
birth certificates, and are likely underreported, suggesting that Strong Start induction rates may be far lower than the national average (Martin et al., 2013). These do vary by approach somewhat, with birth center rates being the lowest (14 percent) and group prenatal care rates exceeding the national benchmark (24 percent). Seventeen percent of maternity care home participants were induced. These data are presented in Figure 21.

FIGURE 20: PERCENTAGE OF VBAC VERSUS REPEAT C-SECTION AMONG STRONG START PARTICIPANTS, BY APPROACH AND OVERALL



Note: VBAC and repeat C-Section were assessed through the Exit Form.

FIGURE 21: INDUCTION OF LABOR, BY APPROACH AND OVERALL

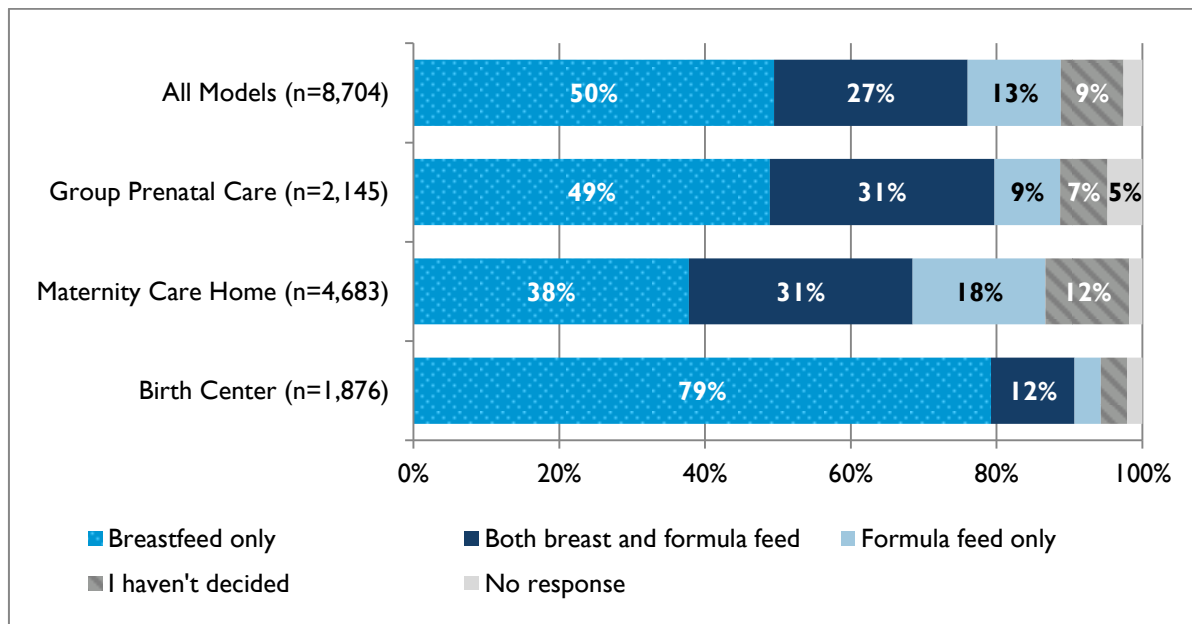


Postpartum Outcomes:

Breastfeeding. Over three-quarters of women indicated on their Third Trimester Surveys that they planned to breastfeed their babies. Specifically, 50 percent planned to breastfeed exclusively and another 27 percent planned to breastfeed and supplement with formula. Intentions to breastfeed are particularly high among birth center participants, where 80 percent plan to breastfeed

exclusively. About half of group prenatal care participants planned to breastfeed exclusively, and close to 40 percent of maternity care home enrollees planned to breastfeed exclusively. These data are presented in Figure 22.

FIGURE 22: STRONG START PARTICIPANT FEEDING INTENTION DURING THIRD TRIMESTER, BY APPROACH AND OVERALL



Note: Values of four percent and less are not labeled.

Post-delivery, among those who completed both the Third Trimester and the Postpartum Surveys, the proportion of women that report actually breastfeeding is about equal to the proportion of women who intended to breastfeed (79 percent overall for both reported and intended breastfeeding), tracking closely with national rates of women reporting that they breastfed their babies for some amount of time (75 percent), and higher than breastfeeding rates among WIC recipients (approximately 68 percent)—a better comparison for Strong Start participants (Centers for Disease Control and Prevention, 2011; Hartmann et al., 2012). Some awardees have established increased breastfeeding as one the goals of their award and several are affiliated with hospitals that have adopted Baby Friendly USA initiatives, designed to promote breastfeeding.⁴²

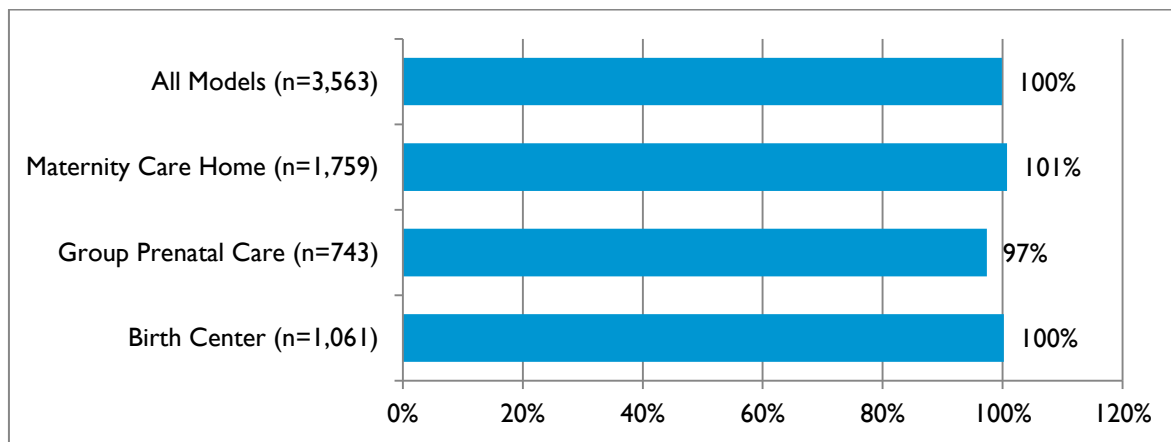
As Figure 23 shows, when Third Trimester Survey and Postpartum Survey data are linked, we observe that nearly 100 percent of women who intended to breastfeed did so. These data may be skewed somewhat by the possibility that women who are breastfeeding may be more likely to return for a postpartum visit for breastfeeding support and may therefore be more likely to have

⁴² Baby Friendly Hospitals is an initiative that encourages hospital providers to embrace policies and practices that promote breast feeding by new mothers and providers who complete the following steps can become certified as “Baby Friendly”

filled out the postpartum survey. Further, there is a reasonable likelihood that women who filled out Postpartum Surveys may have been overall more likely to breastfeed, either because they received support from program staff and felt connected enough to the program to internalize recommendations to breastfeed, or they were simply more compliant patients who returned for postpartum visits. Nonetheless, sufficient support was provided to these women to help them meet their intentions to breastfeed

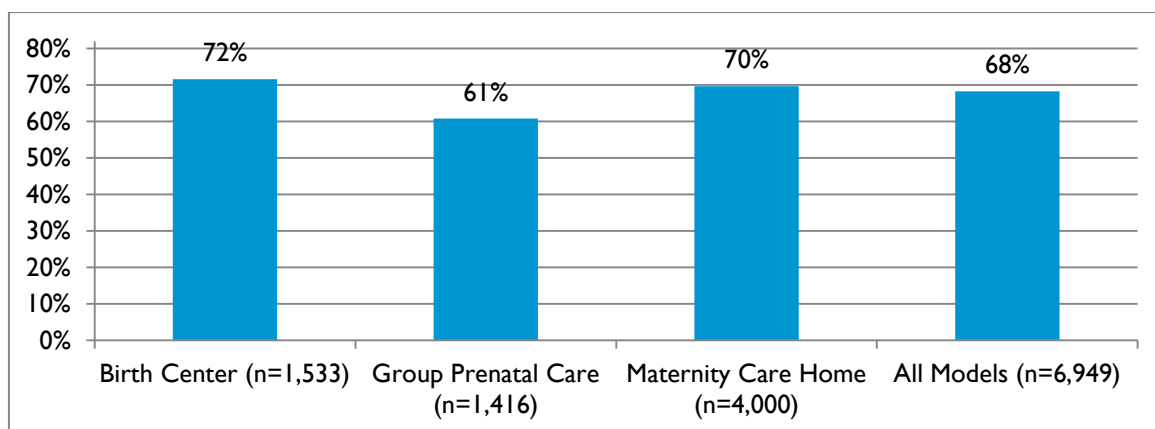
Just under 70 percent of women for whom Postpartum Surveys were submitted self-report that someone spoke with them about using birth control. Data, presented in Figure 24, demonstrate that rates of birth control counseling did not vary much by approach.

FIGURE 23: STRONG START PARTICIPANTS WHO BREASTFEED AMONG THOSE WHO PLANNED TO BREASTFEED, BY APPROACH AND OVERALL



Note: Plans to breastfeed were assessed through the Third Trimester Survey and reported breastfeeding was assessed through the Postpartum Survey. Responses shown here only represent women who completed both surveys and, therefore, may not be representative of the entire Strong Start population.

FIGURE 24: PERCENT OF STRONG START PARTICIPANTS WHO RECEIVED BIRTH CONTROL COUNSELING, BY APPROACH AND OVERALL

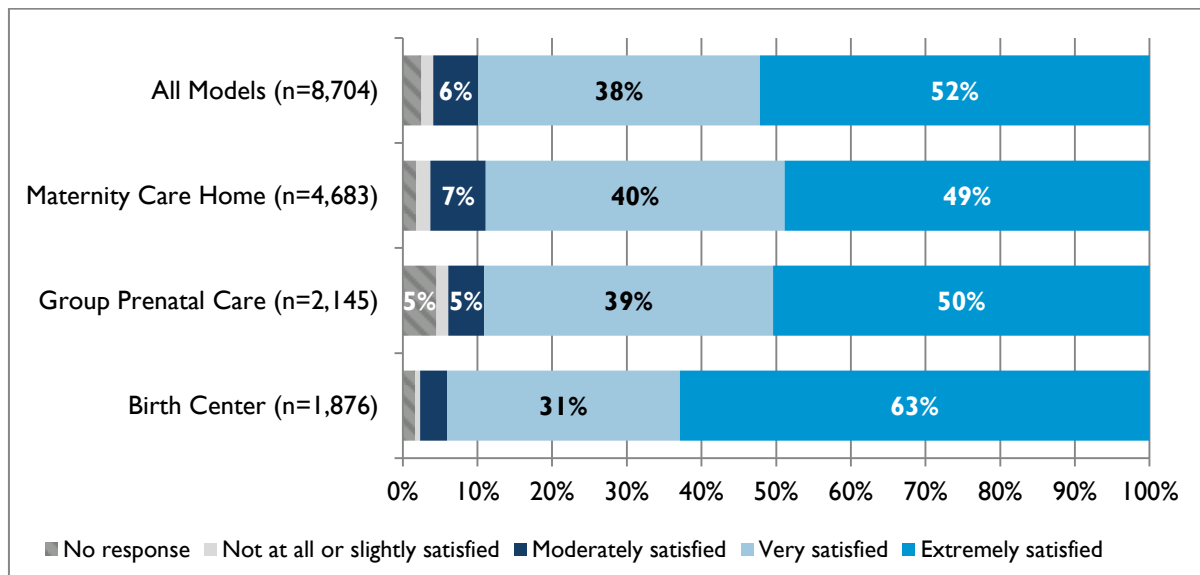


Note: Receipt of birth control counseling was reported by Strong Start participants through the Postpartum Survey.

Client Satisfaction:

Satisfaction with prenatal care is high overall, based on responses to the Third Trimester Survey, with 90 percent of participants indicating they were either very satisfied or extremely satisfied with their prenatal care. As displayed in Figure 25, satisfaction is highest among birth center participants, with 94 percent indicating they were very satisfied or extremely satisfied with the prenatal care they received. Nearly 90 percent of both group prenatal care and maternity care home participants report being either very satisfied or extremely satisfied with their prenatal care. The research literature suggests, however, that satisfaction surveys pertaining to maternity care services may be of limited reliability, since there tends to be a strong bias toward high ratings (van Teijlingen, Hundley, Rennie, Graham, and Fitzmaurice, 2003).

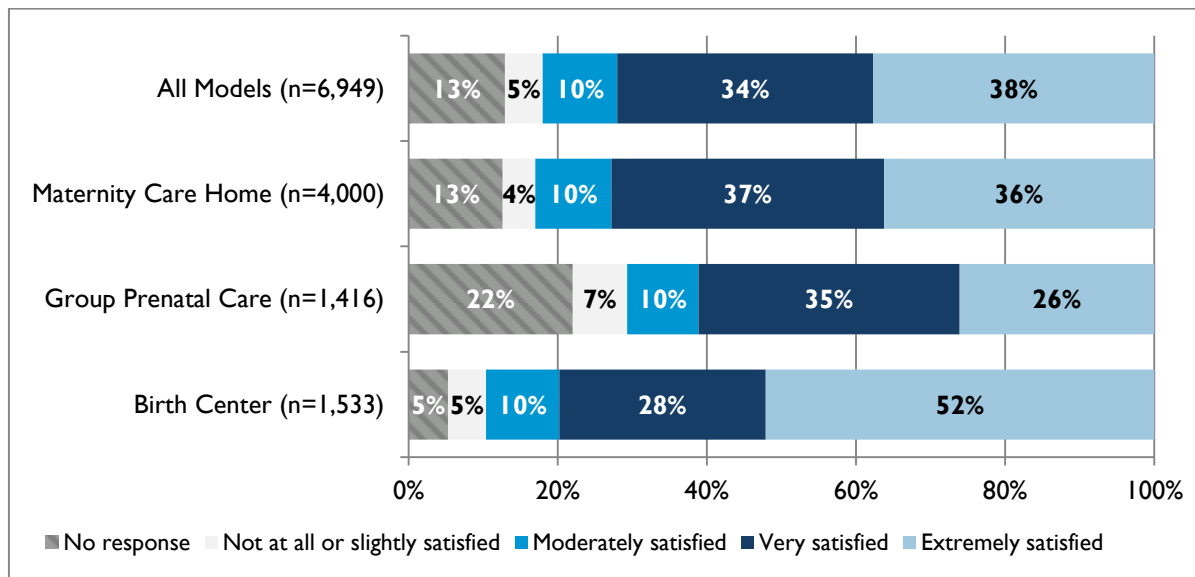
FIGURE 25: PERCENTAGE OF STRONG START PARTICIPANTS SATISFIED WITH PRENATAL CARE, BY APPROACH AND OVERALL



Notes: Satisfaction with prenatal care was reported by Strong Start participants through the Third Trimester Survey. Values of less than four percent are not labeled.

Satisfaction with delivery experience is also relatively high overall, but lower than rates of prenatal care satisfaction, and with more missing data. Among participants for whom Postpartum Surveys were submitted, approximately 72 percent were either very satisfied or extremely satisfied with their delivery experience. Again, satisfaction levels are highest among participants enrolled in birth center care (80 percent are very or extremely satisfied), followed by maternity care home participants (73 percent) and group prenatal care (61 percent) who report being either very or extremely satisfied. These satisfaction data are presented in Figure 26.

FIGURE 26: PERCENTAGE OF STRONG START PARTICIPANTS SATISFIED WITH DELIVERY EXPERIENCE, BY APPROACH AND OVERALL



Notes: Satisfaction with delivery experience was reported by Strong Start participants through the Postpartum Survey.

SUMMARY OF FINDINGS

The data reported in this section represent an early look at the characteristics of Strong Start participants, their service use, and their outcomes.

Participant-level data submitted through Quarter 1 2015 continue to indicate that Strong Start enrolled women have high levels of psychosocial need, with particularly striking incidence of depression across the board. There are, however, notable variations with regard to the demographic and risk characteristics of participants by model. Specifically, birth center clients do tend to have demographic profiles that are less likely to be associated with poor birth outcomes, and maternity care home enrollees tend to have more medical risk factors that put them at risk for poor birth outcomes.

Findings through Quarter 1 2015 suggest that C-Section prevalence among women receiving care at Strong Start sites may be lower than the national average, though there is substantial variation across the three approaches. Moreover, induction rates appear to be lower than national benchmarks, though these trends should be viewed with caution at this early stage given large amounts of missing data. Both findings indicate that women enrolled in Strong Start may be avoiding interventions that are not medically indicated. Further information about what may be contributing to these trends could be explored during the Year 3 case studies.

Rates of preterm delivery and low birth weight also seem to vary by approach, and while they track fairly well with national benchmarks overall—benchmarks that do not take into account

income or insurance status—there is substantial divergence by approach. This finding, in particular, should be interpreted with caution, however, given the large amount of missing birth date data at this time. In addition, while these findings will be more fully explored in the impact analysis, we will continually track these outcomes descriptively with these participant-level data.

At this early stage, data also suggest that women enrolled in birth center and group prenatal care appear to be more likely to attempt breastfeeding than low-income women generally, as evidenced by WIC recipient rates of breastfeeding, and are having a good deal of success in following through with their intentions. Importantly, participants enrolled in Strong Start are indicating that they are pleased with the services they are receiving, with particular enthusiasm among women enrolled in birth center care.

TECHNICAL ASSISTANCE AND DATA ACQUISITION

INTRODUCTION

The ultimate objective of the State Data Linkage Technical Assistance (TA) task of the Strong Start evaluation is to obtain linked birth certificate data, Medicaid eligibility data, and Medicaid claims and encounter data from states with Strong Start awardees. The data will be used to support the Impact Analysis component of the evaluation to assess whether and to what extent Strong Start has had an impact on premature births rates, low birth weight occurrences, and Medicaid costs through pregnancy and the first year after birth. The technical assistance is designed to “meet states where they are,” by either facilitating the transmission of these data to the Urban Institute so that they can be linked, or to help states conduct the linkage of these large and complex data sets themselves. In Year 1, the evaluation team developed its TA Work Plan and designed various tools to begin connecting and engaging with state officials. During Year 2, after productive collaboration with CMCS, as well as the Administration on Children and Families (ACF) and one of its contractors—MDRC—to explore lessons learned through other projects with similar data linkage goals, we began to contact states and started the long process of discussing our data needs with state officials, identifying the steps involved in requesting and obtaining data, and completing the various applications and regulatory steps needed to share data. By the end of Year 2, we had succeeded in beginning work with both the Medicaid and Vital Records agencies in the 20 states that we judged to have sufficient Strong Start enrollment to merit the large investment in time and resources needed to obtain the necessary data.

Good progress has been made over the course of the year. Specifically, since beginning our outreach to states in December of 2014, we have held 35 initial calls with vital records and Medicaid officials in all 20 states where we plan to pursue data linkage, submitted 15 data request applications, and received four approvals to access data. In addition, as of June 26, 2015 we are in the process of completing six additional applications and eight agreements with state agencies. We have also submitted two Business Associate Agreements for approval. With agreement from CMMI,

we have decided to pursue data from the Children’s Health Insurance Program (CHIP) in just two states—Tennessee and Texas—because they are the only states that have large numbers of Strong Start enrollees insured through that program.

The next year will see the evaluation team working to gain approval from and finalize data sharing agreements with the remaining state agencies, and work with state officials to successfully prepare, link and transfer the data to the Urban Institute. We envision three possible scenarios for the transfer of data needed for the Impact Analysis:

1. State officials (or their contractors) conduct the linkage of birth certificates to Medicaid eligibility and claims/encounter data, and then share the linked files with Urban annually;
2. State agencies send requested birth certificate and Medicaid data to the Urban Institute, so that we can conduct the required linkages; or
3. The evaluation team provides hands-on technical assistance to state officials who would like to build their internal capacity to perform birth certificate/Medicaid data linkage and supports the state’s linkage of data, and then the state shares the linked data with the evaluation team.

Thus far, 14 states have said that they prefer option 1, noting that they have conducted such linkage exercises in the past and citing legal and privacy concerns with sharing large data sets with outside organizations (see Table 6). Four states have indicated that they would prefer to send identifiable data to the Urban Institute so that we can conduct the linkage (option 2). Two states have not yet decided who should perform the linkage, and just one state agency has indicated that it does not currently have the capacity to share or link data (thereby potentially removing it from consideration in the Impacts Analysis). Only two states have indicated that they limited experience linking Medicaid claims data with birth certificate data and that they might want to receive training and TA (option 3).

While significant progress has been made in Year 2, this task will continue to be time-consuming given that each state and state agency has different processes for obtaining approval to share data. However, we seem to have developed positive relationships with state officials and have encountered very little resistance to requests for information thus far.

The remainder of this chapter provides additional detail on the process we have followed during Year 2, the progress we have made, the challenges we have encountered, and our plans for Year 3.

PROCESS FOR GAINING APPROVAL TO ACCESS MEDICAID AND VITAL RECORDS

Background Research:

To prepare for initial outreach to states, we developed a State Background Brief (see Appendix E) for each of the 25 Strong Start states (including the District of Columbia) with potential to be included in the impact analysis based on enrollment projections. These background briefs were used to educate the project team about each state’s history, experience, and capacity related to sharing and linking data. The State Background Brief also included contact information for state officials in the Vital Records and Medicaid agencies. Information included in the State Background Briefs was obtained from a number of sources, including state agency websites, Strong Start program-level data, CMMI reports, and observations made while attending CMCS-sponsored AcademyHealth data linkage workshops.

In addition, with help from CMMI officials, we were connected with researchers at MDRC who are conducting the evaluation of the Mother and Infant Home Visiting Program (MIHOPE-Strong Start). MDRC’s evaluation, like ours, relies on obtaining and linking birth certificate and Medicaid data, but they started working with states roughly one year before our evaluation. Therefore, to learn more about MDRC’s process and lessons learned, we scheduled a series of biweekly calls with the MDRC team, during which we specifically discussed the nine states they worked with that are also participating in the Strong Start II. MDRC staff shared information about contacts within state agencies, the extent of data availability and quality, the application processes they completed, and their experiences working with the Vital Records and Medicaid agencies in these states. These early conversations with MDRC were extremely helpful in guiding our TA approach and preparing us for the lengthy and time-consuming process of gaining access to state data.

From this initial background research, we roughly organized states into three tiers based on their projected Strong Start enrollment numbers and demonstrated experience and capacity to link Medicaid and Vital Records data (state tiers and organizational responsibility are summarized in Table 5).

TABLE 5: STRONG START STATES FOR THE TECHNICAL ASSISTANCE TASK

State	Lead Organization	MIHOPE-Strong Start State
Tier 1 States		
1. California	UI	Yes
2. Florida	HMA	No
3. Georgia	HMA	Yes
4. Illinois	AIR	Yes
5. Michigan	AIR	Yes
6. South Carolina	UI	Yes
Tier 2 States		
7. Arizona	HMA	No
8. Kentucky	AIR	No
9. Louisiana	HMA	No

State	Lead Organization	MIHOPE-Strong Start State
10. Mississippi	AIR	No
11. Nevada	AIR	Yes
12. New Jersey	HMA	Yes
13. Pennsylvania	AIR	Yes
14. Tennessee	AIR	Yes
Tier 3 States		
15. Alabama	AIR	No
16. Virginia	AIR	No
17. Maryland	AIR	No
18. Missouri	AIR	No
19. Texas	HMA	No
20. Washington, DC	AIR	No

Note: The lead organization is responsible for tracking and scheduling communication between the research team and state agencies. For all states, including those led by AIR and HMA, two researchers from the Urban Institute participated in all initial calls with state officials, and reviewed and approved all applications. We are not collecting data from Alaska, Arkansas, Kansas, Minnesota, Missouri, Montana, North Carolina, Nebraska, New Mexico, Oklahoma, Oregon, Wisconsin and West Virginia.

Six states were classified as Tier 1 because of their relatively high enrollment numbers and apparent experience and capacity. Eight states were placed in Tier 2 based on their lower rates of enrollment and less experience with data linkage. The six states with the lowest enrollment numbers and least experience/capacity in data linkage were categorized as Tier 3. Each state was then assigned to a lead organization, which was responsible for contacting state officials and pursuing data acquisition, and TA Liaisons were identified to serve as the primary point of contact for the state agencies. Five states were eliminated from this process because they did not have a sufficient volume of Strong Start enrollees to merit the effort required to obtain and link data.

Outreach Approach:

Materials

To support our outreach, the evaluation team developed a set of materials that could be customized for each state. These included:

- *Email template for the initial contact* – Provides state officials with a brief introduction to the Strong Start II program and evaluation and requests a 30-minute telephone call to provide more information about the impact analysis and data needs.
- *Executive Brief* – Describes the project and evaluation in more detail, our data request, and evidence for why states would benefit from participating in the evaluation using state-specific statistics on birth outcomes and costs. The brief also provides a short description of the evaluation team and the available technical assistance (see Appendix F).
- *“Talking points” script for initial calls with state officials* –Includes additional information about the prevalence and cost of pre-term births for the state, the Strong Start II program and impact analysis, and the data request, as well as an outline to guide TA Liaisons through

the initial calls with the state agencies; and also outlines the proposed timeline, available TA, and optional financial stipend to offset state costs.⁴³

Initial Calls: We called Tier 1 states first to pilot test our materials and approach because we anticipated fewer barriers with these states, given their experience with data linkage. In addition, MDRC provided us with reliable contact information for the majority of these states. The TA Liaisons at the lead organizations customized and sent the email template to select state officials at both the Vital Records and Medicaid agencies. The Liaisons then followed up to schedule a 30-minute phone call with each agency. Prior to the initial call, Executive Briefs were customized and sent to the contacts as part of the meeting invitation.

During each initial call, TA Liaisons gauged states' interest in participating in the impact analysis (by sharing birth certificate and Medicaid data), determined their preferences regarding whether they would prefer to link birth certificate and Medicaid data or pass those data sets on to Urban, and inquired about the process for obtaining data in that state. At the end of each call, next steps were identified. Overall, the process worked remarkably well for the Tier 1 states. All six states (including both Medicaid and Vital Records officials) responded positively to participation in the impact analysis and often credited their familiarity with such evaluations and previous experience with MIHOPE as preparing them for our data request.

One important outcome of the first round of calls was the commonly identified need for a document that would summarize, in detail, the information needs of the evaluation. Urban Institute staff developed this "Information Needs for the Impact Analysis" document (see Appendix G)—which identifies the variables needed from birth certificate, Medicaid eligibility, and encounters/claims data, as well as the typical steps involved in linking the data, so that TA Liaisons could share it with state officials following future calls.

Following the success of these initial calls with the pilot states, we used the same process for the Tier 2 and Tier 3 states. While this process was also successful with these states, it was somewhat more challenging to find the appropriate contacts at the state agencies to work with because of their relative lack of experience participating in similar evaluations.

Follow-Up Steps: After completing our initial calls with Vital Records and Medicaid officials in the states, we took a variety of follow-up steps. Many agencies sent us data request applications; others asked us to send additional documentation, including the Urban Institute's approved IRB; still others asked us to follow-up within a specified timeframe so that they could discuss the request within their agency; and a few sent us agreements to review and sign. Below we provide more detailed information on these steps.

⁴³ The Strong Start Evaluation has budgeted to provide states with a small stipend to help offset costs associated with providing or linking data for the study. As of the time of this writing, nearly half of the states have expressed interest in receiving this stipend, but no stipends have yet been provided.

- *Data Request Applications:* Twenty-one agencies in 14 states have asked the evaluation to complete data request applications. Though fundamentally similar in nature, the applications have varied significantly in complexity and length, with each state/agency form having its own unique “flavor” and requirements.
- After completing the first few of these applications, the evaluation team created an internal “Frequently Asked Questions” document that assembled common facts, figures, variables, and answers to questions so that all subsequent applications could be completed more quickly, easily, and consistently. This document was updated as we received additional applications with new questions and information requests. Common components across applications included descriptions of the project, the specific data request, data security protocols, and prior IRB approval. The majority of agencies accepted the Urban Institute’s IRB approval as sufficient; however, a few agencies requested that we also go through their independent state IRB.
- *DUAs/BAAs/MOAs:* For some state agencies, the application process also required the completion of Data Use Agreements (DUAs) or Business Associate Agreements (BAAs). Specifically, eight agencies in seven states have requested that the Urban Institute sign an agreement with the state agency such as a DUA, BAA, or Memorandum of Agreement (MOA). BAAs typically address protected health information (PHI), including how the Urban Institute plans to use, disclose, and safeguard PHI from the state, and procedures it will follow should there be any suspected or actual breach of security, intrusion, or unauthorized use or disclosure of PHI. Several states already have an existing agreement between the Medicaid and Vital Records agencies to share data and noted that our data request could be added as an addendum to the pre-existing agreement.
- *Other Documents:* Some state agencies required other “next steps,” including a separate conversation to discuss the stipend, a joint call between the Medicaid and Vital Records agencies to discuss collaboration and the sharing of data, or simply additional documentation such as the Urban Institute’s IRB approval and a HIPAA Waiver. Additionally, in one state, both agencies referred us to the Strong Start awardee in that state to facilitate our data request because the awardee (a university-based health system) was already working with the state for their independent Strong Start evaluation.

Management: The TA Team has implemented a number of procedures to effectively and efficiently manage the large volume of interactions with state officials, as well as the completion, review, and submission of states’ various data applications and agreements. Specifically, the team meets biweekly to discuss progress, successes, challenges, and strategies to overcome identified challenges. We also developed a “TA Tracker” spreadsheet that is updated biweekly to systematically record information about each state agency and our progress-to-date. All applications and agreements are initially drafted by the TA Liaisons in each firm; they are then shared with experts from the Impacts Analysis team at the Urban Institute to ensure accuracy,

completeness, and clarity before being submitted to states. Finally, all documents are stored in a shareable web-based storage system, OwnCloud, to ensure that all organizations have access to and are providing the most recent information to the states.

PROGRESS, CHALLENGES, AND LESSONS LEARNED

Overall, states have been quite supportive of the Strong Start evaluation and willing to share data for the impact analysis. This positive response suggests that states are interested and invested in improving maternal and child health outcomes and participating in an evaluation that is designed to support this goal. At this time, only one state agency, the Maryland Department of Health and Mental Hygiene (which houses the Vital Statistics Administration), has indicated that they do not currently have the capacity to share their data. Although a number of states indicated that they have limited resources, most expressed a preference for performing the linkage of birth certificates and Medicaid data themselves (rather than send the identifiable data for the Urban Institute to link), to ensure the confidentiality and privacy of their data. The agencies likely to perform these linkages are equally divided between Vital Records agencies and Medicaid agencies. Other factors that seem to influence states' willingness to share and/or link data for the impact analysis include:

- *Previous experience:* A number of states are capable of providing linked data files for the Strong Start impact analysis because of previous data sharing and linkage experience. These states will require a lower level of effort than states without linkage experience.
- *Financial stipend:* A small number of state agencies expressed interest in the financial stipend to help offset the costs of sharing and linking data.
- *IRB approval:* Most states reciprocated the Urban Institute's IRB approval, and thus did not require their own state-based IRB approval, thereby reducing the amount of time and resources needed to share data.

On the next page, we provide specific information about our progress and the outcomes in each state (see Table 6).

Below we describe several challenges and lessons learned from our interactions with the states.

- **There is no "one size fits all" approach.** Each state agency requires a different process to access their data. As described above, some state agencies require a completed data request application, others require a signed agreement, and a few states require an additional IRB approval from the state IRB. Two state agencies also required a HIPAA Waiver from the Urban Institute's IRB. In addition, we received a range of questions about the Strong Start evaluation generally, the impact analysis specifically, and the Urban Institute staff that will have access to the data. Additionally, state agencies have different processes and timelines to approve our request. Because of this variation, the FAQ document and

trackers were helpful tools to meet the needs and requirements of each state agency and develop strong relationships.

- **States' experiences sharing and linking data vary.** State agencies generally fell into two categories with respect to experience in sharing and linking data.
 - *More experienced* states, including those that are participating in the MIHOPE evaluation, tend to have existing and productive relationships between Vital Records and Medicaid agencies, and already share and link data for other evaluation purposes. Overall, these state agencies seemed more receptive to sharing and linking their data and had fewer questions about the request. In addition, these states typically have data request applications, established data request processes, and a specified "lead" person who handles such requests and/or performs data linkages.

TABLE 6: SUMMARY OF TECHNICAL ASSISTANCE OUTCOMES, BY STATE AND STATE AGENCY

State	Agency	Initial Contact	Interest in Stipend	Total Approvals	Data Request Application Status			DUA/BAA/MOA/MOU Status			Linkage Responsibility	
					In Progress	Submitted	Approved	In Progress	Submitted	Approved	State	UI
TOTAL	40	35	10	4	6	15	3	7	1	0	14	4
1. Alabama	Medicaid VR	Yes Yes	Yes No	Yes No	No No	No Yes	No No	No Yes	No No	No No	No No	Yes Yes
2. Arizona	Medicaid VR	Yes Yes	No No	No No	Yes No	No No	No No	No No	No No	No No	No No	No Yes
3. California	Medicaid IRB VR	Yes Yes No	No No Yes	No Yes No	No No No	Yes Yes Yes	No Yes No	No No No	No No No	No No No	No No No	Yes No No
4. District of Columbia	Medicaid VR	Yes Yes	No No	No No	No Yes	No No	No No	Yes No	No No	No No	No No	Yes No
5. Florida	Medicaid VR	Yes Yes	No No	No No	No No	Yes Yes	No No	No No	No No	No No	No No	No Yes
6. Georgia	Medicaid VR	No Yes	No No	No No	No No	No No	No No	No No	No No	No No	No No	No Yes
7. Illinois	Medicaid VR	Yes Yes	No No	Yes No	No No	Yes Yes	Yes No	No No	No No	No No	No No	Yes No
8. Kentucky	Medicaid VR	No Yes	No Yes	No No	No No	No No	No No	No No	No No	No No	No No	Yes No
9. Louisiana	Medicaid VR	Yes Yes	No Yes	No No	No Yes	No No	No No	No No	No No	No No	No No	Yes No
10. Maryland	Medicaid VR	Yes Yes	Yes Yes	No Denied*	Yes No	No Yes	No No	No No	No No	No No	No No	No No
11. Michigan	Medicaid and VR	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes No
12. Mississippi	Medicaid VR	Yes Yes	No Yes	No No	No No	No No	No No	Yes Yes	No No	No No	No No	Yes No
13. Missouri	Medicaid VR	No Yes	No Yes	No No	No No	No No	No No	No No	No No	No No	No No	No No
14. Nevada	Medicaid VR	Yes Yes	No No	No No	No No	No Yes	No No	Yes No	No Yes	No No	No No	Yes No
15. New Jersey	Medicaid VR	Yes No	No No	No No	No No	No No	No No	No No	No No	No No	No No	Yes No
16. Pennsylvania	Medicaid VR	Yes Yes	Yes No	No Yes	No No	No Yes	No Yes	No No	Yes No	No No	No No	Yes No
17. South Carolina	Medicaid VR	Yes Yes	No No	No No	No No	Yes Yes	No No	No No	No No	No No	No No	Yes No
18. Tennessee	Medicaid IRB VR	Yes Yes Yes	No No Yes	No No No	No Yes Yes	No No Yes	No No No	Yes No No	No No No	No No No	No No No	Yes No No
19. Texas	Medicaid VR	Yes Yes	No No	No No	Yes No	No No	No No	No No	No No	No No	No No	Yes No
20. Virginia	Medicaid VR	Yes Yes	No No	No No	No No	No No	No No	No No	No No	No No	No No	Yes No

Note: *The Maryland Department of Health and Mental Hygiene, which houses the Vital Statistics Administration, indicated that they do not currently have the capacity to share their data. We plan to follow up with them at a later time to learn if their situation has changed.

- *Less experienced* states seemed to have more difficulty understanding our request after the initial call, prompting the development of our Information Needs for the Impact Analysis document. As described above, this document, which was customized for each state, provides a summary of the Strong Start initiative and evaluation, a description of the linkage process, and the list of Medicaid and birth certificate variables needed for the impact analysis (see Appendix G). To help clarify our request, this document was sent to state agencies in advance of our initial meeting and then discussed during the meeting. Additionally, these states had less established processes for sharing and linking data, which meant that there was often some difficulty in ascertaining which agency would be responsible for sharing and/or linking data. Finally, a few states noted that while they have some data linkage experience, they do not have experience linking birth certificate data with Medicaid claims/encounters data, and therefore might need some level of individual technical assistance.
- **It is critical to be patient and flexible, but persistent.** Identifying the appropriate contacts at the state agencies, developing relationships with these contacts, and securing agreements require considerable time and patience. A number of states have limited resources and numerous competing priorities. To the extent possible, it has been important for us to be aware of and sensitive to these competing priorities and other initiatives. Because participation in the impact analysis is voluntary, it is also important to not be pushy, but instead, persistent. For example, multiple reminders (e.g., emails, phone calls) to the state agencies were often needed to schedule meetings, identify next steps, and receive the forms and agreements. In addition, staff turnover in several states caused unanticipated delays. Finally, states that do not have existing agreements between the Medicaid and Vital Records agencies need additional time to develop their own internal agreements, which extends the time it takes to secure agreements with the Urban Institute.
- **Expect data lags.** State agencies described the typical lag time that exists between when the data collection year ends and when data are available for public release. For example, in most states, final 2014 birth certificate data will not be available until fall 2015. Lags for Medicaid data—in particular claims and encounter data—are even longer. Thus, at best, we will only be able to report on birth certificate data in the Year 3 annual report (in July 2016), and we need to anticipate that more complete impact findings will not be available until Years 4 and 5 of the evaluation.⁴⁴

⁴⁴ In 2014/15, many Strong Start awardees were granted no-cost extensions to later points in 2016 and into 2017. These extensions will thus capture more births that occur later in 2016 than originally anticipated and may, therefore, affect our ability to obtain complete birth and Medicaid data for this calendar year. We do not anticipate program births occurring in 2017.

IMPACT ANALYSIS

OVERVIEW OF IMPACT ANALYSIS

The impact analysis will compare outcomes for Strong Start participants to outcomes for non-participating eligible women and infants with similar risk profiles. This assessment relies on the best available data and quantitative methods to account for possible confounding factors that may be driving changes in outcomes that might otherwise be incorrectly attributed to Strong Start.

The impact analysis aims to answer the following three broad evaluation questions:

- What are the impacts of the care approaches and enhanced services supported by Strong Start relative to traditional Medicaid care on gestational age, birth weight, and cost?
- Do impacts differ across awardees and across the three Strong Start approaches? If so, how?
- How does the implementation analysis explain the impact findings? For example, which features of the approaches (such as services offered and intensity of services) lead to the greatest impact of the program?

One of the most challenging issues for the evaluation is the selection of a comparison group that will serve as a counterfactual to determine what would have occurred had Strong Start care approaches not been in place. We therefore must select a comparison group that allows us to estimate the impact of Strong Start, *in combination* with one of the three alternative approaches of care, compared to standard Medicaid maternity care practices—such as private providers, community health centers, public health department clinics, and hospital outpatient departments. The ideal comparison group would then consist of women who receive services in standard Medicaid maternity care practices that do not offer prenatal care through any of the Strong Start approaches—maternity care homes, group prenatal care, or birth centers.

The evaluation’s Design Plan included a detailed description of a preferred methodological approach to the cross-site impact evaluation of Strong Start (Howell et al., 2014). In short, our preferred approach is to select a comparison group for each Strong Start site from observably similar women in each local area—or a statistically matched area, where needed—who are enrolled in Medicaid but do not participate in Strong Start. Data from birth certificates and Medicaid/CHIP eligibility and claims/encounter data for the mother and child will be linked using some version of the following approach, tailored to the needs and processes of each awardee/state combination:

- Each awardee must provide a list of participants with enough information to link Strong Start participants to birth certificates. At enrollment, Strong Start participants are being assigned a 10-digit study identifier (ID) by each site as part of the intake process, this

information along with their Medicaid ID, names of mother and baby, their birthdates, and address will be used to match enrollees to birth certificates and Medicaid data.

- The geographic area in which Strong Start participants reside will be identified and other women from the same area or a similar area will be identified as potential comparison group members. The state will either provide identifiable birth certificates for linking by evaluation staff, or perform the linkage to certificates in each designated geographic area.
- The linked participant ID/birth certificate file will be provided to the state Medicaid agency with identifiers, or to the national evaluator (depending on the state's preference), for linking to the Medicaid enrollment file. In some states, the Medicaid agency would provide Medicaid records to the agency overseeing vital statistics, or some other agency, for that agency to conduct the match. Only birth certificates from the geographic area(s) identified for each site must be matched and only birth certificates for Medicaid covered women would be required and analyzed.
- In each geographic area a propensity score weighted comparison group will be derived. The linked birth certificate/Medicaid enrollment file will be used for propensity score matching and weighting.
- The Medicaid identifiers for mother and infant in both the participant and comparison groups will be returned to the state agency for extracting full claims/encounter data for the year prior to delivery (when available) and one year postpartum for mother and infant.

Depending on each state's preference and existing linking algorithms, it is likely that some combination of the following information will be used for matching:

- Birth certificates: mother's name, mother's date of birth, mother's and child's address, child's name, and child's date of birth.
- Medicaid data on mother: mother's name, mother's date of birth, and mother's address.
- Medicaid data on child: child's name, child's date of birth, and child's address.
- Hospital identifier (if available).

After obtaining merged birth certificate and Medicaid data, the analysis will be conducted by creating propensity score-based weights, confirming there are no remaining differences in control variables between Strong Start participants and weighted comparison observations, and estimating impacts as the difference in outcomes between Strong Start participants and propensity score weighted comparison group observations. Propensity score reweighting is very similar to more traditional propensity score matching, except that it uses information from all eligible comparison group members rather than an arbitrary number of best matches for each member of the treatment group. In propensity score reweighting, comparison group members who are the most similar to treatment group members receive the largest statistical weights, and dissimilar comparison group members receive lower (or even zero) weights.

The birth certificate variables for the propensity score matching include the mother's age, race, educational status, marital status, insurance status, and zip code. Behavioral risk factors, also from the birth certificate data, include smoking and prenatal care use, and medical risk factors previous birth of an exceptionally large or small baby, previous fetal death, previous pre-term birth, chronic hypertension, and non-gestational diabetes. As we discussed in the Comparison Group Feasibility Study (2014) not all of the variables on the birth certificate are reported reliably. In particular, the concordance of the birth record with other data sources is low for pre-pregnancy medical risk factors. At the same time, the specificity for these variables is high; that is, when they are reported on the birth certificate they have a very high likelihood of being present. Therefore, even though some risk factors will be under-reported, we will still match on these variables and obtain matches for women who are identified as having a given risk factor. Medicaid data will be used primarily for identifying which births are covered by Medicaid and associated costs. In addition, these files contain information on the basis of eligibility (BOE) for women enrolled in Medicaid. Eligibility groups will be used as a factor in the propensity score approaching in order to identify women who are eligible because of disability or cash-assistance status, eligible through Section 1931, eligible through the ACA expansion, or eligible because of pregnancy only.

WORK COMPLETED IN YEAR 2

Selecting Comparison Groups:

Over the past year, the major priority of the evaluation's impacts team has been to determine how to select a comparison group for each Strong Start site. Ideally, a valid comparison group would come from the same county or parish where Strong Start participants reside. We would then use the propensity score reweighting approach to select observably similar women in the same county who are enrolled in Medicaid but do not participate in Strong Start.

However, our comparison groups must include similar women who receive care from a standard Medicaid maternity practice, *not* from settings that fit the approach for Strong Start sites. The impacts team has identified two scenarios that necessitate drawing the comparison group from a different county than that where Strong Start sites or participants are located:

1. *The demonstration (through a single site or multiple demonstration sites) or non-demonstration sites using similar approaches "saturate" the area.* Under this scenario, our comparison group would be "contaminated," i.e., composed of women who do not receive care in standard Medicaid maternity practices. If there are no or limited standard Medicaid maternity care options in the county, we will need to select a similar but different county in the state to draw the comparison group.
2. *There are some standard Medicaid maternity practices in the local area, but the Strong Start site is the only source of care for high risk pregnant women on Medicaid in the area.* In this case, it would be difficult to match women with similar risk profiles within the same area

due to differences in observable and unobservable factors. That is, all high risk pregnancies would be referred to the site implementing Strong Start, leaving only lower risk women in the local area. This scenario is especially concerning because the birth certificate data do not allow us to completely control for some factors that would allow us to identify high risk women. Therefore, under this scenario, we will also need to select a different area to draw the comparison group.

To determine which Strong Start sites fall under either of these categories, the impact analysis team reviewed all of the Year One case study memos and followed up with site visit teams to gather information. In addition, we also geocoded/mapped the most recent crosswalk enrollment data and analyzed the location of Strong Start enrollees relative to the each site location.

Table 7 summarizes our findings regarding whether comparison groups can be obtained from the local area surrounding each Strong Start site, or whether matched comparison counties need to be identified. Overall, we find that for 9 awardees, our comparison group can be pulled from the same counties where Strong Start participants reside. For 14 awardees, we will need to find matched counties to select the comparison group for at least one of the sites associated with the awardee—all but two awardees are due to criteria #1 above (The University of Alabama-Birmingham (UAB) and the Medical University of South Carolina (MUSC)). For three awardees, decisions regarding comparison group selection have not yet been made.

For UAB MUSC, we found that one of the Strong Start sites is the only source of care for high risk pregnant women on Medicaid in the local area. Both of these sites are academic medical hubs and therefore also attract high risk women throughout their respective states. Moreover, they are in the large metropolitan areas that are quite different from other communities in the state. Because of this combination of factors, we are concerned that we may not be able to find a similar county from which to draw a comparison group. To address these unique situations, for each of these awardees, we will draw women for the comparison groups from the local area and from the best comparison county we can identify and test the sensitivity of our results to the choice of comparison group.

Method for Selecting Comparison Counties:

During the past year, we also developed a statistical method for matching counties for sites where a local comparison group does not appear feasible. For each case where we need to go outside the local area to find a comparison group, we implemented a “nearest neighbor” matching estimation technique to find the most similar county within the same state, based on observable characteristics of the county. We used this method to pair treatment counties with Strong Start participants to the closest matched county in the state without Strong Start participants. We will draw the comparison group from Medicaid covered births in the counties identified through this process. The technique we implemented allows for matching over multiple variables in determining the closest matches.

We estimated several variants of the matching estimation technique and found our results were robust across approach specifications (e.g., including more/less variables under each category). There is one exception to note. We found that including or excluding the latitude and longitude measures yield different matched counties in many instances. This is not surprising, since including these variables places more weight on counties that are geographically closer to the counties where Strong Start participants reside.

TABLE 7: SUMMARY OF COMPARISON GROUP COUNTY DECISIONS

Awardee/AABC Site	Decision on Comparison Group Location			Reason for Using Matched Counties	
	Use Same Counties for All Sites	Use Matched Counties for All Sites	Use a Combination of Same and Matched Counties	Only Medicaid Maternity Provider in the Area	High Risk Sites
ACCESS Community Health Network	Yes	No	No	No	No
Albert Einstein Healthcare Network	No	No	Yes	Yes	No
American Association of Birth Centers	No	No	Yes	No	No
Amerigroup Corporation	Yes	No	No	No	No
Central Jersey Family Health Consortium	–	–	–	–	–
Florida Association of Healthy Start Coalitions	No	Yes	No	Yes	No
Grady Memorial Hospital Association	No	No	Yes	Yes	No
Harris Health System	Yes	No	No	No	No
Health Insight of Nevada	No	No	Yes	No	No
Johns Hopkins University School of Medicine	–	–	–	–	–
Los Angeles County Department of Health Services	No	No	Yes	Yes	No
Maricopa Integrated Health System	Yes	No	No	No	No
Medical University of South Carolina	No	Yes	No	Yes	Yes
Meridian Health Plan	No	Yes	No	Yes	No
Mississippi Primary Health Care Association	No	Yes	No	Yes	No
National Capital Strong Start	Yes	No	No	No	No
Rosemary Birthing Home	No	Yes	No	Yes	No
Signature Medical Group	No	No	Yes	Yes	No
St. John Providence Health System	–	–	–	–	–
Texas Tech Health Science Center	No	Yes	No	Yes	No
United Neighborhood Health Services	Yes	No	No	No	No
University of Alabama, Birmingham	No	Yes	No	Yes	Yes
University of Kentucky	No	No	Yes	No	No
University of South Alabama	Yes	No	No	No	No
University of Tennessee Health Science Center	Yes	No	No	No	No
Virginia Commonwealth University	Yes	No	No	No	No

Note: Cells labeled with a dash symbol indicate that decisions have not been made for this awardee.

We use county-level data from the Area Health Resource File (AHRF) to match counties on observable county characteristics. These variables include:

- Geographic and population measures
 - Total area (in square miles)
 - Urban-rural continuum
 - Population density (number of people per square mile)
 - Latitude
 - Longitude
- Socioeconomic measures
 - Personal income per capita
 - Percent in poverty
 - Percent black
 - Percent Hispanic
 - Percent of population covered by Medicaid
 - Percent of children covered by Medicaid
- Provider supply
 - Number of hospitals
 - Number of hospitals with neonatal intensive care (detailed level not available)
 - Number of hospitals with obstetric care
 - Number of doctors per capita
 - Number of OB-GYNs per capita
 - Number of certified midwives and certified nurse-midwives per capita
 - Number of hospital beds per capita

In the next three months we will finalize our matching algorithm and select comparison groups for each site as needed.

Emerging Issues and Implications:

In reviewing the case study reports to determine how comparison counties should be identified, we also assessed other issues that could limit the evaluation’s ability to identify unbiased causal impacts in certain cases. In particular, we focused on whether or not sites used an “opt-out” or

“opt-in” procedure for enrolling women into Strong Start, and the extent to which women were given the option of enrollment in Strong Start (i.e., “opt in”) participated. While some awardees reported that take-up upon offers of enrollment was low at first, many reported that they changed their strategy to an “opt-out” policy and others implemented other strategies to encourage women to participate. Overall through the first year, it seemed that most sites ultimately had relatively high take-up among women who were offered enrollment in Strong Start.

The one exception to this was for sites that offered group prenatal care. Of the nine awardees offering group prenatal care in states where we are conducting impact analysis, six had very low take up at some or all of their sites. This occurred generally in sites that offered both group prenatal care and traditional maternity care services. Table 8 presents data on the extent to which those offered group prenatal care through Strong Start are enrolling.

TABLE 8: GROUP PRENATAL CARE ENROLLMENT STRATEGIES

Awardee	State	# of Sites	Enrollment Approach		Selection Issue ¹
			Sites with Opt-Out	Sites with Opt-In	
Albert Einstein Healthcare Network	PA	2	Yes	No	No
Amerigroup Corporation	LA	6	Yes	Yes	Yes*
Central Jersey Family Health Consortium	NJ	8	Yes	Yes	Unclear at this time
Grady Memorial Hospital Association	GA	4	No	Yes	No
Harris Health System	TX	7	No	Yes	Unclear at this time
Health Insight of Nevada	NV	3	No	Yes	No
Providence Hospital	DC	1	No	Yes	No
St. John Providence Health System	MI	2	No	Yes	Yes
Texas Tech Health Science Center	TX	1	Yes	No	Unclear at this time
University of Kentucky	KY	6	Yes	No	Yes
University of South Alabama	AL	2	No	Yes	Yes
University of Tennessee Health Science Center ²	TN	2	Yes	Yes	Yes*
Virginia Commonwealth University	VA	5	No	Yes	Yes

Notes: ¹Sites with greater than 25% of women declining to participate are considered to have a selection issue with implications for the impact analysis.

²University of Tennessee Health Science Center acquired University of Tennessee Medical Group’s Strong Start award in the spring of 2015. Because this awardee was in the midst of contract negotiations with CMS during the Q1 2015 data submission deadline, it did not submit data for this quarter. Enrollment for this awardee is based off of Q4 2015 program monitoring data. Cells that contain an asterisk indicate that there is only a selection issue at opt-in sites for these awardees.

The low take up of Strong Start among group prenatal care sites suggests that those who enroll in group prenatal care may be different than those who choose not to enroll. In other words, estimates of the impact of enrolling in Strong Start at these group prenatal care sites and awardees may be biased by selection even after adjusting for differences in observable characteristics. Moreover, it is not clear what the direction of the selection bias would be. While we are concerned

about selection bias generally in our impact analysis, we plan to conduct a sensitivity analysis that would use distance from the site as an instrument. We cannot employ this strategy in this case because the sites in question offer both group and traditional maternity care. This makes us concerned that estimates of the effects of Strong Start for these six awardees will be biased. Consequently, we would not interpret the estimated effects as causal impacts, but rather as associations that adjust for observable differences. Additional detail on selection bias can be found in the evaluation’s Design Plan (Howell et al. 2014) and Comparison Group Feasibility Study (Dubay, Blavin, Howell, & Garrett, 2014)

CROSS-CUTTING ANALYSIS AND EMERGING ISSUES

Syntheses of findings through the second year of data collection allow us to make a number of cross-cutting observations about awardees’ progress in implementing Strong Start, promising practices they have adopted to overcome common challenges, and preliminary outcomes among Strong Start participants. With more complete case study and PLPE data at the end of Year 2 of the evaluation, and in advance of receiving birth certificate and Medicaid data that will allow us to begin measuring Strong Start’s impacts on key outcomes, we make the following interim observations:

1. ***Strong Start enrollment accelerated during the last year and surpassed 23,000 women by the end of Quarter 1, 2015.*** This total is more than three times higher than where enrollment stood at the same point in 2014. As reported in our Year 1 Annual Report, initial enrollment rates were lower than expected because of a number of factors, including late project start-up for some awardees, slow establishment of routine intake and enrollment procedures, and hesitant support and buy-in from obstetrical providers not accustomed to Strong Start’s innovative approaches to prenatal care. Moreover, many awardees found that fewer Medicaid and CHIP patients were eligible for Strong Start than they expected, since they either did not possess sufficient risk factors for preterm birth or were not identified and screened for enrollment until after Strong Start’s gestational age cut-off. But several changes were made in the past year that helped accelerate enrollment.

Importantly, in June 2014, CMMI allowed awardees to adjust certain eligibility criteria so that more women could enroll in Strong Start. Specifically, it eliminated the requirement that women be identified with an additional risk factor for preterm birth beyond their Medicaid status, and it allowed awardees to enroll women past 28 weeks gestation. After another revision to criteria in 2015, women are allowed to enroll up to 29 weeks gestation, with some exceptions made for later enrollment in special circumstances.

Even before these changes in eligibility occurred, however, many awardees had already adopted new enrollment procedures that were succeeding in improving rates of enrollment. As described in the case study section, many awardees and sites moved to “opt out” enrollment so that Strong Start participation is the default option in more prenatal practices. Awardees have also increasingly encouraged sites to enroll women with

“pending” Medicaid eligibility, since most women with this status are ultimately enrolled in Medicaid. Finally, according to key informants, awardee staff have simply gotten better at identifying potential participants and enrolling them into Strong Start as programs have matured.

Combined, eligibility changes at the federal level and enrollment changes at the local level have helped Strong Start improve its performance in enrolling pregnant women such that the initiative is now nearly halfway toward its projected total enrollment goal of 50,000 women.

- 2. *Changes in eligibility criteria have influenced the composition of Strong Start participants somewhat, but the ability of the program to impact outcomes overall (and of the evaluation to detect changes in outcomes) should not be significantly affected.*** Given CMMI’s modification of eligibility criteria for Strong Start, it is reasonable to question whether the potential for Strong Start to improve outcomes (because of later gestational age enrollment) has been compromised. Thus far, however, the evaluation team believes that this is likely not the case. In general, Year 2 case studies did not find that awardees were aggressively seeking to enroll late-term pregnant women into their programs; the participant-level data show that only seven percent of women have been enrolled after 28 weeks gestation. (Across the approaches, group prenatal care sites appeared least likely to enroll women in their third trimesters, given guidance against such practices in the commonly used CenteringPregnancy model.) Thus, though this rate could grow during the next year, and late enrollment can hinder Strong Start’s ability to help women with pregnancy complications that can only be impacted by early intervention, we believe that the overall study sample is still large enough not to have been significantly compromised and that we can control for late enrollment in our impact analysis.

With regard to removal of the requirement that Strong Start participants possess a secondary pre-term risk factor, we do not believe that this change has led to an improvement in women’s risk profiles. Rather, participant-level process evaluation data clearly illustrate that program enrollees continue to exhibit high levels of both medical and psychosocial risk factors, and our case study findings bolster the observation that changes in eligibility criteria have not substantially altered who is being enrolled in Strong Start.

- 3. *More complete participant-level data allow us to better understand women’s risk profiles, however we continue to see Strong Start serving a relatively disadvantaged population.*** The addition of Exit Form data to our analyses this year permitted us to characterize participants’ medical risk factors for preterm birth and low birth weight. As described in the participant-level process evaluation section, while we find that Strong Start enrollees exhibit rates of gestational diabetes and hypertension that are comparable to other low-income women of childbearing age, we also find that Strong Start women are more likely to have had a previous preterm birth than women generally. Even though a prior preterm birth is the strongest predictor of having another preterm delivery, Strong Start participants with a

prior preterm birth seem to be no more likely to receive 17P injections, which are the standard of care for preventing repeat preterm deliveries. Rates of having had a previous low birth weight baby are lower than is observed in the general population, but approximately 20 percent of participants with previous pregnancies reported short inter-pregnancy intervals (less than 18 months), another strong predictor of poor birth outcomes.

With regard to socioeconomic and psychosocial risk factors, we continue to find Strong Start participants more likely than the general population to have low levels of educational attainment, high rates of unemployment, persistent food insecurity, unstable housing, and low rates of being married. It is important to note that, overall, women enrolled in birth centers appear to be healthier and to face fewer economic and social challenges than women enrolled in either group prenatal care or maternity care homes.

4. ***Depression is a particularly prevalent risk factor among Strong Start participants, but Strong Start services are specifically designed to provide psychosocial support.*** It is particularly noteworthy that women enrolled in Strong Start exhibit rates of depression that are substantially higher than generally reported rates of perinatal depression. Similar proportions of depression among women are observed within each of the Strong Start approaches—25 percent in group prenatal care, 23 percent in maternity care homes, and 22 percent among birth center enrollees—and case study analyses confirm that key informants from all approach types have identified high rates of depression and have sought to focus on addressing participants’ mental health needs. Strong Start interventions appear well designed to support women with depression or other psychosocial stressors. Birth centers have added peer counselors to the midwifery approach who, according to key informants, specifically focus on talking with women about their circumstances and exploring ways to support women during their pregnancies. The group aspect of group prenatal care is specifically intended to help women build relationships, support and learn from one another, and benefit from the knowledge that there are others experiencing many of the same risks, stress factors, and circumstances that they are experiencing. And the most common feature of maternity care homes is the care manager, who serves as a focal point of support during women’s pregnancies, identifying needs, arranging care and referrals, and generally relieving women of the stress of organizing their own care. Across all approaches, Strong Start staff report that they often refer women to mental health services and supports. Unfortunately, however, these staff also report that such resources are often in short supply in their communities.
5. ***Strong Start’s rich content of care across all three enhanced approaches consistently focuses on such high priority issues as nutrition, maternal health, risks of smoking and substance abuse, preparation for childbirth and delivery, breastfeeding, and family planning.*** As described in the case study section, all three approaches of enhanced prenatal care embodied in Strong Start have implemented an array of services that goes far beyond traditional, medically-focused prenatal care. Whether delivered by midwives and peer

counselors in birth centers, care managers in maternity care homes, or midwives and other facilitators in group prenatal care sessions, these services include extensive education and/or counseling on such high priority topics as nutrition, maternal health, the importance of full-term pregnancies, risks associated with smoking and substance abuse, preparation for childbirth and delivery, early signs of labor, breastfeeding, and family planning, among myriad other topics. When Strong Start staff cannot provide a service directly, they routinely refer women to services and resources in the community. Participant-level data are beginning to quantify the extent to which these enhanced services are being provided. On top of the average 10 prenatal care visits received in each approach receive, women also receive:

- a. In maternity care homes, an additional five enhanced encounters with care managers;
- b. In birth centers, an average of four peer counselor encounters; and
- c. In group prenatal care, most visits last two hours compared to routine prenatal care visits that last 10-15 minutes, and can thus be considered “enhanced.”

Awardees are also providing health education classes, linking women with substance abuse services, and generally relying on the trust established between care coordinators, peer counselors, or group facilitators, to connect women with services that would be beneficial to them and to facilitate healthy pregnancy outcomes.

6. ***Strong Start programs are overcoming implementation challenges, adapting and refining their approaches to care, and evolving in positive ways.*** Through the midpoint of Strong Start implementation, it appears that Strong Start programs have largely “hit their stride.” That is, they have confronted and—in many cases—overcome a number of implementation challenges and barriers, become more comfortable in delivering care, and are beginning to see (or at least perceive) positive results. Examples of such maturation include:

- a. Adopting “opt out” enrollment systems (among other strategies) to boost enrollment rates;
- b. Establishing clearer and more coordinated staff roles and responsibilities;
- c. Adjusting the approach to Strong Start enhanced service delivery to better fit the needs of patient populations and provider practices;
- d. Building stronger relationships with obstetrical providers that enhance both coordination of service delivery and referrals; and
- e. Hiring additional administrative staff to help with data collection and reporting, a move that key informants commonly credited with freeing up practitioners’ time to focus on service delivery.

Some of this progress can be attributed to the ongoing support awardees have received from CMMI, such as financial resources that allowed for administrative staff hiring, training

and collaboration provided by the Learning and Diffusion contractor, and the ongoing advocacy and support provided by awardees' Project Officers. But progress is largely due to the hard work and persistence of awardees in adapting existing routines to accommodate new innovations, and persevering in the face of implementation challenges. To be sure, success is not uniformly observed across all awardees. But with the better part of a year remaining for most programs, we might expect to see continued growth and improvement.

7. ***Strong Start mothers express very high levels of satisfaction with care and experience some positive outcomes, including low C-Section and induced delivery rates (among others).*** While large amounts of missing data require us to be cautious in drawing conclusions, Exit Form data available through Quarter 1 2015 allow us to begin painting a more complete picture of the outcomes experienced by Strong Start participants. These data suggest that C-Section prevalence among women receiving care at Strong Start sites may be lower than the national average, though there is substantial variation across the three approaches. Moreover, reported rates of induced deliveries are lower than national benchmarks. Both findings indicate that women enrolled in Strong Start may be avoiding interventions that are not medically indicated. Rates of preterm delivery and low birth weight babies among Strong Start participants also track fairly well with national benchmarks overall, though these benchmarks do not take into account income or insurance status. There is, again, substantial divergence by approach, with birth centers experiencing much lower rates of both measures compared to group prenatal care and maternity care homes. Further, subgroup analyses indicate that black women, overall, are more likely to experience both preterm deliveries and low birth weight babies than other racial and ethnic subgroups enrolled in Strong Start, a finding consistent with national data.

At this stage, data also suggest that women enrolled in birth center and group prenatal care appear to be more likely to attempt breastfeeding and are having a good deal of success in following through with their intentions to breastfeed. As was the case in Year 1, participants enrolled in Strong Start across all three approaches, but in particular those in birth centers, indicate high levels of satisfaction with their prenatal services and delivery experiences.

Bolstering these quantitative findings, key informants who participated in our case studies have observed many patient-level benefits that they attribute to Strong Start. These include improvements in prenatal and postpartum visit attendance rates; positive changes in nutrition, exercise, and smoking cessation; reduced stress; increased knowledge and confidence about labor and delivery; fewer unnecessary visits to the ED for false labor; better rates of breastfeeding; and increased access to and use of contraception. Finally, virtually all key informants remarked on the strength, trust, and value of the relationships that develop between participants, their peers, and Strong Start staff and providers, be they maternity care home care managers, birth center peer counselors, or group prenatal care facilitators.

8. ***Most Strong Start awardees hope to sustain their programs after the initiative ends and are beginning to plan for the future.*** As the second year of implementation progressed, Strong Start awardees increasingly discussed the issue of sustainability and began planning for the conclusion of federal grant support. Most awardees expect that they will continue Strong Start enhancements in some form after program funding ends. Some plan to identify and transition to other forms of financial support while others plan to adapt their approaches to better attract funding within or outside their organizations. Numerous awardees hope to attract the attention of state Medicaid/CHIP programs and managed care plans. Given the promise of Strong Start interventions in reducing costs associated with poor birth outcomes, these awardees hope to use Strong Start (and related) data to spur payment reforms at the state level. For example, one health-plan based awardee has already succeeded in receiving supplemental reimbursement for group prenatal care into its Medicaid payments. For maternity care homes, obtaining certification as a patient-centered medical home was described as a strong foundation upon which to continue a maternity care home approach, and some awardees have used Strong Start as a pilot for developing more broad-based, system-wide care coordination services. Among group prenatal care awardees, a majority expressed a strong desire to continue with their new approach to care; in particular, those that had implemented the approach before Strong Start were certain that programs would be sustained, if not for all pregnant women, then at least for certain target high risk groups, such as substance abusers or women with HIV. Birth centers' midwifery approach of care will continue once the award has concluded, but AABC sites' interest in sustaining the new peer counseling service was inconsistent, and many key informants who were interested in sustaining peer counseling were unsure how it could be financially supported.
9. ***States, thus far, have been supportive and accommodating of requests for birth certificate and Medicaid data.*** From the outset, no other component of the Strong Start evaluation was surrounded by more uncertainty than the Technical Assistance/Data Acquisition task. The task's scope of work was designed with technical assistance as the focal point, presuming that states would need hands-on consultation in order to link birth certificate and Medicaid data sets or even to share their data with an outside research organization. Though the team's calls with MDRC (the contractor for the MIHIPE-Strong Start evaluation through the Administration on Children and Families) were helpful in identifying state contacts and discussing the numerous challenges that MDRC encountered in their efforts to apply for and obtain data, they also raised concerns given how slow MDRC's progress has been and how little data had actually been obtained after well over a year of work on their part.

Despite these predicted barriers, we have been pleasantly surprised by the positive reception we have received from state officials from both vital records and Medicaid agencies. As described above, the vast majority of state officials have expressed willingness

to work with us to share needed data, many have said that they are familiar with and have prior experience linking these data, and virtually all demonstrated their understanding of the utility and value of linking these data, including the ability to learn more about how poor birth outcomes might be addressed by innovations in prenatal care.

Of course, it is much too early to claim success in our efforts, and we have already encountered cases for which state inertia has become challenging to overcome and progress has slowed. Still, at this early point, there is cause for optimism that our efforts to obtain and link birth certificate and Medicaid data from a majority of states will prove successful.

10. ***Several challenges can be expected to confront the evaluation's impact analysis—including imperfect comparison counties and selection bias for certain sites—but the evaluation team is carefully planning ways to address these challenges in future years.***

The evaluation team made good progress in Year 2; as described above, the major focus of our work was on reviewing case study findings to begin identifying any issues or concerns that might surround the selection of comparison group counties for the impacts analysis. Ideally, valid comparison groups would come from the same counties where Strong Start participants reside. However, our comparison groups must comprise women who are similar to Strong Start enrollees and who receive care from a standard Medicaid maternity practice, not from settings that are similar to Strong Start sites. Thus far, it appears that for nine awardees, comparison groups can be pulled from the same counties where Strong Start participants reside. But for 14 awardees, we will need to identify matched counties to select the comparison group for at least one of the sites associated with the awardee. (For three awardees, decisions regarding comparison group selection have not yet been made.) In most cases, this is because Strong Start approaches appear to “saturate” their local areas, and thus there are insufficient standard maternity care practices from which to draw comparison samples. In two cases, Strong Start is the only source of care for high risk pregnant women in Medicaid in the local area, meaning that only low risk women remain in the surrounding counties. For group prenatal care, a different challenge—selection bias—confronts the evaluation. For these practices, which have mostly used “opt in” enrollment approaches, take-up rates of Strong Start have been relatively low, which suggests that women who enroll in group prenatal care may be different from those who choose not to enroll. Moving forward into Year 3 of the evaluation, the evaluation team is developing methods for addressing these challenges.

Plans for Year 3

Plans for Year 3 of the Strong Start for Mothers and Newborns Initiative evaluation not only call for continued data collection via qualitative case studies and participant-level process evaluation, but also continued work on the data linkage technical assistance task, and analysis of the first wave of birth certificates to be used in the project's Impact Analysis. Specific plans for Year 3, by major task, are presented below.

CASE STUDIES

In Year 3, the evaluation team will conduct another round of site visits that will mix in-person visits for some awardees and virtual visits (phone interviews) for others. In person case study visits will include in-person key informant interviews with program staff, providers and community partners; focus groups with pregnant and postpartum Strong Start participants; and observations of Strong Start care delivery. In-person site visits will involve 18 awardees and 10 AABC sites, while phone interviews will be conducted with eight awardees and six AABC sites. Interviews will focus on common challenges and best practices, as well as the program's sustainability. We will begin preparing our data collection instruments in September of 2015 and host an all-firm site visit "refresher" training in early October. Data collection will begin with a pilot site visit (involving leaders from all firms) in late October. The remaining Y3 case study data collection will occur between November 2015 and April 2016. Information gathered from these visits will be synthesized and presented in the project's Year 3 Annual Report.

PARTICIPANT-LEVEL PROCESS EVALUATION

Throughout the third evaluation year, awardees will continue to submit participant-level data on a quarterly basis. As described in this Year 2 Annual Report, the evaluation team has received and processed 94 percent of expected Intake forms, a considerable increase from Year 1 submission rates which hovered around 50 percent. Submission rates for Third Trimester and Postpartum Surveys still lag behind targets, at around 78 and 62 percent respectively. The Exit Form, which was introduced after the Year 1 Annual Report, has a submission rate of nearly 60 percent. In the year ahead, we anticipate receiving a larger proportion of forms for Strong Start awardees, as well as a continued need to provide assistance to awardees submitting data electronically, as some continue to iron out problems with their data collection and submission processes. By the end of next year, we expect to have collected, compiled, and reported on participant-level data from Quarters 2, 3, and 4 2015, and Quarter 1 2016.

DATA LINKAGE TECHNICAL ASSISTANCE

In Year 3, we will continue our work to secure written approval/agreements to access state data. We will develop timelines for the receipt of data from each agency and state. With respect to the financial stipends, we will follow up with those agencies that expressed interest in the stipend to identify the amount required for each state agency, and develop a routine process for allocating these funds.

We expect to begin receiving some data in Year 3, which could include birth certificate and Medicaid data from 2014. To help state agencies successfully and efficiently prepare and send the data, we will develop a range of materials, for example, a step-by-step “how-to-guide” on how to transfer the data via the FTP site. We will also provide states with key information that they need to identify Strong Start participants (e.g., participant names and addresses) and comparison groups (e.g., lists of counties from which we will draw comparison groups) from their data. Additional detail on this process is provided in the impact analysis chapter.

Finally, as described above, some state agencies have less experience linking Medicaid and birth certificate data. As needed, therefore, we are prepared to provide individualized technical assistance to help state officials prepare, link, and transfer data files to the Urban Institute. And while it seems highly unlikely, should we identify any systemic issues related to linking and transferring the data, we will explore the usefulness of providing “global” technical assistance to state officials through, for example, webinars and “how to” guides for state agencies.

IMPACT ANALYSIS

Over the first three months of Year 3 of the evaluation, we will finalize our approach to selecting comparison counties and will select specific counties for each site that requires an out-of-county comparison group. It will be necessary to complete this process quickly, as a number of states have requested the names of counties for which birth certificate and Medicaid eligibility, claims and encounter data will be needed.

We also expect to begin receiving birth certificate and Medicaid data for 2014 from a number of states over the course of Year 3. We anticipate that the birth certificate and Medicaid data will be linked by some states before submission to Urban, and that for other states we will obtain the data sets and conduct the linkage at the Urban Institute. We will also begin the process of creating a consistent set of variables across the states to build a consistent Strong Start database. We hope to be able to conduct a preliminary impact analysis for the first year cohort of births in time for the Year 3 Annual Report. However, some awardees and sites were slow in their start up and so it is not clear how feasible it will be to conduct awardee or site-specific analyses with only the first year cohort of births. Moreover, our ability to conduct this analysis depends on the willingness and timelines of states to provide us with linked and/or unlinked birth certificate and Medicaid data. To

the extent that that process takes longer than anticipated our ability to conduct first year impact analyses in the coming year will be affected.

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Technical Appendices

APPENDIX A: FIGURES FROM THE LITERATURE REVIEW

TABLE A.1.: STRONG START AWARDEE AND APPROACH

Awardee Name	State	Strong Start approach (intervention)	Total Number of Sites		
			Birth Centers	Maternity Home	Group Prenatal Care
Access Community Health Network	Illinois	Maternity Care Home	–	32	–
Albert Einstein Healthcare Network	Pennsylvania	Centering Pregnancy	–	–	2
American Association of Birth Centers	Alaska, Arizona, California, Florida, Illinois, Kansas, Maryland, Minnesota, Nebraska, New Mexico, New York, North Carolina, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, West Virginia, and Wisconsin	Birth Center	41	–	–
Amerigroup Corporation	Louisiana	Centering Pregnancy	–	–	7
Central Jersey Family Health Consortium, Inc.	New Jersey	Centering Pregnancy	–	–	8
Florida Association of Healthy Start Coalitions	Florida	Maternity Care Home	–	8	–
Grady Memorial Hospital Corporation DBA Grady Health System	Georgia	Centering Pregnancy	–	–	4
Harris County Hospital District	Texas	Centering Pregnancy	–	–	7
HealthInsight of Nevada	Nevada	Centering Pregnancy	–	–	3
Johns Hopkins University	Maryland	Maternity Care Home	–	5	–
Los Angeles County Department of Health Services	California	Maternity Care Home	–	5	–
Maricopa Special Health Care District	Arizona	Maternity Care Home	–	5	–
Medical University of South Carolina	South Carolina	Maternity Care Home	–	7	–
Meridian Health Plan	Michigan	Maternity Care Home	–	1	–
Mississippi Primary Health Care Association, Inc.	Mississippi	Maternity Care Home	–	9	–
Oklahoma Health Care Authority	Oklahoma	Centering Pregnancy	–	–	4
Providence Health Foundation of Providence Hospital	Washington, DC	Birth Center, Maternity Care Home and Centering Pregnancy	1	3	2
Signature Medical Group	Missouri	Maternity Care Home	–	9	–
St. John Community Health Investment Corp.	Michigan	Enhanced Prenatal Care Support Group (Year 1) Centering pregnancy (Year 2)	–	–	3
Texas Tech University Health Sciences Center	Texas	Maternity Care Home	–	2	1
United Neighborhood Health Services, Inc.	Tennessee	Maternity Care Home	–	7	–
University of Alabama at Birmingham	Alabama	Maternity Care Home	–	4	–
University of Kentucky Research Foundation	Kentucky	Centering Pregnancy	–	–	6
University of Puerto Rico Medical Sciences Campus	Puerto Rico	Centering Pregnancy	–	–	1

Awardee Name	State	Strong Start approach (intervention)	Total Number of Sites		
			Birth Centers	Maternity Home	Group Prenatal Care
University of South Alabama ¹	Alabama	Maternity Care Home and Centering Pregnancy	–	6	–
University of Tennessee Medical Group	Tennessee	Centering Pregnancy	–	–	2
Virginia Commonwealth University	Virginia	Centering Pregnancy	–	–	4
Total:			42	103	60

Notes: 1: One site at the University of South Alabama is implementing both the maternity care home and group prenatal care approach. For the total number of sites, we count the site as the primary approach (maternity care home). VCU and OKHCA plan to implement more than one model in at least one of their sites, and this will be accounted for in the Year 3 Annual Report.

Dash symbols indicate that the awardee is not operating any sites in a particular approach.

TABLE A.2.: MEDICAID AND CHIP ELIGIBILITY POLICIES FOR CHILD-BEARING WOMEN, BY STRONG START STATE

Location	Income Eligibility (Percent of FPL)-Pregnant Women		Medicaid Eligibility- Parents of Dependent Children	Medicaid Eligibility- Other Adults	Family Planning Program	ACA Plans	
	Medicaid (Title XIX)	CHIP (Title XXI)				Medicaid Expansion	Marketplace Type
Alabama	146%	NA	18%	0%	Yes	Not participating	FFM
Alaska	205%	NA	143%	0%	No	Not participating	FFM
Arizona	161%	NA	138%	138%	No	Participating	FFM
California	213%	NA	138%	138%	Yes	Participating	SBM
District of Columbia	211%	324%	221%	215%	No	Participating	SBM
Florida	196%	NA	34%	0%	Yes	Not Participating	FFM
Georgia	225%	NA	37%	0%	Yes	Not participating	FFM
Illinois	213%	NA	138%	138%	No	Participating	Partnership
Kansas	171%	NA	38%	0%	No	Not Participating	FFM ⁶
Kentucky	200%	NA	138%	138%	No	Participating	SBM
Louisiana	138%	NA	24%	0%	Yes	Not participating	FFM
Maryland	264%	NA	138%	138%	Yes	Participating	SBM
Michigan	200%	NA	138%	138%	Yes	Participating ⁵	Partnership
Minnesota	283%	NA	138% ¹	138%	Yes	Participating	SBM
Mississippi	199%	NA	27%	0%	Yes	Not participating	FFM
Missouri	201%	NA	22%	0%	Yes	Not Participating	FFM
Nebraska	199%	NA	54%	0%	No	Not participating	FFM ⁶
Nevada	165%	NA	138%	138%	No	Participating	SBM ⁷
New Jersey	199%	205%	138%	138%	No	Participating	FFM
New Mexico	255%	NA	138%	138%	Yes	Participating	SBM ⁷
New York	223%	NA	138%	138%	Yes	Participating	SBM
North Carolina	201%	NA	44%	0%	Yes	Not participating	FFM
Oklahoma	138%	NA	44%	0% ²	Yes	Not participating	FFM
Oregon	190%	NA	138%	138%	Yes	Participating	SBM ⁷
Pennsylvania	220%	NA	138%	138%	Yes	Participating ⁵	FFM
South Carolina	199%	NA	67%	0%	Yes	Not participating	FFM
Tennessee	200%	NA	101%	0%	No	Not participating	FFM
Texas	203%	NA	18%	0%	Yes ⁴	Not participating	FFM
Virginia	148%	205%	44%	0%	Yes	Not Participating	FFM ⁵

Location	Income Eligibility (Percent of FPL)-Pregnant Women		Medicaid Eligibility- Parents of Dependent Children	Medicaid Eligibility- Other Adults	Family Planning Program	ACA Plans	
	Medicaid (Title XIX)	CHIP (Title XXI)				Medicaid Expansion	Marketplace Type
West Virginia	163%	NA	138%	138%	No	Participating	Partnership
Wisconsin	306%	NA	100% ³	100%	Yes	Not participating	FFM

Notes: ¹Minnesota received approval to implement a Basic Health Program (BHP) established by the ACA in December 2014 and transferred coverage for Medicaid enrollees with incomes between 138 and 200% FPL to the BHP as of January 1, 2015.

²In Oklahoma, individuals without a qualifying employer with incomes up to 100% FPL are eligible for more limited subsidized insurance through the Insure Oklahoma Section 1115 waiver program. Individuals working for certain qualified employers with incomes at or below 200% FPL are eligible for premium assistance for employer-sponsored insurance.

³Wisconsin amended its Medicaid state plan and existing Section 1115 waiver to cover adults up to 100% FPL in Medicaid but did not adopt the ACA Medicaid expansion.

⁴Texas operates an entirely state-funded program that provides family planning services to women at least 18 years of age and up to 185 percent FPL.

⁵Michigan and Pennsylvania have approved Section 1115 waivers for their Medicaid expansions. In February 2015, Pennsylvania announced it will withdraw the Healthy Pennsylvania waiver to implement a traditional Medicaid expansion called Health Choices. The transition from Healthy Pennsylvania to Health Choices is planned to be completed by September 30, 2015.

⁶Kansas, Nebraska, and Virginia have received federal approval to conduct plan management activities to support certification of qualified health plans in FFM.

⁷Nevada, New Mexico, and Oregon are operating SBMs with federal support.

Sources: Medicaid eligibility: <http://kff.org/health-reform/state-indicator/medicaid-and-chip-income-eligibility-limits-for-pregnant-women-as-a-percent-of-the-federal-poverty-level/>; <http://kff.org/health-reform/state-indicator/medicaid-income-eligibility-limits-for-adults-as-a-percent-of-the-federal-poverty-level/>; Family Planning: http://www.guttmacher.org/statecenter/spibs/spib_SMFPE.pdf; Health Reform: <http://kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/>; <http://kff.org/health-reform/state-indicator/state-health-insurance-marketplace-types/>

APPENDIX B: PARTICIPANT-LEVEL PROCESS EVALUATION DATA COLLECTION FORMS

Strong Start for Mothers and Newborns Initiative Patient Intake Form

Study ID Label: _____

Instructions: Please mark your answer by placing a ☒ in the appropriate box with a black pen.

Correct 😊	Incorrect 😞
☒	[☐ no] or [☒] or [☐] or [☐ X]

Enter Today's Date, using the following number format: MM/DD/YYYY. _____/_____/_____

1. Were you on Medicaid when you became pregnant with this pregnancy?

- Yes No Not Sure

2. Did you have other health insurance when you became pregnant with this pregnancy?

- Yes No Not Sure

3. Are you in the WIC program right now (do you get food for yourself from WIC)? Yes No

4. Are you of Hispanic, Latina, or Spanish origin?
(One or more categories may be selected)

- No, not of Hispanic, Latina, or Spanish origin
- Yes, Mexican, Mexican American, Chicana
- Yes, Puerto Rican
- Yes, Cuban
- Yes, another Hispanic, Latina, or Spanish origin

4a. What is your race?
(One or more categories may be selected)

- White
- Black or African American
- American Indian or Alaska Native
- Asian Indian
- Chinese
- Filipino
- Japanese
- Korean
- Vietnamese
- Other Asian
- Native Hawaiian
- Guamanian or Chamorro
- Samoan
- Other Pacific Islander

5. Do you speak a language other than English at home? Yes No

5a. If yes, what is this language? Spanish Other language (Identify) _____

6. How many adults (people 18 and older) live in your home besides you? _____

7. How many children (people 17 and younger) live in your home? _____

7a. What are the ages (in years) of those children?

Child 1: _____ Child 2: _____ Child 3: _____ Child 4: _____

Child 5: _____ Child 6: _____ Child 7: _____ Child 8: _____

7b. If more than 8 children live in your home, please list their ages here: _____

8. Check here if you are homeless or living in a shelter right now:

9. Do you have a job right now? Yes No

9a. If yes, what is your job? _____

9b. 11.b. How many hours (#) do you usually work each week? _____

10. Are you in school right now? Yes No

10a. If yes, are you in: High School GED Training College

Other (please explain) _____

10b. If you are in school, are you: Full time Part time

11. Do you have: A high school diploma A GED Neither

12. Do you have a college degree? Yes No

12a. If yes, what college degrees do you have? (Please check all that apply.)

Associate's Degree (from a community college or other two year college program)

Bachelor's Degree (from a four year college or university)

Yes, other (please explain) _____

13. Please put a check next to any of these things that make it hard for YOU to come to appointments.

- I do not have a car
- The bus or train is hard to use to get to my appointment
- I do not have enough money to pay for a ride to the appointment
- My work hours make it hard to come to appointments
- I do not always have someone I trust to watch my older children
- My spouse/partner/boyfriend does not want me to come to appointments
- Other reason(s) (Please list them below.)

13a. Other reason 1:

13b. Other reason 2:

13c. Other reason 3:

14. What is your relationship status now?

- Married, living with spouse
- Married, not living with spouse
- In a relationship but not living together
- Not in a relationship right now
- Living with a partner

14a. If yes, have you been living together for more than one year? Yes No

15. Have you ever been divorced? Yes No

16. Have you ever been widowed? Yes No

16a. If yes, year spouse died:

17. During the last 12 months, have you been to the dentist and had a dental check-up? Yes No Not Sure

18. Were you using birth control when you became pregnant with this pregnancy? Yes No Sometimes

19. Were you trying to become pregnant? Yes No

20. When you have this baby, do you hope to have a: Vaginal birth Cesarean (c-section) Unsure

21. How many times have you been pregnant before this pregnancy? _____

21a. How many babies did you have who were born alive? _____

22. Did you ever have a baby who was born too early (preterm or "preemie," before 37 weeks)? Yes No

23. If you have had a baby, when was your last baby born (using the following number format: MM/DD/YYYY)?

_____/_____/_____

The following questions address how you have been feeling during the past week (7 days).

Question	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
24. I felt depressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. I felt that everything I did was an effort.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. My sleep was restless.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. I was happy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. I felt lonely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. People were unfriendly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. I enjoyed life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. I felt sad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. I felt that people disliked me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. I could not get "going."	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Over the last 2 weeks (14 days), how often have you been bothered by the following problems?

Question	Not at all	Several days	Over half the days	Nearly every day
34. Feeling nervous, anxious, or on edge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Not being able to stop or control worrying.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Worrying too much about different things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Trouble relaxing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Being so restless that it's hard to sit still.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Becoming easily annoyed or irritable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Feeling afraid as if something awful might happen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

41. If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with other people?

- Not difficult at all
- Somewhat difficult
- Very difficult
- Extremely difficult

Relationships can be hard. Sometimes arguments get out of control. Sometimes a woman might be afraid of her partner, or she might get hurt. The next questions will ask about things like this that might have happened to you.

42. Have you ever been in a relationship where your partner has pushed or slapped you? Yes No

43. Have you ever been in a relationship where your partner threatened you with violence? Yes No

44. Have you ever been in a relationship where your partner has thrown, broken, or punched things? Yes No

If you have a spouse, partner, or boyfriend right now, please answer the following questions.

Question	Disagree strongly	Disagree somewhat	Disagree a little	Agree a little	Agree somewhat	Agree strongly
45. My spouse/partner/boyfriend makes me feel unsafe even in my own home.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. I feel ashamed of the things he does to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. I try not to rock the boat because I am afraid of what he might do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. I feel like I am programmed to react a certain way to him.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. I feel like he keeps me prisoner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50. He makes me feel like I have no control over my life, no power, no protection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

51. If you do smoke cigarettes, how many cigarettes or packs do you smoke on most days?

_____ cigarettes _____ packs of cigarettes I do not smoke cigarettes

52. Which best describes the rules about smoking inside your home now?

- No one is allowed to smoke anywhere inside my home
- Smoking is allowed in some rooms or at some times
- Smoking is permitted anywhere inside my home
- I am homeless or live in a shelter right now

Note: 1 Drink = 12 oz beer (1 regular can) = 12 oz cooler = 5 oz wine = 1 mixed drink (1.5 oz. hard liquor)

53. How many drinks does it take to make you feel high?

- One or 2 drinks
- More than 2 drinks
- I do not drink alcohol

54. Have people annoyed you by criticizing your drinking? Yes No

55. Have you felt you ought to cut down on your drinking? Yes No

56. Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover?
 Yes No

57. Did any of your parents have a problem with drug use? Yes No

58. Does your partner have a problem with drug use? Yes No

59. In the past, have you had problems in your life because of drugs? Yes No

How true were each of these statements for you and your household during the past 12 months (since this time last year)?

60. I worried about whether {my/our} food would run out before {I/we} got money to buy more.
 Often true Sometimes true Never true

61. The food that {I/we} bought just didn't last, and {I/we} didn't have enough money to get more food.
 Often true Sometimes true Never true

62. {I/we} couldn't afford to eat balanced meals.
 Often true Sometimes true Never true

63. Since this time last year, did {you/you or other adults in your household} ever cut the size of your meals or skip meals because there wasn't enough money for food? Yes No

63a. How often did this happen?
 Almost every month Some months but not every month In only 1 or 2 months

64. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?
 Yes No

65. In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?
 Yes No

FOR OFFICE USE ONLY

Completed by:

- Patient on paper
 - With Assistance
- Patient electronically
 - With Assistance
- Healthcare worker in person
- Healthcare worker on the phone
- Other

“The project described was supported by Funding Opportunity Number CMS-IDI-12-001 from the Centers for Medicare & Medicaid Services, Center for Medicare & Medicaid Innovation. The contents of this Intake Form do not necessarily represent the official views of HHS or any of its agencies. This project does not limit a fee-for-service Medicare, Medicaid, or CHIP patient’s freedom to choose a particular health care provider.”

Strong Start for Mothers and Newborns Initiative Third Trimester Survey

Study ID Label: _____

Instructions: Please mark your answer by placing a in the appropriate box with a **black pen**. When appropriate, use numbers (0, 1, 2, 3, etc.) to answer questions.

Correct 😊



Incorrect 😞

[no] or [] or [] or [X]

Your responses are voluntary and will be kept confidential.

Today's Date

____/____/____
MM/DD/YYYY

Estimated Due Date

____/____/____
MM/DD/YYYY

1. How many adults (people 18 and older) live in your home? (Do not count yourself.) _____
2. How many children (people 17 and younger) live in your home? (Do not count yourself.) _____
3. Are you homeless or living in a shelter right now? Yes No Prefer not to answer
4. Please choose the statement that best describes you. (Select one answer.)
- I have never smoked or I stopped smoking before I became pregnant.
 - I stopped smoking when I found out I was pregnant.
 - I have cut down on my smoking since I found out I was pregnant.
 - I smoke about the same as before I found out I was pregnant.
 - Prefer not to answer
5. What is your relationship status now? (Select one answer.)
- Married, living with spouse
 - Married, not living with spouse
 - Living with a partner/boyfriend
 - In a relationship but not living together
 - Not in a relationship
 - Prefer not to answer
6. Do you have a spouse, partner, or boyfriend right now? Yes No Unsure

If you have a spouse, partner, or boyfriend right now, please select one answer the following questions.

Question	Disagree strongly	Disagree somewhat	Disagree a little	Agree a little	Agree somewhat	Agree strongly	Prefer not to answer
6a. My spouse/partner/boyfriend makes me feel unsafe even in my own home.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6b. I feel ashamed of the things he does to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6c. I try not to rock the boat (cause trouble) because I am afraid of what he might do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6d. I feel like I am programmed to react a certain way to him.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6e. I feel like he keeps me prisoner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6f. He makes me feel like I have no control over my life, no power, no protection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Where do you plan to deliver this baby? <input type="checkbox"/> Hospital <input type="checkbox"/> Birth Center <input type="checkbox"/> Home <input type="checkbox"/> Unsure							
8. Do you plan to have a support person with you during labor? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure							
8a. If yes, select all that apply: <input type="checkbox"/> Doula <input type="checkbox"/> Spouse/Partner/Boyfriend <input type="checkbox"/> Other family member <input type="checkbox"/> Someone else (specify) _____							
9. Do you plan to take something for pain during labor? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure							
9a. If yes, do you plan to get an Epidural? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure							
10. How do you plan to deliver this baby? <input type="checkbox"/> Vaginally <input type="checkbox"/> Cesarean Section (C-Section) <input type="checkbox"/> Unsure							
11. Have any of your prenatal care providers suggested scheduling your delivery prior to your due date? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure							
12. How do you plan to feed your baby in the first few weeks? <input type="checkbox"/> Breastfeed only <input type="checkbox"/> Formula feed only <input type="checkbox"/> Both breast and formula feed <input type="checkbox"/> I haven't decided							
13. How would you rate your level of overall satisfaction with the prenatal care you are receiving? Would you say you are:							
Not at all satisfied	Slightly satisfied	Moderately satisfied	Very satisfied	Extremely satisfied			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

Strong Start for Mothers and Newborns Initiative Postpartum Survey

Study ID Label: _____

Instructions: Please mark your answer by placing a ☒ in the appropriate box with a **black pen**. When appropriate, use numbers (0, 1, 2, 3, etc.) to answer questions.

Correct 😊	Incorrect ☹️
☒	[☐ no] or [☒] or [☐] or [☐ X]

Your responses are voluntary and will be kept confidential.

Today's Date _____/_____/_____ MM/DD/YYYY	Delivery Date _____/_____/_____ MM/DD/YYYY
---	--

1. Where did you deliver this baby? Hospital Birth Center Home

Other (please specify) _____

2. Did you have a support person with you during labor? Yes No Unsure

2a. If yes, please specify who supported you during labor. (Select all that apply.)

Doula Spouse/Partner/Boyfriend Other family member

 Someone else (specify) _____

3. Did you have any medicine during labor to help you with pain? Yes No Unsure

3a. If yes, did you receive an Epidural? Yes No Unsure

4. How did you deliver this baby? Vaginally Cesarean Section (C-Section) Refused

5. Did a doctor, nurse, or midwife try to speed up your labor using medicine? Yes No Unsure

6. Did a doctor, nurse, or midwife break your bag of water to start or speed up your labor?
 Yes No Unsure

7. How satisfied were you with your delivery experience? (Select one.)

Not at all satisfied	Slightly satisfied	Moderately satisfied	Very satisfied	Extremely satisfied
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. How would you rate your overall level of satisfaction with the prenatal care you received? (Select one.)

Not at all satisfied	Not at all satisfied	Not at all satisfied	Not at all satisfied	Not at all satisfied
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. What is your relationship status now? (Select one answer.)

- Married, living with spouse
- Married, not living with spouse
- Living with a partner/boyfriend
- In a relationship but not living together
- Not in a relationship
- Prefer not to answer

10. Did you ever breastfeed or pump breast milk to feed your baby after delivery, even for a short period of time?

- Yes
- No
- Prefer not to answer

10a. If yes, are you currently breastfeeding or feeding pumped breast milk to your new baby?

- Yes
- No
- Refused

11. After your new baby was born, did a doctor, nurse, or other health care worker talk with you about using birth control? Yes No Unsure

12. Are you or your spouse/partner/boyfriend doing anything now to keep from getting pregnant?

- Yes
- No
- Unsure

13. If yes, what kind(s) of birth control are you using to keep from getting pregnant? (Select all that apply.)

- Condom or rubber
 - Withdrawal or pulling out
 - Vasectomy or male sterilization
 - Birth Control Pills
 - IUD (for example, Mirena/Paragard)
 - Tubal ligation or female sterilization (Tubes Tied)
 - Spermicidal foam/jelly/cream/film/suppository
 - Hormonal implant or injection (Implanon/Nexplanon)
 - Injection (The Shot/Depo)
 - Rhythm or safe period
 - Breastfeeding
 - Something else (please specify)
-

Strong Start for Mothers and Newborns Exit Data Collection Form

Study ID Label: _____

Instructions: Please mark your answer by placing a ☒ in the appropriate box with a **black pen**.

For statements that ask for a number, please answer with a number only (e.g., 5). Do not include any text with or instead of the numbers (e.g., five, five feet, 5, feet).

Important:

- If you have submitted all Exit Form information electronically** except details regarding enhanced services, please mark the box to the left and skip to Section VII of this form.

Note: For the purposes of this form, past and current pregnancies are defined as follows:

- **Past Pregnancy:** The pregnancy or pregnancies that occurred prior to this Strong Start pregnancy.
- **Current Pregnancy:** The pregnancy during which most recent enrollment in Strong Start occurred.

Participant Information	
14. Today's date	_____/_____/_____ MM/DD/YYYY
15. Date participant enrolled in Strong Start	_____/_____/_____ MM/DD/YYYY
16. Participant's Estimated Date of Delivery (EDD)	_____/_____/_____ MM/DD/YYYY
17. Did the participant stop receiving Strong Start services prior to delivery?	<input type="checkbox"/> Yes <input type="checkbox"/> No
17a. If yes, please select the reason she stopped receiving Strong Start services.	
<input type="checkbox"/> Loss of Medicaid/CHIP eligibility	<input type="checkbox"/> Voluntary withdrawal from the program
<input type="checkbox"/> Move/Relocation	<input type="checkbox"/> Elective pregnancy termination
<input type="checkbox"/> Lost to follow-up	<input type="checkbox"/> Miscarriage/Spontaneous abortion
<input type="checkbox"/> Other (please specify)	

I. Past Pregnancy History and Complications

18. Did the participant have any past pregnancies (pregnancies that occurred prior to this Strong Start pregnancy)?
<input type="checkbox"/> Yes (If yes, continue to question 5a.)
<input type="checkbox"/> No (If no, skip to question 12.)
18a. If yes, how many prior pregnancies did the participant have? _____

Instructions: Please place a ☒ in the appropriate box to indicate if the participant had risk factors from past pregnancies. For previous birth outcomes, indicate the number of times the risk factor occurred.

Risk factors from past pregnancy (pregnancies)

19. Please indicate if participant had any of the following risk factors during a previous pregnancy:

- Preeclampsia or pregnancy-induced hypertension
- Gestational diabetes
- Cervical incompetence
- Placental abnormalities
- Congenital abnormalities of the fetus
- None
- Not known
- Other risk factor(s): _____

Previous birth outcome(s)	Yes	No	Not Known	If yes, number of occurrences
20. Previous preterm birth(s) (20 weeks \geq 36 weeks, 6 days Estimated Gestational Age [EGA])	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
20a. If participant had previous preterm birth(s), please specify the reason(s). If unknown, indicate "Not known." <input type="checkbox"/> Other reason(s): _____				
21. Previous birth(s) less than 2,500 grams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
22. Previous miscarriage(s) (< 20 weeks EGA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
23. Previous elective termination(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
24. Previous stillbirth(s) (fetal death \geq 20 weeks EGA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

II. General Medical Risk Factors

Instructions: Please place a ☒ in the appropriate box to indicate if the participant had any of the risk factors prior to her current pregnancy.

Participant risk factors prior to current pregnancy	Yes	No	Not Known
25. Type I diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Type II diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Hypertension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

III. Risk Factors During Current Pregnancy

Instructions: Please enter the mother's height and weight in the appropriate boxes. Respond in only one type of measurement (e.g., centimeters OR inches; kilograms OR pounds).

Height	Height in Centimeters	OR	Height in Inches
28. Height of mother at first prenatal visit	_____.____		____.____
Weight	Weight in Kilograms	OR	Weight in Pounds
29. Weight of mother at first prenatal visit	____.____		____.____
30. Weight of mother at last prenatal visit	____.____		____.____

Instructions: Place a in the appropriate box to indicate if the participant had a risk factor during her current pregnancy.

Risk factors during current pregnancy	Yes	No	Not Known
31. Urinary tract infection(s) during last 6 months of pregnancy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Cervical incompetence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Placenta previa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Placental abruption	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Gestational diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Pregnancy-related hypertension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Preeclampsia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Syphilis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Human immunodeficiency virus (HIV)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Congenital abnormalities of the fetus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Other risk factor(s): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IV. Delivery Information – Current Pregnancy

Instructions: Please place a ☒ in the appropriate box to indicate the place and method of delivery for the participant.

Place of delivery			
42. Please indicate the type of facility where the participant's delivery occurred.			
<input type="checkbox"/> Hospital	<input type="checkbox"/> Birth center	<input type="checkbox"/> Home birth	<input type="checkbox"/> Other
Method of delivery			
43. Please indicate the method of delivery. (Check all that apply for this pregnancy.)			
<input type="checkbox"/> Vaginal			
<input type="checkbox"/> Cesarean section (C-section)			
If vaginal:			
43a. Was it a vaginal birth after Cesarean (VBAC)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not known
If C-section:			
43b. Was it a repeat C-section?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not known
43c. Was it a scheduled C-section?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not known

Instructions: Please place a ☒ in the appropriate box to indicate whether the participant received the following treatments prior to or during labor.

Treatment prior to or during labor	Yes	No	Not Known
44. Antenatal steroids for impending preterm delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Progesterone injections to prevent preterm birth (e.g., 17P, PI7 or 17-OHP; hydroxyprogesterone caproate)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Vaginal progesterone to prevent preterm birth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Tocolytics to prevent preterm birth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Was the participant's labor induced?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48a. If participant was induced, was Pitocin used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48b. If participant had previous preterm birth(s), please specify the reason(s). If unknown, indicate "Not known."			
<input type="checkbox"/> Not known			
<input type="checkbox"/> Other reason(s):			

V. Delivery Outcomes – Current Pregnancy

Instructions: Please complete the tables below by entering numbers to indicate number of fetuses identified and born. In the second table, please report the weight of all infants born.

Number of fetuses identified and born		Number	
49. How many fetuses were identified?		_____	
50. How many infants were live born?		_____	
51. How many infants were still born?		_____	
52. What was the infant weight at birth (grams or pounds or ounces)? Note: If multiple births, record the weight for each newborn baby.			
	Grams	OR	Pounds and Ounces
52a. Baby #1	____, ____		____ lbs. ____ oz.
52b. Baby # 2 (if multiple births)	____, ____		____ lbs. ____ oz.
52c. Baby #3 (if multiple births)	____, ____		____ lbs. ____ oz.
52d. Baby #4 (if multiple births)	____, ____		____ lbs. ____ oz.

VI. Information on Routine Prenatal and Postpartum Care – Current Pregnancy

Instructions: Please place an in the appropriate box to indicate who provided routine obstetric care to the participant.

Routine prenatal service provider	
53. Please indicate who provided routine obstetric care to the participant. (Select one.)	
<input type="checkbox"/> Obstetrician	<input type="checkbox"/> Licensed Professional Midwife
<input type="checkbox"/> Nurse Practitioner	<input type="checkbox"/> Certified Nurse Midwife/Certified Midwife
<input type="checkbox"/> Family Medicine Physician	<input type="checkbox"/> Other

Instructions: Please list the dates of all routine clinical prenatal AND postpartum follow up visits in the table below. List dates of all routine visits that occurred during the current pregnancy⁴⁵.

	54. Dates of Individual Prenatal and Postpartum Follow-Up Visits (MM/DD/YYYY)	55. Dates of Group Prenatal and Postpartum Follow-Up Visits (MM/DD/YYYY)
Visit 1.	____/____/____	____/____/____
Visit 2.	____/____/____	____/____/____
Visit 3.	____/____/____	____/____/____
Visit 4.	____/____/____	____/____/____
Visit 5.	____/____/____	____/____/____
Visit 6.	____/____/____	____/____/____
Visit 7.	____/____/____	____/____/____
Visit 8.	____/____/____	____/____/____
Visit 9.	____/____/____	____/____/____
Visit 10.	____/____/____	____/____/____
Visit 11.	____/____/____	____/____/____
Visit 12.	____/____/____	____/____/____
Visit 13.	____/____/____	____/____/____
Visit 14.	____/____/____	____/____/____
Visit 15.	____/____/____	____/____/____
Visit 16.	____/____/____	____/____/____
Visit 17.	____/____/____	____/____/____
Visit 18.	____/____/____	____/____/____
Visit 19.	____/____/____	____/____/____
Visit 20.	____/____/____	____/____/____

Or, indicate total number of visits if visit dates are not available.

Totals	41a. Number of individual visits per trimester: First Trimester: _____ Second Trimester: _____ Third Trimester: _____	42a. Number of group visits per trimester: First Trimester: _____ Second Trimester: _____ Third Trimester: _____
--------	--	---

⁴⁵ **For individual visits:** include routine clinical prenatal visits with a physician, midwife, nurse practitioner or similar care provider that occurred during the current pregnancy. **For group visits:** Include group prenatal care visits, such as centering visits only. Do not include specialist visits related to the pregnancy or other medical reasons or “enhanced” services such as group education, peer counseling, or smoking cessation.

VII. Number of Encounters for Enhanced Services

Instructions: Please place an in the appropriate box to indicate whether the participant received an enhanced service. For each enhanced service received, enter the number of encounters that occurred.

Note: An **enhanced** encounter or service is a face-to-face or phone encounter that is **not part of routine clinical prenatal care**. These visits do not need to be funded by Strong Start.

Select “No” if the participant did not receive the service because it was not needed or the service is not offered. Also select “No” if the participant receives the service as part of routine prenatal care. For example, if care coordination is provided for all patients during routine prenatal care visits, and does not involve meeting with a separate individual, select “No.” Select “Yes” only if the service involves an additional encounter.

Do not double count services. For example, if a care coordinator visit includes health education, select only the care coordinator visit. We will understand from our case study work and your operational plan what is encompassed in those visits.

Enhanced encounters	Yes	No	Not Known	If yes, indicate the number of enhanced encounters
56. Care coordinator encounters (e.g., encounters with a social worker, case manager, nurse or community health worker)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
57. Mental health care encounters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
58. Doula encounters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

If all encounters where enhanced services were provided have been counted in question 43 to 45, skip to question 51. Otherwise, continue to question 46.

Enhanced services not counted in questions 43 - 45	Yes	No	Not Known	If yes, indicate the number of enhanced encounters
59. Health education (not centering)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
60. Home visits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
61. Self-care (not centering)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
62. Nutrition counseling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
63. Substance abuse services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
64. Referrals for non-medical services outside of the Strong Start program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
65. Referrals for high risk medical services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

65a. If referred for high-risk services, please indicate type of referral(s).

- Maternal Fetal Specialist
 Pulmonologist
 Endocrinologist
 Cardiologist
 Other

65b. If known, please indicate the number of high-risk encounters the participant had: _____

Thank you for completing the Exit Form.

**APPENDIX C: PARTICIPANT-LEVEL PROCESS EVALUATION
DATA THROUGH QUARTER 1 2015**

TABLE C.1.: ENROLLMENT, RECEIVED FORMS, AND SOCIODEMOGRAPHIC CHARACTERISTICS

Table C.1.1. All Awardees

Data Elements	N or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Assoc.	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm.Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Number of Women Enrolled (Obtained from the Program-Level Program Progress Report)																													
Newly Enrolled in Q1, 2015	N	270	69	694	78	76	161	87	158	65	140	267	102	123	322	280	17	387	191	12	90	127	78	85	124	207	44	71	4325
Total Ever Enrolled through Q1, 2015	N	1375	572	4557	317	602	716	627	774	401	965	1166	575	735	1537	2098	138	1328	843	69	380	588	563	388	378	875	413	567	23547
Number of Women Delivered through Q1, 2015	N	609	399	2174	102	284	344	292	472	156	555	272	297	532	995	957	93	389	382	31	164	229	394	211	255	316	56	259	11219
Forms Received through Q1, 2015																													
Intake Forms Received through Q1, 2015	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Received in Q1, 2014	N	305	108	678	16	199	166	38	167	74	384	241	101	210	578	746	43	247	71	17	52	112	170	116	99	167	38	226	5369
Received in Q2, 2014	N	230	45	598	113	87	138	38	118	48	191	194	45	85	225	271	24	132	76	-	63	85	101	96	18	96	-	62	3191
Received in Q3, 2014	N	226	78	662	79	138	126	62	172	81	106	220	66	89	221	272	18	168	146	-	44	140	90	51	74	222	50	41	3647
Received in Q4, 2014	N	244	56	498	39	119	112	56	99	35	93	255	77	100	195	125	19	313	262	12	61	93	50	43	78	161	47	106	3348
Received in Q1, 2015	N	255	67	406	36	45	157	91	159	23	134	267	92	92	321	252	-	333	167	-	82	111	45	85	110	182	0	72	3600
Received through Q1, 2015 as a percentage of the number of women ever enrolled	%	91.6	61.9	62.4	89.3	97.7	97.6	45.5	92.4	65.1	94.1	100.9	66.3	78.4	100.2	79.4	80.4	89.8	85.6	72.5	79.5	92.0	81.0	100.8	100.3	94.6	33.9	89.4	81.3
Third Trimester Surveys Received through Q1, 2015	N	686	202	1772	170	243	335	179	415	192	373	42	177	312	817	694	42	462	217	+	116	223	210	170	228	236	66	101	8704
Received in Q1, 2014	N	62	-	201	-	12	-	14	55	47	18	0	0	15	94	107	-	-	20	+	-	-	-	16	24	0	-	-	730
Received in Q2, 2014	N	113	37	291	16	64	60	17	88	37	101	0	44	83	161	179	-	40	28	+	-	26	31	25	24	-	26	16	1526
Received in Q3, 2014	N	160	59	455	68	63	98	49	123	40	81	0	41	55	197	156	15	121	53	+	13	65	68	63	39	43	24	31	2186
Received in Q4, 2014	N	176	48	462	42	59	92	45	84	40	108	-	42	66	155	142	11	135	-	+	37	70	48	35	66	81	13	25	2099
Received in Q1, 2015	N	175	52	363	43	45	80	54	65	28	65	34	50	93	210	110	-	160	115	+	54	54	54	31	75	109	0	28	2163
Received through Q1, 2015 as a percentage of the number of women delivered	%	112.6	50.6	81.5	166.7	85.6	97.4	61.3	87.9	123.1	67.2	15.4	59.6	58.6	82.1	72.5	45.2	118.8	56.8	+	70.7	97.4	53.3	80.6	89.4	74.7	117.9	39.0	77.6
Postpartum Surveys Received through Q1, 2015	N	532	127	1441	44	171	328	29	408	128	420	84	114	403	714	572	34	247	183	54	73	157	213	95	159	123	+	77	6949
Received in Q1, 2014	N	25	-	128	-	12	0	-	18	12	77	-	0	53	62	31	-	-	14	0	-	25	0	-	21	-	+	-	507
Received in Q2, 2014	N	54	0	220	0	46	-	-	42	27	52	0	28	80	128	109	-	27	19	0	-	12	30	-	25	-	+	19	964
Received in Q3, 2014	N	121	16	293	11	33	88	-	102	34	86	0	26	72	232	133	-	56	31	0	17	24	57	35	27	16	+	18	1544
Received in Q4, 2014	N	161	24	426	11	29	103	11	112	23	78	33	35	71	158	144	11	84	0	-	12	36	67	27	39	52	+	11	1770
Received in Q1, 2015	N	171	86	374	20	51	128	-	134	32	127	45	25	127	134	155	-	77	119	48	26	60	59	25	47	52	+	28	2164

Data Elements	N or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Assoc.	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm.-Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
		Received through Q1, 2015 as a percentage of the number of women delivered	%	87.4	31.8	66.3	43.1	60.2	95.3	9.9	86.4	82.1	75.7	30.9	38.4	75.8	71.8	59.8	36.6	63.5	47.9	174.2	44.5	68.6	54.1	45.0	62.4	38.9	+
Exit Forms Received through Q1, 2015	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Received in Q1, 2014	N	+	-	169	-	-	0	+	-	0	-	-	+	-	-	36	0	-	0	-	+	-	0	+	-	-	+	-	263
Received in Q2, 2014	N	+	-	125	0	0	0	+	-	0	0	-	+	0	0	-	0	0	0	0	+	-	0	+	0	0	+	-	139
Received in Q3, 2014	N	+	0	388	0	0	0	+	0	0	0	0	+	59	0	43	0	0	-	0	+	11	0	+	0	-	+	0	503
Received in Q4, 2014	N	+	137	610	22	0	47	+	35	-	24	0	+	117	185	288	68	-	68	0	+	141	78	+	133	95	+	0	2056
Received in Q1, 2015	N	+	121	841	36	230	228	+	102	122	173	55	+	153	138	698	-	42	180	31	+	126	68	+	95	42	+	211	3708
Received through Q1, 2015 as a percentage of the number of women delivered	%	+	66.9	98.1	58.8	81.3	79.9	+	29.4	82.7	36.9	23.5	+	62.2	33.3	111.4	77.4	11.8	65.2	125.8	+	125.8	37.1	+	90.2	44.0	+	83.8	59.4
Sociodemographic Characteristics																													
Mother's Age at Intake	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Less than 18 years of age	%	6.7	8.2	3.3	1.4	6.3	6.6	9.8	10.1	1.9	7.7	3.1	13.1	2.1	2.7	9.1	9.9	6.4	4.6	2.0	1.3	5.0	5.9	5.1	7.4	7.9	0	5.5	5.6
Equal to or greater than 18 and less than 35 years of age	%	71.6	86.2	86.2	39.6	83.8	90.1	84.2	79.9	87.7	68.9	82.9	80.8	90.6	92.8	78.5	64.9	82.1	89.1	90	40.1	86.3	88.4	85.2	62.3	75.0	0	84.8	80.7
Equal to or greater than 35 years of age	%	8.4	2.0	6.2	2.1	4.9	3.1	2.1	9.9	3.8	4.1	13.1	5.0	6.4	3.2	3.8	0.9	8.0	5.7	8.0	2.6	8.3	4.4	4.9	8.7	2.7	0	4.9	5.8
Missing	%	13.3	3.7	4.3	56.9	4.9	0.1	3.9	0.1	6.5	19.3	0.9	1.0	0.9	1.2	8.6	24.3	3.4	0.7	0	56	0.4	1.3	4.9	21.6	14.5	100	4.7	7.9
Race and Ethnicity	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Hispanic	%	47.9	15.5	26.7	6.0	43.5	21.2	4.6	83.4	44.8	7.7	60.2	63.3	3.8	3.6	1.0	10.8	32.4	3.2	2.0	54.6	49.9	2.6	32.2	96.0	1.6	1.4	27.2	27.1
Non-Hispanic white	%	4.4	12.1	56	19.8	10.9	29.8	4.2	2.0	30.7	13.5	5.4	13.4	24.8	83.4	8.3	24.3	1.1	75.2	8.0	24.5	11.8	16.2	43.2	1.1	34.4	2.1	18.5	27.6
Non-Hispanic black	%	44.1	65.5	11.1	71.0	37.8	44.5	89.5	13.6	13.4	71.8	23.2	20.5	69.3	11.2	87.9	7.2	61.4	15.8	88.0	13.2	33.6	80.5	14.3	0.3	60.1	78.6	39.4	39.8
Non-Hispanic Asian	%	0.8	1.1	1.1	1.1	1.7	0.4	0.7	0.4	2.7	1.9	5.6	0.5	0	0.5	0.2	0	0.8	1.2	0	0	0.9	0	1.0	0	1.2	0	3.7	1.2
Non-Hispanic other	%	0.6	0.3	0.6	0	1.9	0.6	0	0.3	3.4	1.3	1.4	0.8	0.2	0.2	0.2	37.8	0.6	0.7	0	0.3	1.1	0.2	0	0	1.0	0	0.6	0.9
Non-Hispanic multiple race	%	0.4	4.8	3.5	2.1	1.5	3.4	1.1	0	3.4	3.4	1.3	1.0	1.2	0.6	0.4	19.8	1.8	2.2	2.0	0.7	0	0.4	3.6	0	1.3	0	3.0	1.8
Missing	%	1.8	0.6	0.9	0	2.7	0.1	0	0.4	1.5	0.3	3.1	0.5	0.7	0.5	2.0	0	1.8	1.7	0	6.6	2.6	0	5.6	2.6	0.4	17.9	7.5	1.7
Ethnicity	N	604	55	758	17	256	148	13	596	117	70	708	241	22	55	16	12	387	23	-	165	270	12	126	364	13	-	138	5189
Mexican, Mexican American, Chicana	%	84.9	30.9	54.0	23.5	16.4	14.2	30.8	62.9	70.1	21.4	71.8	92.1	54.5	70.9	31.2	100	8.5	21.7	-	49.7	65.2	66.7	73.0	0	61.5	-	23.2	52.4
Puerto Rican	%	2.5	52.7	12.5	0	21.5	44.6	15.4	0.3	0	20.0	0.4	1.7	9.1	3.6	12.5	0	1.3	0	-	0.6	0.4	0	2.4	95.9	15.4	-	10.9	12.9
Cuban	%	0.3	1.8	1.6	5.9	1.6	13.5	15.4	0.3	0	4.3	0.4	0.4	4.5	0	0	0	0.3	0	-	0.6	0.4	8.3	0.8	0	7.7	-	1.4	1.2
Other Hispanic, Latina, or Spanish origin	%	10.6	12.7	29.8	70.6	59.0	22.3	38.5	36.4	27.4	54.3	26.3	5.4	31.8	23.6	56.2	0	89.7	78.3	-	48.5	33.7	16.7	23.0	3.0	7.7	-	63.0	32.4
Multiple Hispanic, Latina, or Spanish origins	%	1.7	1.8	2.1	0	1.6	5.4	0	0	2.6	0	1.1	0.4	0	1.8	0	0	0.3	0	-	0.6	0.4	8.3	0.8	1.1	7.7	-	1.4	1.2
Living in Shelter or Homeless at Intake	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155

Data Elements	N or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Assoc.	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm.-Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Yes	%	0.8	1.4	0.7	1.1	1.5	2.4	0.7	0.4	1.1	1.1	1.1	0.8	1.9	0.6	1.9	0.9	2.4	1.4	2.0	0.7	2.6	2.0	4.6	3.4	1.2	0	1.8	1.4
Missing	%	99.2	98.6	99.3	98.9	98.5	97.6	99.3	99.6	98.9	98.9	99.2	98.1	99.4	98.1	99.1	97.6	98.6	98	99.3	97.4	98	95.4	96.6	98.8	100	98.2	98.6	
Employed at Intake	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Yes	%	37.1	37.3	39.9	44.5	40.5	38.9	41.1	24.1	34.5	37.9	43.8	32.8	40.5	38.2	35.7	45.9	39.7	45.2	32	38.1	36	37.9	34.8	29.8	38.4	21.4	35.5	38
No	%	61.7	61.3	58.9	54.8	58	60.7	57.2	75.4	64.4	61.9	54.4	66.7	59.5	61.6	62.4	54.1	59.3	53.6	68	54.6	63.2	61.8	59.8	68.3	58.6	57.1	43.2	60
Missing	%	1.1	1.4	1.2	0.7	1.5	0.4	1.8	0.6	1.1	0.2	1.9	0.5	0	0.1	1.9	0	0.9	1.2	0	7.3	0.7	0.2	5.4	1.8	3.0	21.4	21.3	2.0
Education Level at Intake	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Less than high school	%	27	22	13.8	21.2	14.5	31.8	24.2	59.6	24.1	29.4	24.2	38.1	22.2	22.3	16.8	13.5	29.0	13.0	24.0	22.5	28.8	26.5	0	8.7	26	16.4	16.8	22.7
High school graduate or GED	%	43.1	59.6	52.1	60.8	52.7	46.2	55.8	27.4	55.6	59	45.5	44.6	62	61.9	51.1	50.5	48.1	65.9	62.0	41.4	39.6	56.4	47.3	34.3	55.6	46.4	37.5	50.7
Bachelor's degree	%	1.9	2.5	10.4	3.2	4.1	1.0	2.8	0.3	2.3	2.3	4.8	0.8	3.3	3.4	1.3	2.7	3.0	5.5	2.0	1.0	1.8	2.4	3.6	6.3	1.1	0	5.9	3.9
Other college degree(s)	%	6.1	5.7	13	8.2	7.5	8.4	7.8	0.2	7.7	3.8	4.5	3.1	7.8	7.2	7.1	16.2	4.1	8.6	4.0	6.6	2.5	5.7	6.9	24.3	5.9	2.1	6.7	7.3
Missing	%	21.9	10.2	10.7	6.7	21.3	12.6	9.5	12.4	10.3	5.5	21.1	13.4	4.7	5.1	23.6	17.1	15.8	6.9	8.0	28.5	27.2	9.0	42.2	26.4	11.5	35.0	33.1	15.4
Relationship Status at Intake	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Married, living with spouse	%	19.2	10.7	42.4	11.7	16.2	14.3	9.5	28.8	21.8	10.8	21.3	13.6	14.8	25.6	7.6	29.7	14.6	27.3	2.0	14.6	28.7	10.5	31.2	19.0	12.3	5.0	18.9	21.2
Married, not living with spouse	%	1.8	1.7	1.8	2.1	3.4	1.4	1.4	2.1	2.3	2.1	2.5	1.3	2.4	1.2	2.4	0	1.9	0.8	6.0	1.3	0.7	1.5	0.8	1.8	3.5	0.7	3.0	1.9
Living with a partner	%	31.1	31.6	32.4	32.9	28.4	34.6	30.9	31.3	44.1	34.5	34.2	36.5	26.6	32.0	19.7	36.9	30.4	35.6	30.0	37.7	33.5	23.9	36.1	45.9	25.6	10.0	26.4	31.0
In a relationship but not living together	%	30.0	35.0	11.9	32.9	28.9	30.3	29.8	19.4	18.4	29.7	30.6	30.4	40.8	24.8	40.5	18.0	30.7	20.8	26.0	20.5	22.6	41.4	15.1	17.9	30.3	23.6	19.7	26.4
Not in a relationship right now	%	16.1	16.7	10.3	17.7	18.2	19.2	26.0	17.6	12.3	21.4	10.5	17.3	15.5	15.8	23.8	12.6	19.8	14.8	36.0	21.5	12.9	21.5	11.3	12.9	23.3	10.7	14.8	16.6
Missing	%	1.7	4.2	1.1	2.8	4.9	0.1	2.5	0.7	1.1	1.5	0.8	0.8	0	0.5	6.0	2.7	2.6	0.7	0	4.3	1.7	1.1	5.6	2.4	5.0	50.0	17.2	2.9

Notes: Gray cells labeled with a plus symbol indicate that fewer than 25 forms had been received during the reporting period. Statistics were calculated only if there were at least 25 forms received. Yellow cells labeled with a dash symbol indicate that between 0 and 11 responses had been received during the reporting period. Statistics were only calculated for items with at least 11 responses. Rows labeled with an "N" indicate the number of observations from which percentages have been calculated.

Table C.1.2. By Strong Start Approach

Data Elements	N or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Number of Women Enrolled (Obtained from the Program-Level Program Progress Report)					
Newly Enrolled in Q1, 2015	N	739	948	2638	4325
Total Ever Enrolled through Q1, 2015	N	4739	5576	13232	23547
Number of Women Delivered through Q1, 2015	N	2275	2755	6189	11219
Forms Received through Q1, 2015					
Intake Forms Received through Q1, 2015	N	2993	4401	11761	19155
Received in Q1, 2014	N	737	1228	3404	5369
Received in Q2, 2014	N	615	721	1855	3191
Received in Q3, 2014	N	688	924	2035	3647
Received in Q4, 2014	N	514	773	2061	3348
Received in Q1, 2015	N	439	755	2406	3600
Received through Q1, 2015 as a percentage of the number of women ever enrolled	%	63.2	78.9	88.9	81.3
Third Trimester Surveys Received through Q1, 2015	N	1876	2145	4683	8704
Received in Q1, 2014	N	203	186	341	730
Received in Q2, 2014	N	323	365	838	1526
Received in Q3, 2014	N	482	615	1089	2186
Received in Q4, 2014	N	480	512	1107	2099
Received in Q1, 2015	N	388	467	1308	2163
Received through Q1, 2015 as a percentage of the number of women delivered	%	82.5	77.9	75.7	77.6
Postpartum Surveys Received through Q1, 2015	N	1533	1416	4000	6949
Received in Q1, 2014	N	130	74	303	507
Received in Q2, 2014	N	239	193	532	964
Received in Q3, 2014	N	314	306	924	1544
Received in Q4, 2014	N	451	342	977	1770
Received in Q1, 2015	N	399	501	1264	2164
Received through Q1, 2015 as a percentage of the number of women delivered	%	67.4	51.4	64.6	61.9
Exit Forms Received through Q1, 2015	N	2133	1433	3103	6669
Received in Q1, 2014	N	169	28	66	263
Received in Q2, 2014	N	125	5	9	139
Received in Q3, 2014	N	388	0	115	503
Received in Q4, 2014	N	610	430	1016	2056
Received in Q1, 2015	N	841	970	1897	3708
Received through Q1, 2015, 2014 as a percentage of the number of women delivered	%	93.8	52.0	50.1	59.4
Sociodemographic Characteristics					
Mother's Age at Intake	N	2993	4401	11761	19155
Less than 18 years of age	%	3.4	6.7	5.8	5.6
Equal to or greater than 18 and less than 35 years of age	%	86.1	75.0	81.4	80.7
Equal to or greater than 35 years of age	%	6.2	4.9	6.0	5.8
Missing	%	4.3	13.4	6.8	7.9
Race and Ethnicity	N	2993	4401	11761	19155
Hispanic	%	25.7	39.2	22.9	27.1
Non-Hispanic white	%	53.3	13.7	26.2	27.6
Non-Hispanic black	%	14.8	39.2	46.3	39.8
Non-Hispanic Asian	%	1.1	1.2	1.2	1.2

Data Elements	N or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Non-Hispanic other	%	0.6	1.6	0.7	0.9
Non-Hispanic multiple race	%	3.6	2.3	1.2	1.8
Missing	%	0.9	2.8	1.5	1.7
Ethnicity	N	770	1724	2695	5189
Mexican, Mexican American, Chicana	%	53.4	38.8	60.7	52.4
Puerto Rican	%	12.7	26.4	4.2	12.9
Cuban	%	1.6	0.8	1.3	1.2
Other Hispanic, Latina, or Spanish origin	%	30.3	33.2	32.5	32.4
Multiple Hispanic, Latina, or Spanish origins	%	2.1	0.9	1.2	1.2
Living in Shelter or Homeless at Intake	N	2993	4401	11761	19155
Yes	%	1.1	1.7	1.4	1.4
Missing	%	98.9	98.3	98.6	98.6
Employed at Intake	N	2993	4401	11761	19155
Yes	%	39.7	34.6	38.8	38.0
No	%	59.1	60.9	60.0	60.0
Missing	%	1.2	4.5	1.2	2.0
Education Level at Intake	N	2993	4401	11761	19155
Less than high school	%	14.3	23.7	24.5	22.7
High school graduate or GED	%	52.3	46.2	52.0	50.7
Bachelor's degree	%	10.1	3.1	2.5	3.9
Other college degree(s)	%	12.7	7.2	6.0	7.3
Missing	%	10.7	19.8	15	15.4
Relationship Status at Intake	N	2993	4401	11761	19155
Married, living with spouse	%	40.7	18.6	17.2	21.2
Married, not living with spouse	%	1.7	2.1	1.9	1.9
Living with a partner	%	32.2	31.3	30.6	31.0
In a relationship but not living together	%	12.9	24.6	30.5	26.4
Not in a relationship right now	%	11.1	17.0	17.8	16.6
Missing	%	1.3	6.4	2.0	2.9

Note: Rows labeled with an "N" indicate the number of observations from which percentages have been calculated.

TABLE C.2.: CORE OUTCOMES: PARTICIPANT VISITS, ENCOUNTERS, AND SERVICES; BIRTHS; DELIVERY METHOD; BIRTH OUTCOMES; AND SATISFACTION

Table C.2.1. All Awardees

Data Elements	N	Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep. of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Assoc.	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Participant Visits, Encounters, and Services																														
Total Number of Exit Forms with Valid Visit Information	N	+	265	2128	-	191	192	+	103	127	192	-	+	318	304	918	68	36	235	28	+	244	135	+	230	120	+	52	5900	
Average number of individual prenatal visits per participant	Mean	+	4.5	10.7	-	5.5	11.1	+	5.0	3.6	8.8	-	+	10.8	10.5	9.9	3.1	6.5	9.4	0	+	5.6	12.2	+	3.6	7.5	+	1.5	9.0	
Average number of group prenatal visits per participant	Mean	+	5.2	0	-	6.5	0	+	6.7	6.6	0	-	+	0.4	0.1	0	4.7	2.2	0	0	+	0	0	+	7.9	1.0	+	0.9	1.1	
Total Number of Exit Forms with Valid Enhanced Encounter Information	N	+	58	1886	-	117	275	+	68	19	172	63	+	328	247	701	16	24	241	39	+	235	140	+	-	98	+	-	4752	
Average number of enhanced encounters per participant	Mean	+	2.5	4.0	-	1.5	7.3	+	2.8	1.1	6.4	1.6	+	11.1	4.0	2.8	4.9	2.6	5.5	1.2	+	4.0	1.6	+	-	1.9	+	-	4.4	
Total Number of Exit Forms with Valid Enhanced Services Information	N	+	131	625	-	158	-	+	11	-	25	-	+	64	20	743	-	11	122	39	+	72	131	+	22	58	+	-	2246	
Average number of enhanced services per participant	Mean	+	1.1	1.6	-	2.2	-	+	1.4	-	3.7	-	+	1.3	1.5	10.6	-	2.1	5.8	8.3	+	4.1	1.7	+	1.0	1.0	+	-	5.0	
Births⁴⁵																														
Total Number of Exit Forms with Valid Birth Information	N	+	264	2125	30	230	219	+	102	120	194	42	+	323	275	928	60	37	218	+	+	280	136	+	214	122	+	37	5968	
Number of Babies Born	N	+	266	2128	31	232	227	+	105	121	196	43	+	334	277	953	60	37	220	+	+	284	138	+	226	127	+	37	6054	
Live infants	%	+	91.4	99.4	96.8	90.5	86.8	+	100	98.3	98.5	95.3	+	96.7	98.6	94.2	98.3	100	99.5	+	+	76.8	96.4	+	94.2	98.4	+	237.8	97.0	
	N	+	243	2115	30	210	197	+	105	119	193	41	+	323	273	898	59	37	219	+	+	218	133	+	213	125	+	88	5872	
Stillborn infants	%	+	-	0.5	-	-	-	+	-	-	-	-	+	-	-	1.6	-	-	-	+	+	-	-	+	6.2	-	+	-	1.2	
	N	+	-	11	-	-	-	+	-	-	-	-	+	-	-	15	-	-	-	+	+	-	-	+	14	-	+	-	72	
Birth status missing	%	+	7.5	-	-	9.5	12.3	+	-	-	-	-	+	-	-	5.4	-	-	-	+	+	23.2	-	+	-	-	+	-	3.6	
	N	+	20	-	-	22	28	+	-	-	-	-	+	-	-	51	-	-	-	+	+	66	-	+	-	-	+	-	217	
Delivery Method																														
Planned Delivery Method at Third Trimester	N	686	202	1772	170	243	335	179	415	192	373	42	177	312	817	694	42	462	217	24	116	223	210	170	228	236	66	101	8704	
Vaginal delivery	%	80.9	77.7	95.1	84.1	84	75.5	84.9	91.6	80.2	79.1	85.7	90.4	75.6	83.0	71.5	83.3	88.7	81.6	83.3	78.4	79.8	83.8	84.1	68	72.5	83.3	80.2	83.6	
C-Section	%	10.1	9.9	2.1	7.1	6.2	20	4.5	5.5	7.3	15.8	7.1	6.8	17.6	13.5	17.0	7.1	5.2	15.2	16.7	14.7	11.2	8.6	7.6	17.5	16.9	9.1	4.0	9.8	

⁴⁵ The percentage of live births, stillborns and those with missing birth status, in many cases, sum to over 100%. This is possibly due to data quality issues with the number of reported live fetuses.

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	Healthinsight of Nevada	Johns Hopkins University	Los Angeles County Dep. of Health Services	Marricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Assoc.	Oklahoma Health Care Authority	Providence Health Frndtn. of Providence Hosp.	Signature Medical Group	St. John Comm, Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Unsure	%	7.7	3.0	1.3	6.5	3.3	3.6	6.1	2.9	7.8	4.6	7.1	2.8	5.8	2.9	8.8	7.1	3.7	1.4	0	6.0	4.0	7.6	4.7	11.8	6.8	3.0	1.0	4.5
Missing	%	1.3	9.4	1.5	2.4	6.6	0.9	4.5	0	4.7	0.5	0	0	1.0	0.6	2.7	2.4	2.4	1.8	0	0.9	4.9	0	3.5	2.6	3.8	4.5	14.9	2.2
Actual Delivery Method from Exit Data	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Vaginal delivery	%	+	67.0	87.3	41.7	58.9	40.7	+	58.3	66.7	65.4	45.3	+	60.1	50.5	49.0	56.9	54.3	57.0	38.5	+	50.0	63.7	+	45.7	53.2	+	1.8	62.7
C-Section	%	+	24.7	12.4	8.3	32.0	24.4	+	14.4	25.6	27.8	18.8	+	36.3	36.3	28.9	25.0	26.1	29.3	20.5	+	25.0	29.5	+	47.0	34.5	+	0.5	23
Vaginal and C-Section	%	+	0	0	0	0	0	+	0	0	0	0	+	0	0	0	0	0	0.4	0	+	0	0	+	0	0	+	0	0
Missing	%	+	8.2	0.2	50.0	9.1	34.9	+	27.3	7.8	6.8	35.9	+	3.6	13.3	22.1	18.1	19.6	13.3	41.0	+	25.0	6.8	+	7.4	12.2	+	97.7	14.3
Planned Delivery Method at Third Trimester From Linked Data*	N	+	90	1223	25	98	131	+	72	107	104	+	+	172	169	359	22	31	87	+	+	139	66	+	146	58	+	+	3109
Vaginal delivery	%	+	92.2	96.7	88	92.9	80.2	+	88.9	86	76.9	+	+	76.2	84.6	74.1	77.3	96.8	82.8	+	+	82.0	90.9	+	66.4	82.8	+	+	87.1
C-Section	%	+	5.6	2.0	8.0	5.1	17.6	+	6.9	6.5	18.3	+	+	19.8	11.8	19.5	13.6	3.2	14.9	+	+	14.4	4.5	+	19.9	10.3	+	+	9.3
Unsure	%	+	2.2	1.3	4.0	2.0	2.3	+	4.2	7.5	4.8	+	+	4.1	3.6	6.4	9.1	0	2.3	+	+	3.6	4.5	+	13.7	6.9	+	+	3.6
Missing	%	+	0	0	0	0	0	+	0	0	0	+	+	0	0	0	0	0	0	+	+	0	0	+	0	0	+	+	0
Actual Delivery Method From Linked Data*	N	+	90	1223	25	98	131	+	72	107	104	+	+	172	169	359	22	31	87	+	+	139	66	+	146	58	+	+	3109
Vaginal delivery	%	+	77.8	87.9	84	64.3	64.1	+	83.3	73.8	64.4	+	+	63.4	66.9	63.0	54.5	71.0	66.7	+	+	65.5	72.7	+	48.6	63.8	+	+	74.4
C-Section	%	+	22.2	12.1	16.0	35.7	35.9	+	16.7	26.2	35.6	+	+	36.6	33.1	37.0	45.5	29.0	33.3	+	+	34.5	27.3	+	51.4	36.2	+	+	25.6
Vaginal and C-Section	%	+	0	0	0	0	0	+	0	0	0	+	+	0	0	0	0	0	0	+	+	0	0	+	0	0	+	+	0
Missing	%	+	0	0	0	0	0	+	0	0	0	+	+	0	0	0	0	0	0	+	+	0	0	+	0	0	+	+	0
Women Who Had Vaginal Birth as a Percentage of Women Who Planned to Deliver Vaginally	%	+	84.4	90.9	95.5	69.2	79.9	+	93.7	85.8	83.7	+	+	83.2	79.1	85.0	70.5	73.3	80.6	+	+	79.9	80.0	+	73.2	77.1	+	+	85.4
Women Who Had C-Section as a Percentage of Women Who Planned to Have a C-Section ⁴⁶	%	+	396.4	605.0	200.0	700.0	204.0	+	242.0	403.1	194.5	+	+	184.8	280.5	189.7	334.6	906.3	223.5	+	+	239.6	606.7	+	258.3	351.5	+	+	275.3
VBAC	N	+	37	90	-	18	36	+	-	12	33	-	-	76	21	117	-	-	42	+	+	46	23	+	61	22	+	-	669
Yes	%	+	32.4	30.0	-	11.1	19.4	+	-	25.0	21.2	-	+	17.1	14.3	8.5	-	-	7.1	+	+	13.0	26.1	+	11.5	9.1	+	-	17.5
No	%	+	0	0	-	0	0	+	-	0	0	-	+	0	0	0	-	-	2.4	+	+	0	0	+	0	0	+	-	0.1
Not known	%	+	0	0	-	0	0	+	-	0	0	-	+	0	0	0	-	-	0	+	+	0	0	+	0	0	+	-	0
Missing	%	+	67.6	70.0	-	88.9	80.6	+	-	75.0	78.8	-	+	82.9	85.7	91.5	-	-	90.5	+	+	87.0	73.9	+	88.5	90.9	+	-	82.4
Repeat C-Section	N	+	37	90	-	18	36	+	-	12	33	-	+	76	21	117	-	-	42	+	+	46	23	+	61	22	+	-	669
Yes	%	+	67.6	70.0	-	88.9	80.6	+	-	75.0	78.8	-	+	82.9	85.7	91.5	-	-	92.9	+	+	87.0	73.9	+	88.5	90.9	+	-	82.5

⁴⁶ The denominator for this row is the number of women who planned to have a C-section based on their Third Trimester Survey, and the numerator is the number of women who had a C-section. Given the prevalence of unplanned C-sections, we expect this to be above 100% in most cases.

Data Elements	N, Mean or %																													
	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	Healthinsight of Nevada	Johns Hopkins University	Los Angeles County Dep. of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Assoc.	Oklahoma Health Care Authority	Providence Health Frndtn. of Providence Hosp.	Signature Medical Group	St. John Comm, Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total		
No	%	+	0	0	-	0	0	+		0	0	-	+	0	0	0	-	-	0	+	+	0	0	+	0	0	+	-	0	
Not known	%	+	0	0	-	0	0	+		0	0	-	+	0	0	0	-	-	0	+	+	0	0	+	0	0	+	-	0	
Missing	%	+	32.4	30.0	-	11.1	19.4	+		25.0	21.2	-	+	17.1	14.3	8.5	-	-	7.1	+	+	13.0	26.1	+	11.5	9.1	+	-	17.5	
Scheduled C-Section	N	+	66	265	-	74	67	+	20	33	57	12	+	120	120	308	18	12	74	+	+	72	43	+	108	48	+	-	1533	
Yes	%	+	39.4	0	-	20.3	25.4	+	20.0	39.4	31.6	8.3	+	43.3	12.5	25.0	27.8	8.3	51.4	+	+	36.1	32.6	+	57.4	27.1	+	-	26.4	
No	%	+	51.5	0	-	77.0	34.3	+	65.0	60.6	61.4	91.7	+	52.5	14.2	18.5	44.4	50.0	44.6	+	+	25.0	65.1	+	37.0	64.6	+	-	32.6	
Not known	%	+	4.5	100	-	2.7	38.8	+	15.0	0	0	0	+	1.7	4.2	48.7	27.8	41.7	2.7	+	+	34.7	0	+	4.6	0	+	-	32.6	
Missing	%	+	4.5	0	-	0	1.5	+	0	0	0	7.0	0	+	2.5	69.2	7.8	0	0	1.4	+	+	4.2	2.3	+	0.9	8.3	+	-	8.5
Birth Outcomes: Estimated Gestational Age (EGA) and Birth Weight																														
Total Number of Exit Forms with Valid Birth Outcomes Information	N	+	241	2112	29	208	190	+	102	118	191	40	+	312	271	875	59	37	217	26	+	214	132	+	205	120	+	88	5793	
Number of Live Births for EGA	N	+	243	2115	30	210	197	+	105	119	193	41	+	323	273	898	59	37	219	27	+	218	133	+	213	125	+	88	5872	
Preterm Births, <37 weeks EGA	%	+	10.3	5.3	0	7.1	23.9	+	19.0	-	21.2	0	+	25.1	10.6	17.6	-	-	8.2	-	+	14.2	20.3	+	17.4	28.0	+	-	12.0	
	N	+	25	112	0	15	47	+	20	-	41	0	+	81	29	158	-	-	18	-	+	31	27	+	37	35	+	-	704	
Non-Preterm Births, ≥37 weeks EGA	%	+	84.0	94.3	0	83.3	76.1	+	80.0	88.2	75.6	0	+	73.7	84.6	68.2	88.1	83.8	86.8	85.2	+	84.4	78.9	+	53.1	70.4	+	37.5	81.1	
	N	+	204	1994	0	175	150	+	84	105	146	0	+	238	231	612	52	31	190	23	+	184	105	+	113	88	+	33	4762	
Early Term Births, 37 to 38 weeks, 6 days EGA	%	+	28.4	20.4	0	19.5	32.0	+	28.6	21.0	30.1	0	+	33.7	17.6	25.1	-	-	21.9	-	+	22.5	27.8	+	25.8	28.8	+	-	23.1	
	N	+	69	431	0	41	63	+	30	25	58	0	+	109	48	225	-	-	48	-	+	49	37	+	55	36	+	-	1358	
Missing EGA	%	+	5.8	-	100	9.5	0	+	-	-	-	100	+	-	4.8	14.3	-	-	5.0	0	+	-	-	+	29.6	-	+	55.7	6.9	
	N	+	14	-	30	20	0	+	-	-	-	41	+	-	13	128	-	-	11	0	+	-	-	+	63	-	+	49	406	
Number of Live Births for Birth Weight	N	+	243	2115	30	210	197	+	105	119	193	41	+	323	273	898	59	37	219	27	+	218	133	+	213	125	+	88	5872	
Low Birth Weight, <2500 grams	%	+	10.3	3.5	-	8.1	21.3	+	-	10.1	19.7	-	+	22.9	7.0	14.7	-	-	7.3	-	+	11.9	24.1	+	22.5	22.4	+	12.5	10.8	
	N	+	25	75	-	17	42	+	-	12	38	-	+	74	19	132	-	-	16	-	+	26	32	+	48	28	+	11	634	
Not Low Birth Weight, ≥2500 grams	%	+	90.9	85.6	73.3	90.5	75.6	+	89.6	89.9	79.7	87.8	+	76.2	70.7	73.9	94.9	81.1	90.4	70.4	+	84.9	75.9	+	80.3	79.2	+	84.1	82.1	
	N	+	221	1810	22	190	149	+	94	107	154	36	+	246	193	663	56	30	198	19	+	185	101	+	171	99	+	74	4822	
Missing	%	+	-	11.3	-	-	-	+	-	0	-	0	+	-	22.3	11.7	0	0	-	-	+	-	-	+	-	0	+	-	7.7	
	N	+	-	240	-	-	-	+	-	0	-	0	+	-	61	105	0	0	-	-	+	-	-	+	-	0	+	-	450	
Satisfaction																														
Satisfaction with Prenatal Care at Third Trimester	N	686	202	1772	170	243	335	179	415	192	373	42	177	312	817	694	42	462	217	24	116	223	210	170	228	236	66	101	8704	
Not at all satisfied	%	1.0	0.5	0	0.6	1.2	0.9	0.6	0	0	0.3	2.4	0	0	0.4	0.3	0	0	0	8.3	0.9	0.4	0	0.6	0.4	1.3	0	2.0	0.4	
Slightly satisfied	%	1.6	1.5	0.5	1.8	1.2	2.4	0.6	0.5	1.6	2.1	0	0	1.9	0.7	1.4	2.4	2.8	0.5	4.2	3.4	0	1.4	0	1.8	1.3	0	0	1.2	
Moderately satisfied	%	7.3	5.0	3.3	5.3	4.1	10.1	6.7	2.4	6.8	6.2	4.8	3.4	7.4	6.2	8.2	4.8	10.2	2.8	12.5	10.3	5.4	11.4	4.1	3.9	7.6	3.0	7.9	6.0	
Very satisfied	%	47.2	36.6	31.1	25.3	45.7	36.1	39.1	48.0	39.6	44.0	64.3	18.6	54.5	39.5	34.4	28.6	41.8	16.1	37.5	43.1	42.6	41.9	42.4	32.0	33.1	34.8	34.7	37.8	
Extremely satisfied	%	41.7	46.5	63.3	64.1	39.1	48.7	46.9	48.9	47.9	46.4	28.6	76.8	35.3	52.3	53.7	61.9	42.4	77.4	37.5	39.7	43.5	45.2	48.8	58.8	53.4	60.6	46.5	52.2	
Missing	%	1.2	9.9	1.7	2.9	8.6	1.8	6.1	0.2	4.2	1.1	0	1.1	1.0	0.9	1.9	2.4	2.8	3.2	0	2.6	8.1	0	4.1	3.1	3.4	1.5	8.9	2.5	

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep. of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Assoc.	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm, Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Satisfaction with Delivery Experience at Postpartum	N	532	127	1441	44	171	328	29	408	128	420	84	114	403	714	572	34	247	183	54	73	157	213	95	159	123	+	77	6949
Not at all satisfied	%	4.1	0	1.9	2.3	0.6	1.2	3.4	0.2	0	1.4	3.6	2.6	1.7	1.1	1.6	0	2.4	1.1	3.7	2.7	1.3	3.3	3.2	9.4	0.8	+	9.1	2.0
Slightly satisfied	%	3.0	0.8	2.9	2.3	4.1	4.0	0	2.2	1.6	3.3	3.6	0	1.0	1.3	2.1	2.9	6.1	0	0	2.7	1.9	6.6	6.3	10.7	4.1	+	24.7	3.1
Moderately satisfied	%	15.8	5.5	9.7	4.5	19.3	9.8	20.7	7.4	10.2	6.4	15.5	4.4	11.4	7.6	8.6	11.8	18.2	6.0	3.7	21.9	5.1	11.3	7.4	12.6	9.8	+	3.9	10.0
Very satisfied	%	44.0	23.6	27.8	22.7	41.5	29.9	31.0	33.8	46.1	31.2	52.4	37.7	39.7	41.0	30.4	44.1	36.8	25.7	3.7	37.0	38.2	38.5	50.5	32.7	22.8	+	32.5	34.3
Extremely satisfied	%	26.1	14.2	52.1	54.5	21.6	24.1	41.4	18.6	41.4	31.0	13.1	53.5	23.3	48.3	49.1	41.2	33.6	60.1	3.7	34.2	34.4	34.7	30.5	34.6	30.9	+	23.4	37.7
Missing	%	7.0	55.9	5.5	13.6	12.9	31.1	3.4	37.7	0.8	26.7	11.9	1.8	22.8	0.7	8.2	0	2.8	7.1	85.2	1.4	19.1	5.6	2.1	0	31.7	+	6.5	12.9

Notes: Gray cells labeled with a plus symbol indicate that fewer than 25 forms had been received during the reporting period. Statistics were calculated only if there were at least 25 forms received.

Yellow cells labeled with a dash symbol indicate that between 0 and 11 responses had been received during the reporting period. Statistics were only calculated for items with at least 11 responses.

Cells that contain an asterisk indicate that statistics are based on a subset of data linked between Third Trimester Surveys and Exit Forms.

Rows labeled with an “N” indicate the number of observations from which percentages have been calculated.

Table C.2.2. By Strong Start Approach

Data Elements	N, Mean or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Participant Visits, Encounters, and Services					
Total Number of Exit Forms with Valid Visit Information	N	2128	1117	2655	5900
Average number of individual prenatal visits per participant	Mean	10.7	4.1	9.7	9.0
Average number of group prenatal visits per participant	Mean	0	5.9	0.1	1.1
Total Number of Exit Forms with Valid Enhanced Encounter Information	N	1886	373	2493	4752
Average number of enhanced encounters per participant	Mean	4.0	2.2	5.0	4.4
Total Number of Exit Forms with Valid Enhanced Services Information	N	625	368	1253	2246
Average number of enhanced services per participant	Mean	1.6	2.3	7.5	5.0
Births					
Total Number of Exit Forms with Valid Birth Information	N	2125	1103	2740	5968
Number of Babies Born	N	2128	1125	2801	6054
Live births	%	99.4	101.3 ⁴⁷	93.4	97.0
	N	2115	1140	2617	5872
Stillborn infants	%	0.5	2.0	1.4	1.2
	N	11	23	38	72
Birth status missing	%	–	4.8	5.7	3.6
	N	–	54	161	217
Delivery Method					
Planned Delivery Method at Third Trimester	N	1876	2145	4683	8704
Vaginal delivery	%	95.3	82.6	79.4	83.6
C-Section	%	2.0	8.0	13.6	9.8
Unsure	%	1.2	5.1	5.5	4.5
Missing	%	1.5	4.3	1.5	2.2
Actual Delivery Method from Exit Data	N	2133	1433	3103	6669
Vaginal delivery	%	87.3	49.1	52.0	62.7
C-Section	%	12.4	24.3	29.6	23.0
Vaginal and C-Section	%	0	0	0	0
Missing	%	0.2	26.7	18.3	14.3
Planned Delivery Method at Third Trimester From Linked Data*	N	1223	600	1286	3109
Vaginal delivery	%	96.7	83.8	79.5	87.1
C-Section	%	2.0	9.5	16.2	9.3
Unsure	%	1.3	6.7	4.4	3.6
Missing	%	0	0	0	0
Actual Delivery Method From Linked Data*	N	1223	600	1286	3109
Vaginal delivery	%	87.9	67.2	64.9	74.4
C-Section	%	12.1	32.8	35.1	25.6
Vaginal and C-Section	%	0	0	0	0
Missing	%	0	0	0	0
Women Who Had Vaginal Birth as a Percentage of Women Who Planned to Deliver Vaginally	%	90.9	80.2	81.6	85.4
Women Who Had C-Section as a Percentage of Women Who Planned to Have a C-Section⁴⁸	%	605.0	345.3	216.7	275.3
VBAC⁴⁹	N	90	161	418	669
Yes	%	30.0	19.9	13.9	17.5
No	%	0	0	0.2	0.1
Not known	%	0	0	0	0
Missing	%	70.0	80.1	85.9	82.4
Repeat C-Section	N	90	161	418	669
Yes	%	70.0	80.1	86.1	82.5
No	%	0	0	0	0
Not known	%	0	0	0	0
Missing	%	30.0	19.9	13.9	17.5

⁴⁷The percentage of live births for the group prenatal care approach is above 100%. This is possibly due to data quality issues with the number of reported live fetuses.

⁴⁸Percentages shown here are high because many more women delivered via Cesarean than planned to do so.

⁴⁹Ns for VBAC and repeat C-section are derived by adding the number of women who had either a VBAC or repeat C-section together.

Data Elements	N, Mean or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Scheduled C-Section	N	265	348	920	1533
Yes	%	0	39.1	29.2	26.4
No	%	0	54.0	33.8	32.6
Not known	%	100	5.2	23.5	32.6
Missing	%	0	1.7	13.5	8.5
Birth Outcomes: Estimated Gestational Age (EGA) and Birth Weight					
Total Number of Exit Forms with Valid Birth Outcomes Information	N	2112	1121	2560	5793
Number of Live Births by Estimate Gestational Age	N	2115	1140	2617	5872
Preterm Births, <37 weeks EGA	%	5.3	11.5	17.6	12.0
	N	112	131	461	704
Non-Preterm Births, ≥37 weeks EGA	%	94.3	72.2	74.3	81.1
	N	1994	823	1945	4762
Early Term Births, 37 to 38 weeks, 6 days EGA	%	20.4	22.9	25.4	23.1
	N	431	261	666	1358
Missing EGA	%	–	16.3	8.1	6.9
	N	–	186	211	406
Number of Live Births by Birth Weight	N	2115	1140	2617	5872
Low Birth Weight, <2500 grams	%	3.5	12.9	15.7	10.8
	N	75	147	412	634
Not Low Birth Weight, ≥ 2500 grams	%	85.6	87.1	77.2	82.1
	N	1810	993	2019	4822
Missing	%	11.3	1.1	7.5	7.7
	N	240	13	197	450
Satisfaction					
Satisfaction with Prenatal Care at Third Trimester	N	1876	2145	4683	8704
Not at all satisfied	%	0	0.6	0.4	0.4
Slightly satisfied	%	0.6	1.0	1.5	1.2
Moderately satisfied	%	3.6	4.8	7.4	6.0
Very satisfied	%	31.2	38.7	40.0	37.8
Extremely satisfied	%	62.8	50.4	48.8	52.2
Missing	%	1.7	4.5	1.8	2.5
Satisfaction with Delivery Experience at Postpartum	N	1533	1416	4000	6949
Not at all satisfied	%	2.0	2.4	1.9	2.0
Slightly satisfied	%	3.1	4.9	2.5	3.1
Moderately satisfied	%	9.8	9.6	10.2	10
Very satisfied	%	27.7	35.0	36.5	34.3
Extremely satisfied	%	52.1	26.1	36.2	37.7
Missing	%	5.3	22.0	12.6	12.9

Note: Yellow cells labeled with a dash symbol indicate that between 0 and 11 responses had been received during the reporting period. Statistics were only calculated for items with at least 11 responses.

Cells that contain an asterisk indicate that statistics are based on a subset of data linked between Third Trimester Surveys and Exit Forms.

Rows labeled with an “N” indicate the number of observations from which percentages have been calculated.

TABLE C.3.: FOCUSED TOPICS: CHARACTERISTICS AT INTAKE, MOTHER’S WEIGHT, PRE-PREGNANCY DIAGNOSES, RISK FACTORS FROM PAST PREGNANCY, RISK FACTORS DURING CURRENT PREGNANCY, INTER-PREGNANCY INTERVAL, PRENATAL SERVICE PROVIDER, ENHANCED ENCOUNTERS, ENHANCED SERVICES, REFERRALS, DELIVERY PROCESS, PRETERM LABOR MANAGEMENT, MULTIPLES, BREASTFEEDING, SUPPORT PERSON, AND BIRTH CONTROL COUNSELING

Table C.3.1. All Awardees

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep. of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Characteristics at Intake																													
Smoking	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Yes	%	9.0	11.0	9.9	9.5	4.6	19.2	4.2	0.6	9.6	15.1	5.1	13.1	11.6	23.9	14	11.7	6.4	15.7	10.0	13.2	11.6	18.2	25.3	2.4	21.4	2.9	7.7	12.0
No	%	83.4	72.3	77.3	74.9	75	79.4	84.9	89.9	79.3	71.4	89.6	85.3	88.2	74.9	61.9	65.8	84.9	80.2	90.0	70.9	84.1	80.7	74.7	79.2	68.4	53.6	22.1	76.3
Missing	%	7.5	16.7	12.8	15.5	20.4	1.4	10.9	9.5	11.1	13.5	5.3	1.6	0.2	1.2	24.0	22.5	8.7	4.2	0	15.9	4.3	1.1	0	18.5	10.3	43.6	70.2	11.7
Food Insecure	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Yes	%	28.0	20.3	17.2	24.0	22.6	22.6	17.2	11.5	26.8	15.2	16.3	2.1	16.8	3.1	14.1	22.5	24.8	9.1	34.0	17.9	14.0	30.7	9.5	24.0	17.0	6.4	20.3	16.9
No	%	63.9	69.8	77.8	69.3	65.1	74.7	73.7	87.6	65.1	82.7	63.8	89.2	82.1	93.8	79.1	73.0	69.4	84.1	64.0	56.6	76.3	65.4	0	67.3	68.0	39.3	43.4	72.9
Missing*	%	8.0	9.9	5.0	6.7	12.3	2.7	9.2	1.0	8.1	2.1	19.9	8.6	1.0	3.2	6.8	4.5	5.8	6.8	2.0	25.5	9.6	3.9	90.5	8.7	14.9	54.3	36.3	10.1
Exhibiting Depressive Symptoms	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Yes	%	21.4	34.7	21.0	32.5	22.4	32.6	30.2	13.6	24.5	33.0	23.7	9.2	13.7	7.9	29.7	27.0	27.0	20.9	50.0	23.2	17.2	45.8	28.6	28.5	30.7	12.1	23.5	23.5
No	%	69.7	47.2	70.1	54.1	54.8	63.9	59.3	83.6	59.4	63.8	74.2	86.6	85.2	86.8	58.6	66.7	60.8	74.5	50.0	50.3	74.3	43.2	53.2	48.5	56.5	31.4	47.9	66.4
Missing*	%	8.9	18.0	8.9	13.4	22.8	3.4	10.5	2.8	16.1	3.2	2.2	4.2	1.1	5.3	11.7	6.3	12.2	4.6	0	26.5	8.5	11.0	18.2	23.0	12.8	56.4	28.6	10.0
Experiencing Intimate Partner Violence in a Relationship (Measured by Slapped, Threatened, and Thrown)	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Yes	%	19.7	19.2	20.3	20.8	17.7	36.5	13.7	18.3	23.0	14.0	27.0	21.8	11.8	14.6	14.5	27.0	17.4	24.2	40.0	19.2	16.3	24.1	12.8	15.0	15.3	8.6	13.8	18.8
No	%	78.3	78.8	77.6	77.0	78.2	59.7	84.2	81.3	74.7	85.7	70.2	76.6	88.2	84.3	83.9	73.0	80.6	71.1	60.0	64.9	78.0	75.4	0	82.1	81.6	44.3	55.8	76.0
Missing*	%	2.0	2.0	2.2	2.2	4.1	3.8	2.2	0.4	2.3	0.3	2.8	1.6	0	1.1	1.6	0	2.1	4.7	0	15.9	5.7	0.4	87.2	2.9	3.0	47.1	30.4	5.1
Experiencing Intimate Partner Violence at Intake (Measured by Women’s Experience of Battery)	N	1260	354	2842	283	588	699	285	715	261	908	1177	381	576	1540	1666	111	1193	722	50	302	541	456	391	379	828	140	507	19155
Yes	%	3.3	2.0	2.0	2.5	3.4	2.7	3.2	1.5	1.1	2.3	3.5	0.3	1.9	0.1	2.5	0	3.2	2.4	10.0	1.0	1.5	1.5	3.1	5.0	2.5	1.4	4.5	2.3
No	%	84.0	89.0	90.3	86.6	77.7	75.5	88.8	83.9	87.0	92.8	91.8	90.3	92.5	90.0	86.9	95.5	87.5	85.2	82.0	66.6	82.3	93.9	76.7	79.4	86.6	47.9	73.6	86.2
Missing*	%	12.7	9.0	7.7	11.0	18.9	21.8	8.1	14.5	11.9	4.9	4.8	9.5	5.6	9.8	10.7	4.5	9.3	12.4	8.0	32.4	16.3	4.6	20.2	15.6	10.9	50.8	21.9	11.5
Mother’s Weight																													
BMI of Mother at First Prenatal Visit	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Normal, <30	%	+	60.3	70.2	26.6	69.7	62.6	+	69.0	69.8	52.6	62.4	+	42.3	41.7	34.7	51.3	52.2	65.1	0	+	63.8	55.5	+	70.0	46.7	+	7.8	55.9

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Obese, 30-39	%	+	26.6	18.8	11.7	22.9	25.5	+	23.7	22.5	22.4	21.9	+	29.3	17.2	21.6	19.4	28.3	18.9	0	+	26.0	26.0	+	20.9	37.4	+	4.6	21.2
Very obese, ≥40	%	+	8.6	3.1	10.0	6.5	8.7	+	5.0	3.1	13.7	4.7	+	17.8	6.0	9.8	9.7	6.5	5.2	0	+	8.0	17.8	+	7.4	14.4	+	0.5	7.1
Missing	%	+	4.5	7.8	51.7	0.9	3.3	+	2.2	4.7	11.2	10.9	+	10.6	35.0	34.0	19.4	13.0	10.8	100	+	2.1	0.7	+	1.7	1.4	+	87.1	15.9
Maternal Weight Gain	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Very low, <.26 lbs. per week	%	+	16.9	7.6	0	8.2	16.4	+	12.2	14.0	26.8	0	+	20.8	13.3	18.9	13.9	10.9	13.7	0	+	36.5	20.5	+	16.1	23.7	+	0.9	14.0
Average, .26-1.74 lbs. per week	%	+	65.5	80.7	0	74.5	37.8	+	59.7	72.1	56.1	0	+	67.7	63.4	49.2	59.7	65.2	65.1	0	+	42.4	70.5	+	47.0	53.2	+	8.3	61.2
Very high, >1.74 lbs. per week	%	+	0.7	0.7	0	0	0.4	+	0	2.3	0.5	0	+	0	1.2	0.6	2.8	0	0.4	0	+	0.3	1.4	+	0	1.4	+	0	0.6
Missing	%	+	16.9	10.9	100	17.3	45.5	+	28.1	11.6	16.6	100	+	11.5	22.1	31.3	23.6	23.9	20.9	100	+	20.8	7.5	+	37.0	21.6	+	90.8	24.1
Pre-Pregnancy Diagnoses																													
Type I Diabetes	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	1.1	0.5	0	0	2.2	+	0	0	0.5	0	+	1.5	0.9	2.0	1.4	0	0	5.1	+	0.3	4.1	+	5.7	0	+	0	1.1
No	%	+	96.6	99.5	31.7	97.8	96.4	+	46.8	96.9	89.8	90.6	+	93.7	94.6	66.0	73.6	76.1	98.4	51.3	+	93.4	94.5	+	91.3	94.2	+	20.3	87.0
Not Known	%	+	0.7	0	0	1.7	0.4	+	50.4	0	2.9	9.4	+	4.2	3.3	26.5	13.9	2.2	0.8	43.6	+	5.9	0	+	2.6	3.6	+	0	6.8
Missing	%	+	1.5	0	68.3	0.4	1.1	+	2.9	3.1	6.8	0	+	0.6	1.2	5.5	11.1	21.7	0.8	0	+	0.3	1.4	+	0.4	2.2	+	79.7	5.0
Type II Diabetes	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	1.5	0	0	0	1.5	+	2.2	0	2.0	1.6	+	5.1	1.8	0.8	1.4	0	0.4	0	+	2.4	7.5	+	12.6	0	+	0	1.5
No	%	+	96.3	5.0	31.7	97.8	97.5	+	44.6	96.9	88.8	89.1	+	90.0	94.0	66.9	72.2	76.1	91.6	56.4	+	91.3	91.1	+	84.3	94.2	+	20.3	56.1
Not Known	%	+	0.7	0	0	1.7	0.4	+	50.4	0	2.9	9.4	+	4.2	3.0	26.5	15.3	2.2	0.8	43.6	+	5.9	0	+	2.6	3.6	+	0	6.8
Missing	%	+	1.5	94.9	68.3	0.4	0.7	+	2.9	3.1	6.3	0	+	0.6	1.2	5.9	11.1	21.7	7.2	0	+	0.3	1.4	+	0.4	2.2	+	79.7	35.7
Hypertension	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	7.5	0.5	0	2.2	9.1	+	0.7	3.9	8.8	3.1	+	18.1	5.7	10.3	1.4	0	0.4	12.8	+	6.9	16.4	+	20.4	10.8	+	0.5	5.9
No	%	+	89.9	99.5	31.7	95.7	89.5	+	46.0	93.8	82.4	85.9	+	76.1	90.6	60.5	72.2	80.4	97.6	46.2	+	87.8	81.5	+	77.4	83.5	+	0	82.2
Not Known	%	+	1.1	0	0	1.7	0.7	+	50.4	0	2.9	10.9	+	5.1	2.4	24.1	15.3	0	0.8	41.0	+	4.9	0	+	1.7	3.6	+	0	6.4
Missing	%	+	1.5	0	68.3	0.4	0.7	+	2.9	2.3	5.9	0	+	0.6	1.2	5.1	11.1	19.6	1.2	0	+	0.3	2.1	+	0.4	2.2	+	99.5	5.6
Risk Factors from Past Pregnancy																													
Previous Preterm Birth(s) Between 20 and 36 weeks, 6 days EGA	N	+	152	1127	28	78	170	+	62	63	135	32	+	217	194	639	37	+	150	33	+	208	78	+	147	79	+	80	3741
Yes	%	+	22.4	10.7	7.1	12.8	23.5	+	8.1	0	20.7	3.1	+	34.1	9.8	15.2	8.1	+	14.0	3.0	+	12.0	34.6	+	5.4	32.9	+	15.0	15.0
No	%	+	69.7	89.3	28.6	84.6	72.4	+	75.8	93.7	74.1	90.6	+	65.4	82.0	42.6	64.9	+	84.0	60.6	+	74.5	62.8	+	30.6	64.6	+	71.2	71.2
Not Known	%	+	5.3	0	0	1.3	3.5	+	12.9	0	4.4	6.2	+	0.5	5.7	35.8	18.9	+	0.7	36.4	+	12.0	0	+	63.9	2.5	+	0	11.1
Missing	%	+	2.6	0	64.3	1.3	0.6	+	3.2	6.3	0.7	0	+	0	2.6	6.4	8.1	+	1.3	0	+	1.4.0	2.6	+	0	0	+	13.8	2.7
Previous Birth(s) <2,500 grams	N	+	152	1127	28	78	170	+	62	63	135	32	+	217	194	639	37	+	150	33	+	208	78	+	147	79	+	80	3741
Yes	%	+	19.7	1.9	10.7	6.4	14.7	+	14.5	1.6	12.6	6.2	+	27.2	8.2	13.3	0	+	10.7	3.0	+	12.0	28.2	+	4.1	15.2	+	6.2	9.7

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep. of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
No	%	+	70.4	95.8	28.6	89.7	72.9	+	69.4	85.7	64.4	78.1	+	55.8	86.1	43.3	45.9	+	83.3	3.0	+	71.6	67.9	+	31.3	58.2	+	78.8	71.7
Not Known	%	+	8.6	0	0	1.3	10.6	+	12.9	0	14.8	15.6	+	16.1	0	36.3	51.4	+	4.0	93.9	+	15.4	1.3	+	64.6	25.3	+	0	14.5
Missing	%	+	1.3	2.3	60.7	2.6	1.8	+	3.2	12.7	8.1	0	+	0.9	5.7	7.0	2.7	+	2.0	0	+	1.0	2.6	+	0	1.3	+	15.0	4.1
Previous Miscarriage(s), <20 weeks EGA	N	+	186	1511	–	117	184	+	63	55	151	43	+	243	211	661	31	+	173	32	+	229	91	+	151	88	+	86	4346
Yes	%	+	31.2	32.6	–	28.2	37.0	+	30.2	36.4	37.1	34.9	+	39.5	24.6	22.2	9.7	+	33.5	21.9	+	27.1	52.7	+	5.3	36.4	+	26.7	30.1
No	%	+	60.2	67.4	–	70.1	57.6	+	57.1	58.2	55.0	60.5	+	58.0	71.1	35.1	48.4	+	65.3	50	+	62.0	46.2	+	31.8	62.5	+	62.8	58.1
Not Known	%	+	5.4	0	–	1.7	4.3	+	12.7	0	4.0	2.3	+	2.5	4.3	39.9	38.7	+	0	28.1	+	10.5	0	+	62.3	0	+	0	10.5
Missing	%	+	3.2	0	–	0	1.1	+	0	5.5	4.0	2.3	+	0	0	2.7	3.2	+	1.2	0	+	0.4	1.1	+	0.7	1.1	+	10.5	1.2
Previous Elective Termination(s)	N	+	186	1511	–	117	184	+	63	55	151	43	+	243	211	661	31	+	173	32	+	229	91	+	151	88	+	86	4346
Yes	%	+	45.7	15.4	–	45.3	16.3	+	9.5	21.8	43.0	37.2	+	11.9	13.7	5.9	0	+	19.7	21.9	+	12.7	8.8	+	0.7	4.5	+	0	15.8
No	%	+	48.9	84.6	–	53.8	77.7	+	77.8	74.5	53.0	62.8	+	85.2	83.4	49.5	54.8	+	79.8	50.0	+	74.7	90.1	+	36.4	94.3	+	41.9	71.5
Not Known	%	+	3.8	0	–	0.9	4.9	+	12.7	0	2.6	0	+	2.5	2.4	41.5	41.9	+	0	28.1	+	10.5	0	+	62.3	0	+	0	10.6
Missing	%	+	1.6	0	–	0	1.1	+	0	3.6	1.3	0	+	0.4	0.5	3.2	3.2	+	0.6	0	+	2.2	1.1	+	0.7	1.1	+	58.1	2.2
Previous Still Birth(s), Fetal Death ≥20 weeks EGA	N	+	152	1127	28	78	170	+	62	63	135	32	+	217	194	639	37	+	150	33	+	208	78	+	147	79	+	80	3741
Yes	%	+	4.6	0.9	3.6	1.3	4.1	+	0	1.6	3.0	0	+	9.2	2.1	3.3	2.7	+	2.7	0	+	1.4	3.8	+	0.7	5.1	+	1.2	2.5
No	%	+	86.8	96.8	32.1	94.9	91.2	+	83.9	90.5	90.4	90.6	+	88.9	89.7	46.3	51.4	+	97.3	0	+	83.2	93.6	+	36.1	92.4	+	41.2	79.6
Not Known	%	+	5.9	0	0	1.3	2.4	+	12.9	0	3.0	3.1	+	1.8	3.6	43.2	43.2	+	0	97.0	+	13.9	0	+	63.3	0	+	0	13.1
Missing	%	+	2.6	2.3	64.3	2.6	2.4	+	3.2	7.9	3.7	6.2	+	0	4.6	7.2	2.7	+	0	3.0	+	1.4	2.6	+	0	2.5	+	57.5	4.8
Risk Factors During Current Pregnancy																													
Urinary Tract Infection(s) During Last 6 Months of Pregnancy	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	13.5	2.6	10.0	29.0	6.9	+	9.4	7.0	18.5	26.6	+	20.8	6.6	13.1	0	13.0	10.0	10.3	+	5.6	12.3	+	6.1	5.8	+	0.5	8.8
No	%	+	77.2	92.7	23.3	65.4	67.3	+	38.1	82.2	72.2	43.8	+	68.0	80.7	57.0	73.6	63.0	81.5	0	+	65.3	82.2	+	92.2	54	+	0	72.8
Not Known	%	+	4.1	0	0	5.2	25.1	+	51.8	0	2.0	26.6	+	11.2	11.8	25.9	16.7	4.3	4.0	89.7	+	29.2	4.8	+	0.4	38.1	+	0	11.1
Missing	%	+	5.2	4.6	66.7	0.4	0.7	+	0.7	10.9	7.3	3.1	+	0	0.9	3.9	9.7	19.6	4.4	0	+	0	0.7	+	1.3	2.2	+	99.5	7.2
Cervical Incompetence	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	2.2	0	1.7	0.4	2.2	+	0	0	2.4	0	+	6.9	0	0.6	0	0	0.8	2.6	+	0.7	2.7	+	0.9	1.4	+	0	0.9
No	%	+	92.5	4.0	26.7	92.2	77.8	+	47.5	91.5	87.3	67.2	+	81.9	90.6	67.7	75.0	78.3	91.2	53.8	+	40.6	92.5	+	97.4	90.6	+	2.3	51.4
Not Known	%	+	1.9	0	0	6.9	19.6	+	51.8	0	1.5	29.7	+	11.2	8.5	27.8	15.3	2.2	3.6	43.6	+	58.7	4.1	+	0.4	7.9	+	0	11.3
Missing	%	+	3.4	96.0	71.7	0.4	0.4	+	0.7	8.5	8.8	3.1	+	0	0.9	3.9	9.7	19.6	4.4	0	+	0	0.7	+	1.3	0	+	97.7	36.3
Placental Previa	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	2.6	0	0	2.2	5.5	+	0.7	0	0.5	0	+	2.1	1.8	0.1	0	0	1.2	0	+	0.7	0	+	0.4	0	+	0	0.7
No	%	+	92.1	5.1	28.3	90.5	76.4	+	46.8	91.5	89.3	65.6	+	86.7	88.5	68.2	75.0	78.3	90.4	56.4	+	40.3	94.5	+	97.8	92.1	+	2.3	52.0

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Frndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Not Known	%	+	1.9	0	0	7.4	17.5	+	51.8	0	1.5	31.2	+	10.9	8.5	27.9	15.3	2.2	4.0	43.6	+	58.7	4.8	+	0.4	7.9	+	0	11.3
Missing	%	+	3.4	94.9	71.7	0	0.7	+	0.7	8.5	8.8	3.1	+	0.3	1.2	3.8	9.7	19.6	4.4	0	+	0.3	0.7	+	1.3	0	+	97.7	36.0
Placental Abruption	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	0	0.4	0	0	0	+	0	0	0	1.6	+	1.5	0	0.1	0	2.2	0.4	2.6	+	0	0	+	1.3	2.2	+	0	0.4
No	%	+	88.8	99.6	28.3	91.3	80.4	+	47.5	91.5	89.3	64.1	+	87.3	90	68	75	76.1	91.2	53.8	+	40.3	94.5	+	97.0	88.5	+	2.3	82.2
Not Known	%	+	6.0	0	0	8.7	18.9	+	51.8	0	2.0	31.2	+	11.2	8.2	28	15.3	2.2	4.0	43.6	+	59.7	4.8	+	0.4	9.4	+	0	11.7
Missing	%	+	5.2	0	71.7	0	0.7	+	0.7	8.5	8.8	3.1	+	0	1.8	3.9	9.7	19.6	4.4	0	+	0	0.7	+	1.3	0	+	97.7	5.7
Gestational Diabetes	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	2.6	2.7	3.3	7.8	13.1	+	5.8	1.6	6.8	6.2	+	8.5	4.8	3.5	5.6	2.2	1.2	2.6	+	5.6	3.4	+	7.0	2.9	+	0.5	4.2
No	%	+	88.8	97.3	28.3	86.1	69.5	+	41.0	89.1	83.9	64.1	+	81.0	85.8	65.3	69.4	78.3	90.4	10.3	+	77.1	92.5	+	91.3	87.8	+	1.8	80.6
Not Known	%	+	4.9	0	0	6.1	16.7	+	51.8	0	1.5	26.6	+	10.6	8.2	27.2	15.3	0	4.0	87.2	+	17.4	3.4	+	0.4	9.4	+	0	9.6
Missing	%	+	3.7	0	68.3	0	0.7	+	1.4	9.3	7.8	3.1	+	0	1.2	4	9.7	19.6	4.4	0	+	0	0.7	+	1.3	0	+	97.7	5.6
Pregnancy-Related Hypertension	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	12.0	1.3	3.3	12.6	6.9	+	1.4	3.1	12.7	10.9	+	8.8	2.4	11.2	2.8	4.3	2.8	17.9	+	3.1	5.5	+	13.0	5.0	+	0	5.7
No	%	+	77.2	98.7	25.0	80.5	74.5	+	46.0	88.4	78.0	56.2	+	80.1	87.0	62.5	72.2	73.9	88.8	41.0	+	79.2	89.0	+	85.2	87.1	+	2.3	79.8
Not Known	%	+	6.4	0	0	6.9	17.8	+	51.8	0	1.5	29.7	+	11.2	9.1	22.3	15.3	0	4.0	41.0	+	17.7	4.8	+	0.4	7.9	+	0	8.8
Missing	%	+	4.5	0	71.7	0	0.7	+	0.7	8.5	7.8	3.1	+	0	1.5	4.0	9.7	21.7	4.4	0	+	0	0.7	+	1.3	0	+	97.7	5.7
Preeclampsia	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	9.4	1.9	3.3	5.2	2.5	+	2.9	2.3	9.8	6.2	+	8.2	0.9	2.1	0	8.7	2.8	7.7	+	2.4	11.0	+	7.8	15.1	+	0.5	3.7
No	%	+	80.5	98.1	26.7	85.3	78.2	+	44.6	88.4	80.5	60.9	+	81.0	89.4	70.7	75.0	69.6	88.8	51.3	+	79.5	83.6	+	90.4	76.3	+	1.8	81.6
Not Known	%	+	6.0	0	0	9.5	18.5	+	51.8	0	1.5	29.7	+	10.9	8.5	23.5	15.3	2.2	4.0	41.0	+	17.7	4.8	+	0.4	8.6	+	0	9.1
Missing	%	+	4.1	0	70	0	0.7	+	0.7	9.3	8.3	3.1	+	0	1.2	3.8	9.7	19.6	4.4	0	+	0.3	0.7	+	1.3	0	+	97.7	5.6
Syphilis	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	0.4	0	0	0.4	1.1	+	0	0.8	1.0	0	+	0	0	0.5	0	0	0	0	+	0.3	0.7	+	0	0.7	+	0.5	0.3
No	%	+	91.4	0	26.7	87.9	86.2	+	47.5	90.7	88.8	82.8	+	88.8	90.0	90.5	75.0	80.4	91.6	0	+	83.7	94.5	+	98.3	92.1	+	1.8	56.1
Not Known	%	+	4.5	100	0	11.7	12.0	+	51.8	0	1.5	15.6	+	11.2	8.8	5.2	15.3	0	4.0	100	+	16.0	4.1	+	0.4	7.2	+	0	38.0
Missing	%	+	3.7	0	73.3	0	0.7	+	0.7	8.5	8.8	1.6	+	0	1.2	3.8	9.7	19.6	4.4	0	+	0	0.7	+	1.3	0	+	97.7	5.6
HIV	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	0	0	1.7	0	1.8	+	0	0	0	0	+	0.6	0.3	0.7	0	4.3	0	2.6	+	0	1.4	+	6.5	0	+	0	0.5
No	%	+	91.8	100	26.7	99.6	85.8	+	47.5	91.5	89.8	82.8	+	93.7	90.0	92.0	75.0	76.1	91.6	0	+	85.4	94.5	+	91.7	92.8	+	2.3	88.9
Not Known	%	+	4.5	0	0	0.4	11.6	+	51.8	0	1.5	15.6	+	5.7	8.5	3.4	15.3	0	4	97.4	+	14.6	3.4	+	0.4	7.2	+	0	4.9
Missing	%	+	3.7	0	71.7	0	0.7	+	0.7	8.5	8.8	1.6	+	0	1.2	3.9	9.7	19.6	4.4	0	+	0	0.7	+	1.3	0	+	97.7	5.6
Congenital Abnormalities of the Fetus	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	1.5	0	1.7	0	1.5	+	0.7	0	4.4	0	+	3.6	1.8	0.5	0	0	2.0	5.1	+	1.4	1.4	+	7.0	6.5	+	0	1.2

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep. of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
No	%	+	91.0	0	26.7	95.7	78.5	+	46.0	90.7	84.4	64.1	+	85.2	87.9	69.0	75.0	78.3	89.6	33.3	+	65.6	93.2	+	91.3	83.5	+	2.3	50.9
Not Known	%	+	3.4	100	1.7	4.3	18.9	+	52.5	0	2.4	31.2	+	11.2	8.8	26.2	15.3	2.2	4.0	61.5	+	32.6	4.8	+	0.4	10.1	+	0	42.1
Missing	%	+	4.1	0	70	0	1.1	+	0.7	9.3	8.8	4.7	+	0	1.5	4.3	9.7	19.6	4.4	0	+	0.3	0.7	+	1.3	0	+	97.7	5.8
Inter-Pregnancy Interval																													
Inter-Pregnancy Interval with Current Pregnancy Since Last Birth	N	+	152	1127	28	78	170	+	62	63	135	32	+	217	194	639	37	24	150	33	+	208	78	+	147	79	+	80	3741
Less than 18 months	%	+	12.4	24.3	7.1	15.3	31.1	+	32.3	25.3	20.7	15.6	+	17.6	25.3	17.2	43.2	16.7	15.4	15.2	+	15.4	17.3	+	14.9	25.3	+	13.7	20.7
Greater than or equal to 18 months	%	+	38.2	39.8	67.9	61.5	62.4	+	46.8	46.0	59.3	43.8	+	70.0	59.8	37.9	24.3	62.5	26.7	48.5	+	68.3	62.8	+	53.1	55.7	+	48.8	47.6
Missing	%	+	49.3	35.9	25.0	23.1	6.5	+	21.0	28.6	20.0	40.6	+	12.4	14.9	44.9	32.4	20.8	58.0	36.4	+	16.3	19.2	+	32.0	19.0	+	37.5	31.8
Prenatal Service Provider																													
Routine Prenatal Service Provider from Exit Data	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Obstetrician	%	+	0	2.2	15.0	1.7	92.7	+	2.2	0	61.5	23.4	+	43.8	63.1	85.2	37.5	23.9	91.2	0	+	72.6	1.4	+	93.0	52.5	+	3.7	37.4
Nurse Practitioner	%	+	0	17.9	1.7	0	0	+	1.4	0	0	4.7	+	0	0	0.1	0	0	0	0	+	0.3	0	+	0	0	+	0.9	5.9
Family Medicine Physician	%	+	85.0	0	21.7	0	5.5	+	61.9	25.6	15.6	3.1	+	0	0.3	0.8	4.2	0	0	0	+	0.7	0.7	+	0	31.7	+	3.2	7.1
Licensed Professional Midwife	%	+	0	79.5	5.0	71.0	1.1	+	33.1	69.8	14.6	46.9	+	35.0	8.5	0	30.6	52.2	0	0	+	5.9	0	+	0	12.9	+	9.7	34.7
Certified Midwife or Nurse Midwife	%	+	0	0.1	0	26.8	0	+	0	0	0	0	+	0.3	0	0	0	0	0	0	+	18.1	0	+	0	0	+	0	1.8
Other	%	+	13.5	0.3	1.7	0	0	+	0	0	1.5	1.6	+	16.9	0	0.2	0	0	0	100	+	0	95.9	+	0	0	+	0	4.3
Missing	%	+	1.5	0	55	0.4	0.7	+	1.4	4.7	6.8	20.3	+	3.9	28.1	13.8	27.8	23.9	8.8	0	+	2.4	2.1	+	7.0	2.9	+	82.5	8.9
Enhanced Encounters																													
Total Number of Exit Forms with Valid Enhanced Encounter Information	N	+	58	1886	-	117	275	+	68	19	172	63	+	328	247	701	16	24	241	39	+	235	140	+	-	98	+	-	4752
Average number of enhanced encounters per participant	Mean	+	2.5	4.0	-	1.5	7.32	+	2.8	1.1	6.41	1.6	+	11.1	4.0	2.8	4.9	2.6	5.5	1.2	+	4.0	1.6	+	-	1.9	+	-	4.4
Received Care Coordinator Encounters	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	23.2	96.8	3.3	52.4	100	+	48.9	14.7	86.3	98.4	+	99.1	73.1	74.8	44.4	50	96.8	100	+	83.0	96.6	+	6.5	71.2	+	0.5	75.9
No	%	+	58.4	2.5	36.7	42.9	0	+	43.2	79.8	8.3	0	+	0	0	23.1	2.8	30.4	0.4	0	+	16.0	2.7	+	91.7	23.0	+	0.9	16.0
Not known	%	+	16.9	0.3	0	4.8	0	+	7.9	0	1.0	1.6	+	0	0	0.8	40.3	2.2	1.2	0	+	0	0	+	0.9	5.8	+	0	1.9
Missing	%	+	1.5	0.4	60.0	0	0	+	0	5.4	4.4	0	+	0.9	26.9	1.4	12.5	17.4	1.6	0	+	1.0	0.7	+	0.9	0	+	98.6	6.2

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Frndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Total Number of Exit Forms with Valid Care Coordinator Encounter Information	N	+	56	1886	-	115	275	+	68	19	172	63	+	328	242	701	15	22	241	39	+	234	139	+	-	98	+	-	4736
Average number of care coordinator encounters per participant	Mean	+	2.5	4.0	-	1.3	7.32	+	2.6	1.1	6.1	1.6	+	10.8	4.1	2.8	5.2	2.6	4.5	1.2	+	4.0	1.0	+	-	1.9	+	-	4.3
Received Mental Health Care Encounters	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	5.6	0	1.7	13.0	0	+	3.6	0	3.4	1.6	+	12.7	2.4	1.9	1.4	6.5	55.0	0	+	3.8	17.8	+	0	0	+	0.5	4.6
No	%	+	76.0	0	38.3	81.0	98.5	+	88.5	94.6	78.5	23.4	+	76.7	67.4	92.3	22.2	67.4	39.0	100	+	88.5	80.1	+	98.7	94.2	+	0.9	52.3
Not known	%	+	17.2	0	0	6.1	0.4	+	7.9	0	12.7	65.6	+	10.6	16.3	1.8	68.1	4.3	3.2	0	+	4.5	1.4	+	0.9	5.8	+	0	5.0
Missing	%	+	1.1	100	60.0	0	1.1	+	0	5.4	5.4	9.4	+	0	13.9	4.0	8.3	21.7	2.8	0	+	3.1	0.7	+	0.4	0	+	98.6	38.0
Total Number of Exit Forms with Valid Mental Health Care Encounter Information	N	+	-	-	-	28	-	+	-	-	-	-	+	33	-	-	-	-	136	-	+	11	19	+	-	-	+	-	255
Average number of mental health care encounters per participant	Mean	+	-	-	-	1.0	-	+	-	-	-	-	+	2.7	-	-	-	-	1.7	-	+	1.1	4.6	+	-	-	+	-	2.1
Received Doula Encounters	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	1.1	11.9	0	0	0	+	0	0	1.0	0	+	0	0	3.0	0	0	0	0	+	0	2.1	+	0	0	+	0.9	4.4
No	%	+	76.8	0	36.7	98.3	98.5	+	92.1	94.6	82.9	85.9	+	94.3	63.4	90.2	27.8	76.1	97.6	100	+	92.0	92.5	+	96.1	93.5	+	0	56.7
Not known	%	+	20.2	0	0	1.7	0.4	+	7.9	0	12.2	4.7	+	5.7	9.4	2.2	63.9	2.2	1.2	0	+	4.9	4.1	+	3.0	6.5	+	0	3.9
Missing	%	+	1.9	88.1	63.3	0	1.1	+	0	5.4	3.9	9.4	+	0	27.2	4.6	8.3	21.7	1.2	0	+	3.1	1.4	+	0.9	0	+	99.1	35.0
Total Number of Exit Forms with Valid Doula Encounter Information	N	+	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-
Average number of doula encounters per participant	Mean	+	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-
Enhanced Services																													
Total Number of Exit Forms with Valid Enhanced Service Information	N	+	131	625	-	158	-	+	11	-	25	-	+	64	20	743	-	11	122	39	+	72	131	+	22	58	+	-	2246
Average number of enhanced services per participant	Mean	+	1.1	1.6	-	2.2	-	+	1.4	-	3.9	-	+	1.3	1.5	10.6	-	2.1	5.8	8.3	+	4.1	1.7	+	1.0	1.0	+	-	5.0
Received Health Education, Not Centering	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	0.7	0	0	28.6	0	+	4.3	23.3	2.0	0	+	10.6	0	64.9	0	23.9	44.6	100	+	18.8	87.0	+	0	0	+	0	17.8

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep. of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
No	%	+	74.2	0	31.7	64.9	33.1	+	87.8	69.8	82.4	89.1	+	190	16.0	31	22.2	47.8	15.3	0	+	75.0	6.8	+	99.1	93.5	+	1.8	30.2
Not known	%	+	24.0	0	1.7	6.5	0	+	7.9	0.8	12.7	0	+	12.1	2.7	1.8	65.3	0	2.8	0	+	1.4	0	+	0.4	5.8	+	0	3.8
Missing	%	+	1.1	100	66.7	0	66.9	+	0	6.2	2.9	10.9	+	58.3	81.3	2.3	12.5	28.3	37.3	0	+	4.9	6.2	+	0.4	0.7	+	98.2	48.3
Total Number of Exit Forms with Valid Health Education Service Information	N	+	-	-	-	56	-	+	-	-	-	-	+	33	-	601	-	-	111	39	+	52	127	+	-	-	+	-	1042
Average number of health education services per participant	Mean	+	-	-	-	1.2	-	+	-	-	-	-	+	1.1	-	4.5	-	-	1.7	3.8	+	4.1	1.0	+	-	-	+	-	3.4
Received Home Visits	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	5.2	29.3	0	13.4	0	+	0	0	2.9	0	+	7.9	0	11.0	5.6	0	35.7	0	+	8.0	0	+	0	0	+	0.5	14.1
No	%	+	47.6	22.6	33.3	74.0	33.1	+	92.1	93.8	84.9	89.1	+	23.3	16.0	84.9	16.7	71.7	23.7	97.4	+	88.2	91.8	+	98.7	92.8	+	1.4	49.6
Not known	%	+	46.1	0	0	12.6	0	+	7.9	0.8	9.8	0	+	10.6	2.7	0.9	66.7	0	4.0	2.6	+	1.4	2.1	+	0.4	6.5	+	0	4.7
Missing	%	+	1.1	48.1	66.7	0	66.9	+	0	5.4	2.4	10.9	+	58.3	81.3	3.2	11.1	28.3	36.5	0	+	2.4	6.2	+	0.9	0.7	+	98.2	31.7
Total Number of Exit Forms with Valid Home Visit Service Information	N	+	-	625	-	17	-	+	-	-	-	-	+	-	-	79	-	-	89	-	-	23	-	+	-	-	+	-	839
Average number of home visit services per participant	Mean	+	-	1.6	-	1.1	-	+	-	-	-	-	+	-	-	1.0	-	-	1.7	-	-	1.0	-	+	-	-	+	-	1.5
Received Self-Care, Not Centering	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	0	0	0	11.3	0	+	0.7	11.6	0	0	+	0.6	0	29.0	0	0	45.0	100	+	4.2	0	+	0.9	0	+	0	7.8
No	%	+	52.8	0	33.3	81.0	33.1	+	91.4	79.8	87.8	89.1	+	28.4	16.0	64.6	18.1	71.7	14.5	0	+	91.3	91.8	+	98.3	93.5	+	0	38.8
Not known	%	+	46.1	0	0	7.8	0	+	7.9	0.8	9.8	0	+	12.7	2.7	1.3	70.8	0	3.2	0	+	1.4	2.1	+	0.4	5.8	+	0	4.7
Missing	%	+	1.1	100	66.7	0	66.9	+	0	7.8	2.4	10.9	+	58.3	81.3	5.1	11.1	28.3	37.3	0	+	3.1	6.2	+	0.4	0.7	+	100	48.7
Total Number of Exit Forms with Valid Self-Care Service Information	N	+	-	-	-	26	-	+	-	-	-	-	+	-	-	226	-	-	112	39	+	12	-	+	-	-	+	-	417
Average number of self-care services per participant	Mean	+	-	-	-	1.1	-	+	-	-	-	-	+	-	-	9.2	-	-	1.7	3.82	+	2	-	+	-	-	+	-	5.9
Received Nutrition Counseling	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	50.2	0	18.3	67.1	0	+	3.6	23.3	11.7	10.9	+	11.5	5.4	75.4	4.2	30.4	38.2	61.5	+	8.7	38.4	+	12.2	42.4	+	0.5	23.0
No	%	+	33.7	0	16.7	27.3	33.1	+	88.5	70.5	76.6	51.6	+	17.8	22.7	20.4	18.1	41.3	20.9	38.5	+	85.4	54.8	+	85.7	54.0	+	1.4	25.8
Not Known	%	+	15.4	100	0	5.6	0	+	7.9	0.8	9.8	34.4	+	12.4	5.1	2.1	66.7	0	3.6	0	+	1.4	0	+	0.4	2.9	+	0	35.8
Missing	%	+	0.7	0	65.0	0	66.9	+	0	5.4	2.0	3.1	+	58.3	66.8	2.2	11.1	28.3	37.3	0	+	4.5	6.8	+	1.7	0.7	+	98.2	15.4

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Total Number of Exit Forms with Valid Nutrition Counseling Service Information	N	+	129	-	-	149	-	+	-	-	18	-	+	37	18	714	-	-	94	24	+	22	54	+	22	58	+	-	1359
Average number of nutrition counseling services per participant	Mean	+	1.1	-	-	1.6	-	+	-	-	3.7	-	+	1.1	1.5	4.1	-	-	1.6	1.0	+	1.5	1.4	+	1.0	1.0	+	-	2.8
Received Substance Abuse Services	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	1.1	0	0	0	0	+	0	10.9	1.0	6.2	+	0.3	0.9	3.5	0	2.2	2.4	0	+	0.7	8.9	+	0	0	+	0.5	1.3
No	%	+	70.8	0	33.3	95.7	33.1	+	91.4	79.1	86.3	62.5	+	30.2	22.7	89.9	19.4	67.4	55.4	92.3	+	92.4	84.2	+	98.7	96.4	+	1.4	46.2
Not Known	%	+	27.0	100	0	4.3	0	+	8.6	0.8	9.3	29.7	+	11.2	5.1	1.7	69.4	0	3.2	2.6	+	4.5	0.7	+	0.4	2.9	+	0	36.2
Missing	%	+	1.1	0	66.7	0	66.9	+	0	9.3	3.4	1.6	+	58.3	71.3	5.0	11.1	30.4	39.0	5.1	+	2.4	6.2	+	0.9	0.7	+	98.2	16.2
Total Number of Exit Forms with Valid Substance Abuse Service Information	N	+	-	-	-	-	-	+	-	-	-	-	+	-	-	20	-	-	-	-	+	-	-	+	-	-	+	-	44
Average number of substance abuse services per participant	Mean	+	-	-	-	-	-	+	-	-	-	-	+	-	-	2.5	-	-	-	-	+	-	-	+	-	-	+	-	2.0
Referrals																													
Total Number of Exit Forms with Valid Referral Information for Non-Medical Services Outside of Strong Start	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	1.5	0	1.7	46.8	67.3	+	8.6	1.6	26.8	65.6	+	74.3	14.5	30.2	0	10.9	83.5	0	+	54.9	5.5	+	0	32.4	+	0.5	21.7
No	%	+	77.9	0	28.3	45.0	32.7	+	81.3	90.7	56.1	29.7	+	24.8	51.4	61.4	26.4	71.7	12.4	97.4	+	43.1	90.4	+	99.1	64.7	+	0.5	35.9
Not Known	%	+	18.0	100	1.7	8.2	0	+	10.1	0.8	10.2	4.7	+	0.3	6.3	4.8	61.1	0	1.6	2.6	+	2.1	1.4	+	0	0.7	+	0	35.6
Missing	%	+	2.6	0	68.3	0	0	+	0	7.0	6.8	0	+	0.6	27.8	3.7	12.5	17.4	2.4	0	+	0	2.7	+	0.9	2.2	+	99.1	6.8
Total Number of Exit Forms with Valid Referral Information for Non-Medical Services	N	+	-	-	-	104	185	+	12	-	52	42	+	246	48	42	-	-	207	-	+	158	-	+	-	45	+	-	1156
Average number of referrals for non-medical services per participant	Mean	+	-	-	-	1.5	2.5	+	2.1	-	1.3	2.1	+	3.3	1.0	1.5	-	-	3.9	-	+	1.6	-	+	-	1.3	+	-	2.5
Referrals for High Risk Medical Services	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	28.1	0	26.7	42.9	5.8	+	15.1	0.8	20.5	32.8	+	39.0	6.3	7.0	4.2	19.6	3.2	0	+	6.6	22.6	+	36.1	38.1	+	0.9	10.9
No	%	+	55.1	0	13.3	50.6	61.8	+	29.5	91.5	63.4	39.1	+	52.6	58.9	82.1	29.2	60.9	89.6	97.4	+	83.7	72.6	+	62.6	61.2	+	0.5	43.4

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Fndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Not Known	%	+	16.5	100	0	6.5	5.5	+	54.7	0.8	9.8	21.9	+	8.5	6.9	7.2	54.2	2.2	1.6	2.6	+	6.2	1.4	+	0.4	0.7	+	0	37.7
Missing	%	+	0.4	0	60	0	26.9	+	0.7	7.0	6.3	6.2	+	0	27.8	3.7	12.5	17.4	5.6	0	+	3.5	3.4	+	0.9	0	+	98.6	8.0
Total Number of Exit Forms with Valid Referral Information for High Risk Medical Services	N	+	47	-	15	85	12	+	16	-	29	11	+	129	-	47	-	-	-	-	+	14	-	+	65	16	+	-	510
Average number of referrals for high risk medical services per participant	Mean	+	2.1	-	2.7	1.6	1.3	+	1.25	-	2.2	1.0	+	1.5	-	1.4	-	-	-	-	+	1.2	-	+	1.6	1.0	+	-	1.6
Total Number of Exit Forms with Valid High Risk Encounter Information	N	+	67	-	12	15	-	+	21	-	19	-	+	119	-	12	-	-	-	-	+	-	-	+	70	52	+	-	430
Average number of high risk encounters per participant	Mean	+	3.2	-	3.1	2.3	-	+	2.9	-	2.3	-	+	9.3	-	1.8	-	-	-	-	+	-	-	+	1.7	4.6	+	-	4.8
Delivery Process																													
Deliveries Location from Exit Form	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Hospital	%	+	93.6	46.0	50.0	91.3	68.7	+	73.4	91.5	93.7	64.1	+	96.7	90.6	83.1	83.3	78.3	85.5	61.5	+	77.1	92.5	+	93.0	87.8	+	1.8	69.8
Birth center	%	+	0	47.0	0	0	0.7	+	0	0	0	0	+	0	0	0	0	0	0	0	+	0	0	+	0	0	+	0	15.1
Home birth	%	+	0	6.2	0	0	0	+	0	0	1.0	0	+	0	0	0	0	0	0.8	0	+	0	0.7	+	0	0	+	0	2.1
Other	%	+	0	0.5	0	0.9	0.4	+	0	0.8	0.5	0	+	0	0.3	0.8	0	0	0.4	30.8	+	0.3	0	+	0	0	+	0	0.6
Missing	%	+	6.4	0.3	50.0	7.8	30.2	+	26.6	7.8	4.9	35.9	+	3.3	9.1	16.1	16.7	21.7	13.3	7.7	+	22.6	6.8	+	7.0	12.2	+	98.2	12.5
Preterm Labor Management																													
Progesterone Injections	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	5.2	0	3.3	0.4	3.6	+	0.7	0	4.4	1.6	+	12.7	0.6	0.3	0	2.2	3.2	2.6	+	0	7.5	+	0.9	2.9	+	0	1.7
No	%	+	68.2	0.7	40.0	88.3	61.5	+	35.3	90.7	86.3	62.5	+	80.1	58.3	40.2	76.4	69.6	83.1	5.1	+	48.6	85.6	+	89.1	82.0	+	13.4	41.7
Not known	%	+	21.3	0	0	11.3	18.9	+	37.4	0.8	4.9	29.7	+	7.3	36.6	49.9	12.5	6.5	2.8	92.3	+	44.4	0.7	+	2.6	5.0	+	3.7	16.5
Missing	%	+	5.2	99.3	56.7	0	16.0	+	26.6	8.5	4.4	6.2	+	0	4.5	9.7	11.1	21.7	10.8	0	+	6.9	6.2	+	7.4	10.1	+	82.9	40.1
Vaginal Progesterone	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	0	0	1.7	0	1.5	+	0	0	2.4	0	+	7.9	0.9	0.1	0	0	0	0	+	0	0.7	+	0.4	1.4	+	0	0.7
No	%	+	73.4	0.7	38.3	88.7	20.7	+	36.0	90.7	88.3	64.1	+	84.6	58.6	40.5	76.4	71.7	86.3	5.1	+	49.3	92.5	+	89.6	84.2	+	13.4	41
Not known	%	+	21.0	0	0	11.3	61.1	+	37.4	0.8	4.9	29.7	+	7.6	35.6	49.8	12.5	6.5	2.8	94.9	+	43.8	0.7	+	2.6	4.3	+	3.2	18.1
Missing	%	+	5.6	99.3	60.0	0	16.7	+	26.6	8.5	4.4	6.2	+	0	4.8	9.6	11.1	21.7	10.8	0	+	6.9	6.2	+	7.4	10.1	+	83.4	40.2
Tocolytics	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	1.1	0	0	0.9	0.7	+	0	5.4	2.9	0	+	3.6	0	0.1	2.8	0	0	5.1	+	0	4.1	+	0.4	2.9	+	0.9	0.7
No	%	+	68.5	7.2	40.0	87.4	14.9	+	36.0	86.0	86.3	64.1	+	88.5	58.9	40.3	75.0	71.7	86.7	2.6	+	49.7	87.7	+	88.7	82.7	+	14.3	42.4
Not known	%	+	24.0	0	0	11.7	66.9	+	37.4	0.8	5.4	29.7	+	7.9	36.0	49.9	9.7	6.5	2.4	92.3	+	43.4	1.4	+	3.0	4.3	+	1.8	18.6
Missing	%	+	6.4	92.8	60.0	0	17.5	+	26.6	7.8	5.4	6.2	+	0	5.1	9.7	12.5	21.7	10.8	0	+	6.9	6.8	+	7.8	10.1	+	82.9	38.3

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Frndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Antenatal Steroids	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Yes	%	+	3.4	0.4	1.7	0.9	1.1	+	0	1.6	7.3	1.6	+	4.5	0.3	0.2	0	0	2.8	10.3	+	1.0	14.4	+	8.3	6.5	+	0.5	1.9
No	%	+	67.0	99.6	40.0	87.4	40.7	+	36.0	89.9	82.9	62.5	+	87.3	58.3	40.0	76.4	69.6	83.9	2.6	+	48.6	78.1	+	81.3	79.1	+	12.9	72.0
Not known	%	+	23.6	0	0	11.7	41.5	+	37.4	0.8	4.9	29.7	+	8.2	36.9	50.0	12.5	8.7	2.4	87.2	+	43.4	1.4	+	3.0	4.3	+	3.7	17.7
Missing	%	+	6.0	0	58.3	0	16.7	+	26.6	7.8	4.9	6.2	+	0	4.5	9.8	11.1	21.7	10.8	0	+	6.9	6.2	+	7.4	10.1	+	82.9	8.5
Induction of Labor with Pitocin, Excluding Planned C-Sections	N	+	241	2133	57	216	258	+	135	116	187	63	+	279	309	989	67	45	210	35	+	262	132	+	168	126	+	217	6256
Yes	%	+	13.3	6.1	7.0	31.5	3.1	+	23.0	22.4	26.7	12.7	+	22.6	10.7	3.6	10.4	8.9	28.1	17.1	+	9.5	39.4	+	18.5	24.6	+	3.7	11.4
No	%	+	14.1	8.3	0	3.7	0.4	+	0.7	0	1.6	1.6	+	1.1	0.6	0.6	4.5	0	1.4	2.9	+	1.1	0	+	0	5.6	+	0.5	4.1
Not known	%	+	2.5	0	1.8	0.9	5.4	+	11.9	0	0	1.6	+	11.1	5.5	2.2	7.5	4.4	0	5.7	+	3.1	0	+	1.2	0	+	0.5	2.1
Missing	%	+	70.1	85.6	91.2	63.9	91.1	+	64.4	77.6	71.7	84.1	+	65.2	83.2	93.5	77.6	86.7	70.5	74.3	+	86.3	60.6	+	80.4	69.8	+	95.4	82.5
Induction of Labor, Excluding Planned C-Sections	N	+	241	2133	57	216	258	+	135	116	187	63	+	279	309	989	67	45	210	35	+	262	132	+	168	126	+	217	6256
Yes	%	+	29.9	14.4	8.8	36.1	9.3	+	35.6	24.1	28.9	15.9	+	34.8	16.8	6.6	22.4	13.3	29.5	25.7	+	13.7	39.4	+	19.6	30.2	+	4.6	17.6
No	%	+	54.8	85.3	31.6	39.8	7.0	+	20.0	67.2	62.0	47.6	+	57.7	36.2	24.7	56.7	57.8	51.0	25.7	+	29.0	51.5	+	66.1	54.8	+	12.0	54.0
Not known	%	+	12.0	0	0	24.1	65.1	+	15.6	0.9	5.3	30.2	+	7.2	42.4	57.9	9.0	6.7	3.8	48.6	+	48.9	1.5	+	4.8	4.0	+	0.9	19.3
Missing	%	+	3.3	0.3	59.6	0	18.6	+	28.9	7.8	3.7	6.3	+	0.4	4.5	10.8	11.9	22.2	15.7	0	+	8.4	7.6	+	9.5	11.1	+	82.5	9.1
Multiples																													
Multiples Pregnancy from Exit Data	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Two or more identified fetuses	%	+	0.7	0.1	1.7	0.9	2.9	+	2.2	0.8	1.0	1.6	+	2.7	0.6	2.3	0	0	0.8	0	+	1.4	1.4	+	5.2	3.6	+	0	1.3
One identified fetus	%	+	98.1	99.5	48.3	98.7	76.7	+	71.2	92.2	93.7	64.1	+	94.9	82.5	84.7	83.3	80.4	86.7	0	+	95.8	91.8	+	87.8	84.2	+	17.1	88.2
Missing	%	+	1.1	0.4	50	0.4	20.4	+	26.6	7.0	5.4	34.4	+	2.4	16.9	12.9	16.7	19.6	12.4	100	+	2.8	6.8	+	7.0	12.2	+	82.9	10.5
Multiples Birth from Exit Data	N	+	267	2133	60	231	275	+	139	129	205	64	+	331	331	1066	72	46	249	39	+	288	146	+	230	139	+	217	6669
Two or more infants born alive	%	+	0.7	0.1	1.7	0.9	2.5	+	2.2	0.8	1.0	1.6	+	2.7	0.6	2.2	0	0	0.8	2.6	+	1.4	0.7	+	3.5	3.6	+	0	1.2
One infant born alive	%	+	89.5	98.9	46.7	89.2	66.5	+	71.2	90.7	92.2	60.9	+	91.5	81.3	79.9	81.9	80.4	86.3	64.1	+	72.9	89.7	+	85.7	82.7	+	40.6	85.7
Missing	%	+	9.7	1.0	51.7	10	30.9	+	26.6	8.5	6.8	37.5	+	5.7	18.1	17.9	18.1	19.6	12.9	33.3	+	25.7	9.6	+	10.9	13.7	+	59.4	13.1
Breastfeeding																													
Breastfeeding Intention at Third Trimester	N	686	202	1772	170	243	335	179	415	192	373	42	177	312	817	694	42	462	217	24	116	223	210	170	228	236	66	101	8704
Breastfeed only	%	36.6	39.1	80.6	34.7	51.9	39.1	49.2	51.8	64.1	18.8	76.2	47.5	53.8	60.5	8.5	73.8	39.2	77.0	25.0	53.4	30.5	31.9	56.5	51.8	14.8	19.7	55.4	49.5
Formula only	%	14.7	13.4	3.4	17.6	4.1	20.0	5.6	4.3	4.2	26.5	4.8	10.7	8.0	20.1	26.8	4.8	8.4	10.1	16.7	11.2	11.7	20.5	11.8	7.5	30.9	31.8	5.9	12.8
Breastfeed and formula	%	33.4	28.7	10.3	39.4	25.5	28.1	33.0	41.9	19.3	34.9	7.1	29.4	25.6	11.4	44.5	11.9	39.6	7.8	54.2	23.3	48.0	41.4	24.1	27.2	41.9	30.3	21.8	26.6
Unsure	%	14.0	8.9	3.5	4.1	9.1	11.3	7.3	1.7	7.3	18.2	4.8	10.7	11.2	7.3	17.7	4.8	10.2	3.2	4.2	10.3	4.9	5.2	4.7	10.1	9.3	18.2	5.9	8.6

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Frndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Missing	%	1.3	9.9	2.2	4.1	9.5	1.5	5.0	0.2	5.2	1.6	7.1	1.7	1.3	0.7	2.4	4.8	2.6	1.8	0	1.7	4.9	1.0	2.9	3.5	3.0	0	10.9	2.6
Breastfeeding After Delivery from Postpartum Data	N	532	127	1441	44	171	328	29	408	128	420	84	114	403	714	572	34	247	183	54	73	157	213	95	159	123	19	77	6949
Yes	%	67.5	38.6	86.5	59.1	70.2	48.5	93.1	57.8	90.6	43.3	78.6	77.2	56.8	72.3	51.2	82.4	85.0	76.5	9.3	58.9	70.7	70.0	81.1	73.0	39.8	52.6	66.2	67.7
No	%	26.3	4.7	7.2	22.7	9.4	22.3	3.4	4.7	5.5	28.3	13.1	21.1	18.9	27.2	37.8	17.6	11.3	16.4	5.6	38.4	15.3	23.9	0	25.2	27.6	47.4	3.9	18.3
Prefer not to answer	%	1.5	1.6	0.7	0	1.2	0.6	3.4	0.2	0.8	0.2	0	0	0	0	1.7	0	0	0	0	1.4	0.6	0	18.9	0	0	0	0	0.8
Missing	%	4.7	55.1	5.6	18.2	19.3	28.7	0	37.3	3.1	28.1	8.3	1.8	24.3	0.6	9.3	0	3.6	7.1	85.2	1.4	13.4	6.1	0	1.9	32.5	0	29.9	13.2
Breastfeeding Intention at Third Trimester From Linked Data**	N	439	41	1080	34	102	200	29	193	113	235	-	81	231	463	392	30	192	87	-	48	103	103	74	121	56	-	34	4511
Breastfeed only	%	36.4	51.2	82.5	32.4	65.7	42	79.3	51.3	70.8	21.3	-	53.1	53.7	62.9	9.7	73.3	46.9	78.2	-	39.6	35.9	35.9	62.2	55.4	19.6	-	70.6	53.5
Formula only	%	15.5	14.6	3.8	20.6	4.9	18.5	3.4	3.6	3.5	28.1	-	12.3	9.1	19.7	31.1	6.7	4.7	10.3	-	16.7	13.6	14.6	13.5	10.7	26.8	-	5.9	13.0
Breastfeed and formula	%	34.2	29.3	10.0	41.2	27.5	28.5	13.8	43.0	18.6	37.0	-	27.2	24.2	10.2	45.4	13.3	41.7	9.2	-	29.2	43.7	40.8	18.9	25.6	48.2	-	20.6	25.5
Unsure	%	13.9	4.9	3.7	5.9	2.0	11.0	3.4	2.1	7.1	13.6	-	7.4	13.0	7.3	13.8	6.7	6.8	2.3	-	14.6	6.8	8.7	5.4	8.3	5.4	-	2.9	8.0
Missing	%	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
Breastfeeding After Delivery From Linked Data*	N	439	41	1080	34	102	200	29	193	113	235	-	81	231	463	392	30	192	87	-	48	103	103	74	121	56	-	34	4511
Yes	%	71.8	85.4	92.6	73.5	88.2	69.5	93.1	92.7	92.9	60.4	-	74.1	77.9	73.7	56.1	83.3	89.6	86.2	-	62.5	81.6	78.6	79.7	71.1	66.1	-	94.1	78.9
No	%	27.3	14.6	6.9	26.5	10.8	29.5	3.4	6.7	6.2	39.6	-	25.9	22.1	26.3	42.3	16.7	10.4	13.8	-	35.4	18.4	21.4	0	28.9	33.9	-	5.9	20.3
Prefer not to answer	%	0.9	0	0.6	0	1.0	1.0	3.4	0.5	0.9	0	-	0	0	0	1.5	0	0	0	-	2.1	0	0	20.3	0	0	-	0	0.8
Missing	%	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
Women Who Breastfed As a Percentage of Women Who Planned to Breastfeed	%	101.7	106.1	100.1	99.9	94.6	98.6	100.0	98.3	103.9	103.6	-	92.3	100.0	100.8	101.8	96.2	101.1	98.6	-	90.8	102.5	102.5	98.3	87.8	97.5	-	103.2	99.9
Support Person																													
Plan to Have a Support Person	N	686	202	1772	170	243	335	179	415	192	373	42	177	312	817	694	42	462	217	24	116	223	210	170	228	236	66	101	8704
Yes	%	82.7	81.2	90.6	91.8	84	74.9	93.3	91.6	90.1	81.5	81.0	69.5	61.9	84.9	76.2	90.5	84.0	94.9	66.7	82.8	68.6	90.0	90.0	89.5	89.8	100	74.3	84.3
No	%	1.5	1.0	1.0	1.8	1.2	2.7	0	1.0	0.5	1.1	0	0.6	1.0	0.4	1.0	2.4	1.7	0.5	4.2	0	1.3	1.0	3.5	3.9	2.1	0	2.0	1.2
Unsure	%	5.7	5.0	3.6	1.8	1.6	3.6	1.7	3.4	2.6	1.9	2.4	1.7	1.3	2.2	2.4	4.8	4.5	0.5	20.8	4.3	3.1	1.0	4.7	4.4	4.2	0	3.0	3.2
Missing	%	10.2	12.9	4.9	4.7	13.2	18.8	5.0	4.1	6.8	15.5	16.7	28.2	35.9	12.5	20.3	2.4	9.7	4.1	8.3	12.9	26.9	8.1	1.8	2.2	3.8	0	20.8	11.3
Had a Support Person During Labor	N	532	127	1441	44	171	328	29	408	128	420	84	114	403	714	572	34	247	183	54	73	157	213	95	159	123	19	77	6949
Yes	%	84.6	43.3	94.2	81.8	84.2	67.7	96.6	59.8	96.9	67.9	85.7	93	74.4	98.3	87.4	97.1	88.7	90.7	13	86.3	73.9	88.7	93.7	53.5	64.2	94.7	72.7	82.7
No	%	6.4	1.6	0.9	4.5	1.8	2.1	0	2.2	1.6	3.6	3.6	5.3	2.0	1.0	3.0	0	6.9	0.5	1.9	9.6	2.5	4.7	0	44.7	3.3	5.3	2.6	3.5
Unsure	%	0.9	2.4	0.2	0	2.3	0.6	0	0.7	0.8	0.2	1.2	0	0	0	1.0	2.9	0.8	0	0	1.4	0	0	6.3	0	0	0	0	0.6

Data Elements	N, Mean or %	Access Community Health Network	Albert Einstein Healthcare Network	American Association of Birth Centers	Amerigroup Corporation	Central Jersey Family Health Consortium	Florida Assoc. of Healthy Start Coalitions	Grady Memorial Hospital Corp.	Harris County Hospital District	HealthInsight of Nevada	Johns Hopkins University	Los Angeles County Dep.of Health Services	Maricopa Special Health Care District	Medical University of South Carolina	Meridian Health Plan	Mississippi Primary Health Care Association	Oklahoma Health Care Authority	Providence Health Frndtn. of Providence Hosp.	Signature Medical Group	St. John Comm. Health Investment Corp	Texas Tech University Health Sciences Center	United Neighborhood Health Services	University of Alabama at Birmingham	University of Kentucky Research Foundation	Univ. of Puerto Rico Med. Sciences Campus	University of South Alabama	University of Tennessee Med. Group	Virginia Commonwealth University	Total
Missing	%	8.1	52.8	4.7	13.6	11.7	29.6	3.4	37.3	0.8	28.3	9.5	1.8	23.6	0.7	8.6	0	3.6	8.7	85.2	2.7	23.6	6.6	0	1.9	32.5	0	24.7	13.2
Birth Control Counseling																													
Had Birth Control Counseling After Delivery	N	532	127	1441	44	171	328	29	408	128	420	84	114	403	714	572	34	247	183	54	73	157	213	95	159	123	19	77	6949
Yes	%	60.9	35.4	70.3	81.8	66.7	50.6	79.3	57.4	59.4	67.6	66.7	82.5	76.2	68.8	76.0	73.5	81.4	75.4	11.1	78.1	70.7	91.1	90.5	58.5	61.8	84.2	59.7	68.3
No	%	27.4	7.9	20.4	0	9.4	15.2	13.8	4.2	30.5	3.6	17.9	13.2	0.5	28.6	12.8	26.5	13.8	15.8	3.7	19.2	8.3	1.9	0	37.7	4.1	5.3	10.4	15.5
Unsure	%	4.7	0.8	3.0	0	3.5	2.7	3.4	1.0	7.0	0.7	2.4	0.9	0.2	1.5	1.6	0	0.4	1.1	0	0	3.2	0.9	9.5	1.3	0.8	0	2.6	2.1
Missing	%	7.0	55.9	6.3	18.2	20.5	31.4	3.4	37.5	3.1	28.1	13.1	3.5	23.1	1.1	9.6	0	4.5	7.7	85.2	2.7	17.8	6.1	0	2.5	33.3	10.5	27.3	14.0

Notes: Gray cells labeled with a plus symbol indicate that fewer than 25 forms had been received during the reporting period. Statistics were calculated only if there were at least 25 forms received.

Yellow cells labeled with a dash symbol indicate that between 0 and 11 responses had been received during the reporting period. Statistics were only calculated for items with at least 11 responses.

Cells with one asterisk symbol indicate that the 'Missing' category includes respondents who did not answer all of the items required to calculate this measure.

Cells with two asterisk symbols indicate that statistics are based on a subset of data linked between Third Trimester and Postpartum Surveys.

Rows labeled with an "N" indicate the number of observations from which percentages have been calculated.

Table C.3.2. By Strong Start Approach

Data Elements	N, Mean or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Characteristics at Intake					
Smoking	N	2993	4401	11761	19155
Yes	%	10.1	7.8	14.1	12
No	%	77.1	71.7	77.8	76.3
Missing	%	12.9	20.4	8.1	11.7
Food Insecure	N	2993	4401	11761	19155
Yes	%	18.1	18.5	16.1	16.9
No	%	76.9	61.4	76.2	72.9
Missing*	%	5.0	20.0	7.7	10.1
Exhibiting Depressive Symptoms	N	2993	4401	11761	19155
Yes	%	21.8	25.2	23.4	23.5
No	%	69.3	57.0	69.3	66.4
Missing*	%	9.0	17.9	7.3	10.0
Experiencing Intimate Partner Violence in a Relationship (measured by Slapped, Threatened, and Thrown)	N	2993	4401	11761	19155
Yes	%	20.6	17.1	19.0	18.8
No	%	77.2	68.4	78.5	76.0
Missing*	%	2.1	14.5	2.4	5.1
Experiencing Intimate Partner Violence at Intake (Measured by Women’s Experience of Battery)	N	2993	4401	11761	19155
Yes	%	2.1	2.9	2.2	2.3
No	%	90.2	81.0	87.2	86.2
Missing*	%	7.7	16.0	10.6	11.5
Mother’s Weight					
BMI of Mother at First Prenatal Visit	N	2133	1433	3103	6669
BMI, <30	%	70.2	53.5	47.0	55.9
Obese, 30-39	%	18.8	19.5	23.5	21.2
Very obese, ≥40	%	3.1	5.9	10.3	7.1
Missing	%	7.8	21.0	19.1	15.9
Maternal Weight Gain	N	2133	1433	3103	6669
Very low, <.26 lbs. per week	%	7.6	11.0	19.8	14.0
Average, .26-1.74 lbs. per week	%	80.7	50.6	52.8	61.2
Very high, >1.74 lbs. per week	%	0.7	0.5	0.6	0.6
Missing	%	10.9	37.9	26.8	24.1
Pre-Pregnancy Diagnoses					
Type I Diabetes	N	2133	1433	3103	6669
Yes	%	0.5	1.3	1.5	1.1
No	%	99.5	74.2	84.4	87.0
Not Known	%	0	7.7	11.1	6.8
Missing	%	0	16.7	3.1	5.0
Type II Diabetes	N	2133	1433	3103	6669
Yes	%	0	2.6	1.9	1.5
No	%	5.0	72.9	83.3	56.1
Not Known	%	0	7.7	11.1	6.8
Missing	%	94.9	16.7	3.7	35.7

Data Elements	N, Mean or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Hypertension	N	2133	1433	3103	6669
Yes	%	0.5	6.0	9.5	5.9
No	%	99.5	66.7	77.4	82.2
Not Known	%	0	7.6	10.2	6.4
Missing	%	0	19.7	2.9	5.6
Risk Factors from Past Pregnancies					
Previous Preterm Birth(s) Between 20 and 36 weeks, 6 days EGA	N	1127	700	1914	3741
Yes	%	10.7	11.4	18.9	15.0
No	%	89.3	63.9	63.2	71.2
Not Known	%	0	18.6	14.9	11.1
Missing	%	0	6.1	3.0	2.7
Previous Birth(s) < 2,500 grams	N	1127	700	1914	3741
Yes	%	1.9	8.6	14.8	9.7
No	%	95.8	60.4	61.7	71.7
Not Known	%	0	24.7	19.2	14.5
Missing	%	2.3	6.3	4.3	4.1
Previous Miscarriage(s), < 20 weeks EGA	N	1511	749	2086	4346
Yes	%	32.6	23.6	30.5	30.1
No	%	67.4	55.5	52.4	58.1
Not Known	%	0	18.0	15.5	10.5
Missing	%	0	2.8	1.6	1.2
Previous Elective Termination(s)	N	1511	749	2086	4346
Yes	%	15.4	22.0	13.9	15.8
No	%	84.6	52.6	68.7	71.5
Not Known	%	0	17.6	15.7	10.6
Missing	%	0	7.7	1.7	2.2
Previous Still Birth(s), Fetal Death ≥20 weeks EGA	N	1127	700	1914	3741
Yes	%	0.9	2.0	3.7	2.5
No	%	96.8	64.0	75.1	79.6
Not Known	%	0	22.7	17.2	13.1
Missing	%	2.3	11.3	4.0	4.8
Risk Factors During Current Pregnancy					
Urinary Tract Infection(s) During Last 6 Months of Pregnancy	N	2133	1433	3103	6669
Yes	%	2.6	11.0	12.1	8.8
No	%	92.7	57.4	66.3	72.8
Not Known	%	0	10.8	18.9	11.1
Missing	%	4.6	20.8	2.8	7.2
Cervical Incompetence	N	2133	1433	3103	6669
Yes	%	0	0.8	1.6	0.9
No	%	4.0	70.6	75.2	51.4
Not Known	%	0	8.6	20.4	11.3
Missing	%	96.0	20.1	2.8	36.3
Placental Previa	N	2133	1433	3103	6669
Yes	%	0	1.0	1.1	0.7
No	%	5.1	70.3	75.7	52.0
Not Known	%	0	8.7	20.3	11.3

Data Elements	N, Mean or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Missing	%	94.9	20.0	2.9	36.0
Placental Abruption	N	2133	1433	3103	6669
Yes	%	0.4	0.4	0.3	0.4
No	%	99.6	69.4	76.2	82.2
Not Known	%	0	9.8	20.6	11.7
Missing	%	0	20.4	2.9	5.7
Gestational Diabetes	N	2133	1433	3103	6669
Yes	%	2.7	4.2	5.3	4.2
No	%	97.3	65.4	76.0	80.6
Not Known	%	0	10.3	15.9	9.6
Missing	%	0	20.1	2.8	5.6
Pregnancy-Related Hypertension	N	2133	1433	3103	6669
Yes	%	1.3	7.8	7.7	5.7
No	%	98.7	62.6	74.8	79.8
Not Known	%	0	9.4	14.6	8.8
Missing	%	0	20.2	2.9	5.7
Preeclampsia	N	2133	1433	3103	6669
Yes	%	1.9	5.2	4.3	3.7
No	%	98.1	65.0	77.9	81.6
Not Known	%	0	9.7	15.1	9.1
Missing	%	0	20.2	2.8	5.6
Syphilis	N	2133	1433	3103	6669
Yes	%	0	0.3	0.4	0.3
No	%	0	68.2	89.1	56.1
Not Known	%	100	11.4	7.7	38.0
Missing	%	0	20.2	2.8	5.6
HIV	N	2133	1433	3103	6669
Yes	%	0	1.2	0.6	0.5
No	%	100	69.2	90.3	88.9
Not Known	%	0	9.5	6.3	4.9
Missing	%	0	20.1	2.8	5.6
Congenital Abnormalities of the Fetus	N	2133	1433	3103	6669
Yes	%	0	1.8	1.7	1.2
No	%	0	68.8	77.6	50.9
Not Known	%	100	9.2	17.6	42.1
Missing	%	0	20.2	3.1	5.8
Inter-Pregnancy Interval					
Inter-Pregnancy Interval with Current Pregnancy Since Last Birth	N	1127	700	1914	3741
Less than 18 months	%	24.3	18	19.5	20.7
Greater than or equal to 18 months	%	39.8	48.3	51.9	47.6
Missing	%	35.9	33.7	28.6	31.8
Prenatal Service Provider					
Routine Prenatal Service Provider from Exit Data	N	2133	1433	3103	6669
Obstetrician	%	2.2	18.9	70.2	37.4
Nurse Practitioner	%	17.9	0.3	0.2	5.9
Family Medicine Physician	%	0	27.3	2.7	7.1

Data Elements	N, Mean or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Certified Midwife or Nurse Midwife	%	79.5	25.6	8.1	34.7
Licensed Professional Midwife	%	0.1	4.3	1.7	1.8
Other	%	0.3	5.3	6.6	4.3
Missing	%	0	18.2	10.6	8.9
Enhanced Encounters					
Total Number of Exit Forms with Valid Enhanced Encounter Information	N	1886	373	2493	4752
Average number of enhanced encounters per participant	Mean	4.0	2.2	5.0	4.4
Received Care Coordinator Encounters	N	2133	1433	3103	6669
Yes	%	96.8	27.9	83.7	75.9
No	%	2.5	46.3	11.3	16
Not known	%	0.3	6.8	0.7	1.9
Missing	%	0.4	19.0	4.3	6.2
Total Number of Exit Forms with Valid Care Coordinator Encounter Information	N	1886	364	2486	4736
Average per participant	Mean	4.0	2.1	4.8	4.3
Received Mental Health Care Encounters	N	2133	1433	3103	6669
Yes	%	0	3.8	8.2	4.6
No	%	0	68.9	80.7	52.3
Not known	%	0	8.7	6.7	5.0
Missing	%	100	18.6	4.4	38.0
Total Number of Exit Forms with Valid Mental Health Care Encounter Information	N	–	42	213	255
Average number of mental health care encounters per participant	Mean	–	1.3	2.2	2.1
Received Doula Encounters	N	2133	1433	3103	6669
Yes	%	11.9	0.3	1.2	4.4
No	%	0	72.0	88.7	56.7
Not known	%	0	8.6	4.3	3.9
Missing	%	88.1	19.1	5.8	35.0
Total Number of Exit Forms with Valid Doula Encounter Information	N	–	–	–	–
Average number of doula encounters per participant	Mean	–	–	–	–
Enhanced Services					
Total Number of Exit Forms with Valid Enhanced Services Information	N	625	368	1253	2246
Average number of enhanced services per participant	Mean	1.6	2.3	7.5	5.0
Received Health Education, Not Centering	N	2133	1433	3103	6669
Yes	%	0	10.0	33.5	17.8
No	%	0	61.1	36.6	30.2
Not known	%	0	9.8	3.6	3.8
Missing	%	100	19.2	26.2	48.3
Total Number of Exit Forms with Valid Health Education Service Information	N	–	101	941	1042
Average number of health education services per participant	Mean	–	2.2	3.5	3.4
Received Home Visits	N	2133	1433	3103	6669
Yes	%	29.3	3.5	8.4	14.1
No	%	22.6	62.5	62.2	49.6
Not known	%	0	14.9	3.2	4.7
Missing	%	48.1	19.1	26.2	31.7
Total Number of Exit Forms with Valid Home Visit Service Information	N	625	17	197	839
Average number of home visit services per participant	Mean	1.6	1.1	1.4	1.5
Received Self-Care, Not Centering	N	2133	1433	3103	6669

Data Elements	N, Mean or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Yes	%	0	5.8	14.0	7.8
No	%	0	60.4	55.6	38.8
Not known	%	0	14.3	3.5	4.7
Missing	%	100	19.5	26.9	48.7
Total Number of Exit Forms with Valid Self-Care Service Information	N	–	66	351	417
Average number of self-care services per participant	Mean	–	2.7	6.6	5.9
Received Nutrition Counseling	N	2133	1433	3103	6669
Yes	%	0	27.5	36.6	23.0
No	%	0	45.4	34.5	25.8
Not Known	%	100	8.0	4.5	35.8
Missing	%	0	19.1	24.4	15.4
Total Number of Exit Forms with Valid Nutrition Counseling Service Information	N	–	336	1023	1359
Average number of nutrition counseling services per participant	Mean	–	1.3	3.3	2.8
Received Substance Abuse Services	N	2133	1433	3103	6669
Yes	%	0	1.3	2.2	1.3
No	%	0	68.8	67.6	46.2
Not Known	%	100	10.3	4.4	36.2
Missing	%	0	19.7	25.8	16.2
Total Number of Exit Forms with Valid Substance Abuse Service Information	N	–	–	43	44
Average number of substance abuse services per participant	Mean	–	–	2.0	2.0
Referrals					
Total Number of Exit Forms with Valid Referral Information for Non-Medical Services Outside of Strong Start	N	2133	1433	3103	6669
Yes	%	0	9.2	42.5	21.7
No	%	0	61.8	48.6	35.9
Not Known	%	100	9.0	3.6	35.6
Missing	%	0	20.0	5.3	6.8
Total Number of Exit Forms with Valid Referral Information for Non-Medical Services	N	–	126	1030	1156
Average number of referrals for non-medical services per participant	Mean	–	1.6	2.6	2.5
Referrals for High Risk Medical Services	N	2133	1433	3103	6669
Yes	%	0	22.1	13.2	10.9
No	%	0	46.5	71.8	43.4
Not Known	%	100	12.4	6.6	37.7
Missing	%	0	19.0	8.3	8.0
Total Number of Exit Forms with Valid Referral Information for High Risk Medical Services	N	–	237	273	510
Average number of referrals for high risk medical services per participant	Mean	–	1.8	1.5	1.6
Total Number of Exit Forms with Valid High Risk Encounter Information	N	–	201	229	430
Average number of high risk encounters per participant	Mean	–	2.6	6.7	4.8
Delivery Process					
Deliveries location from Exit data	N	2133	1433	3103	6669
Hospital	%	46.0	73.9	84.3	69.8
Birth center	%	47.0	0	0.1	15.1
Home birth	%	6.2	0	0.2	2.1
Other	%	0.5	1.0	0.4	0.6
Missing	%	0.3	25.1	15.0	12.5

Data Elements	N, Mean or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Preterm Labor Management					
Progesterone Injections	N	2133	1433	3103	6669
Yes	%	0	1.5	3.0	1.7
No	%	0.7	63.6	59.7	41.7
Not known	%	0	13.7	29.1	16.5
Missing	%	99.3	21.1	8.2	40.1
Vaginal Progesterone	N	2133	1433	3103	6669
Yes	%	0	0.1	1.4	0.7
No	%	0.7	64.8	57.7	41.0
Not known	%	0	13.7	32.6	18.1
Missing	%	99.3	21.4	8.3	40.2
Tocolytics	N	2133	1433	3103	6669
Yes	%	0	1.3	1.0	0.7
No	%	7.2	63.2	56.9	42.4
Not known	%	0	14	33.5	18.6
Missing	%	92.8	21.6	8.5	38.3
Antenatal Steroids	N	2133	1433	3103	6669
Yes	%	0.4	2.7	2.5	1.9
No	%	99.6	61.9	57.7	72
Not known	%	0	14.2	31.5	17.7
Missing	%	0	21.3	8.4	8.5
Induction of Labor with Pitocin, Excluding Planned C-Sections	N	2133	1297	2826	6256
Yes	%	6.1	17.0	12.8	11.4
No	%	8.3	3.9	0.9	4.1
Not known	%	0	2.8	3.3	2.1
Missing	%	85.6	76.3	82.9	82.5
Induction of Labor, Excluding Planned C-Sections	N	2133	1297	2826	6256
Yes	%	14.4	23.8	17.2	17.6
No	%	85.3	42.8	35.5	54.0
Not known	%	0	10.6	37.8	19.3
Missing	%	0.3	22.7	9.6	9.1
Multiples					
Multiples Pregnancy from Exit Data	N	2133	1433	3103	6669
Two or more identified fetuses	%	0.1	1.5	1.9	1.3
One identified fetus	%	99.5	75.4	86.4	88.2
Missing	%	0.4	23.0	11.7	10.5
Multiples Birth from Exit Data	N	2133	1433	3103	6669
Two or more infants born alive	%	0.1	1.3	1.8	1.2
One infant born alive	%	98.9	76.9	80.7	85.7
Missing	%	1.0	21.8	17.5	13.1
Breastfeeding					
Breastfeeding Intention at Third Trimester	N	1876	2145	4683	8704
Breastfeed only	%	79.3	48.9	37.8	49.5
Formula only	%	3.6	9.0	18.2	12.8
Breastfeed and formula	%	11.5	30.8	30.7	26.6
Unsure	%	3.6	6.5	11.5	8.6

Data Elements	N, Mean or %	Birth Center Approach	Group Prenatal Care Approach	Maternity Care Home Approach	Total
Missing	%	2.1	4.8	1.8	2.6
Breastfeeding After Delivery from Postpartum Data	N	1533	1416	4000	6949
Yes	%	86.4	64.7	61.5	67.7
No	%	7.4	9.5	25.6	18.3
Prefer not to answer	%	0.7	1.8	0.5	0.8
Missing	%	5.6	24	12.3	13.2
Breastfeeding Intention at Third Trimester From Linked Data**	N	1151	853	2507	4511
Breastfeed only	%	80.9	57.4	39.5	53.5
Formula only	%	4.0	7.7	18.9	13.0
Breastfeed and formula	%	11.3	29.7	30.6	25.5
Unsure	%	3.8	5.2	10.9	8.0
Missing	%	0	0	0	0
Breastfeeding After Delivery From Linked Data**	N	1151	853	2507	4511
Yes	%	92.4	84.8	70.6	78.9
No	%	7.0	12.9	28.9	20.3
Prefer not to answer	%	0.5	2.3	0.5	0.8
Missing	%	0	0	0	0
Women Who Breastfed As a Percentage of Women Who Planned to Breastfeed	%	100.2	97.4	100.7	99.9
Support Person					
Plan to Have a Support Person	N	1876	2145	4683	8704
Yes	%	90.0	87.9	80.4	84.3
No	%	1.0	1.6	1.1	1.2
Unsure	%	3.8	3.3	2.9	3.2
Missing	%	5.2	7.2	15.6	11.3
Had a Support Person During Labor	N	1533	1416	4000	6949
Yes	%	93.7	69.5	83.1	82.7
No	%	1.3	6.7	3.3	3.5
Unsure	%	0.3	1.4	0.4	0.6
Missing	%	4.8	22.4	13.2	13.2
Birth Control Counseling					
Had Birth Control Counseling After Delivery	N	1533	1416	4000	6949
Yes	%	71.6	60.8	69.7	68.3
No	%	19.4	12.3	15.2	15.5
Unsure	%	2.8	2.4	1.8	2.1
Missing	%	6.2	24.5	13.3	14.0

Notes: Yellow cells labeled with a dash symbol indicate that between 0 and 11 responses had been received during the reporting period. Statistics were only calculated for items with at least 11 responses.

Cells that contain one asterisk indicate that the 'Missing' category includes respondents who did not answer all of the items required to calculate this measure.

Cells that contain two asterisks indicate that statistics are based on a subset of data linked between Third Trimester and Postpartum Surveys.

Rows labeled with an "N" indicate the number of observations from which percentages have been calculated.

**APPENDIX D: PARTICIPANT-LEVEL PROCESS EVALUATION
DATA QUALITY REPORT**

IV. Participant-Level Process Evaluation Data – Data Quality Report

This section summarizes the Strong Start participant-level process evaluation data quality issues for all data submitted for the first quarter (Q1) of 2015. We summarize issues related to missing data, duplicate study IDs, unmatched study IDs, and multiple selection responses.

A. Processed Forms and Valid Forms for Q1 2014 to Q1 2015

1. Definitions

- Processed forms: All forms received through the current data submission period.
- Valid forms: All forms received through the current data submission period that met data quality standards and are analyzed and reported in the participant-level process evaluation report (e.g. excluding forms with duplicate study IDs, invalid study IDs, etc.)

Table D.1. Number of Forms Processed and Number of Valid Forms by Awardee, Q1 2014 to Q1 2015

Awardee	Processed and Valid Forms	Intake Forms	Third Trimester Surveys	Postpartum Surveys	Exit Forms	Total
1. Access Community Health Network	# of processed forms	1317	689	534	12	2552
	# of valid forms	1260	686	532	12	2490
	% of valid forms	95.7%	99.6%	99.6%	100.0%	97.6%
2. Albert Einstein Healthcare Network	# of processed forms	388	208	128	289	1013
	# of valid forms	354	202	127	267	950
	% of valid forms	91.2%	97.1%	99.2%	92.4%	93.8%
3. American Association of Birth Centers	# of processed forms	3010	1804	1463	2142	8419
	# of valid forms	2842	1772	1441	2133	8188
	% of valid forms	94.4%	98.2%	98.5%	99.6%	97.3%
4. Amerigroup Corporation	# of processed forms	305	176	44	60	585
	# of valid forms	283	170	44	60	557
	% of valid forms	92.8%	96.6%	100.0%	100.0%	95.2%
5 Central Jersey Family Health Consortium	# of processed forms	618	258	180	231	1287
	# of valid forms	588	243	171	231	1233
	% of valid forms	95.1%	94.2%	95.0%	100.0%	95.8%
6. Florida Association of Healthy Start Coalitions	# of processed forms	715	335	330	275	1655
	# of valid forms	699	335	328	275	1637
	% of valid forms	97.8%	100.0%	99.4%	100.0%	98.9%
7. Grady Memorial Hospital Corporation DBA Grady Health System	# of processed forms	298	179	29	0	506
	# of valid forms	285	179	29	0	493
	% of valid forms	95.6%	100.0%	100.0%	N/A	97.4%
8. Harris County Hospital District	# of processed forms	718	415	408	139	1680
	# of valid forms	715	415	408	139	1677
	% of valid forms	99.6%	100.0%	100.0%	100.0%	99.8%

Awardee	Processed and Valid Forms	Intake Forms	Third Trimester Surveys	Postpartum Surveys	Exit Forms	Total
9. HealthInsight of Nevada	# of processed forms	283	196	130	129	738
	# of valid forms	261	192	128	129	710
	% of valid forms	92.2%	98.0%	98.5%	100.0%	96.2%
10. Johns Hopkins University	# of processed forms	911	422	450	206	1989
	# of valid forms	908	373	420	205	1906
	% of valid forms	99.7%	88.4%	93.3%	99.5%	95.8%
11. Los Angeles County Department of Health Services	# of processed forms	1177	44	89	64	1374
	# of valid forms	1177	42	84	64	1367
	% of valid forms	100.0%	95.5%	94.4%	100.0%	99.5%
12. Maricopa Special Health Care District	# of processed forms	397	178	114	0	689
	# of valid forms	381	177	114	0	672
	% of valid forms	96.0%	99.4%	100.0%	N/A	97.5%
13 Medical University of South Carolina	# of processed forms	581	316	412	331	1640
	# of valid forms	576	312	403	331	1622
	% of valid forms	99.1%	98.7%	97.8%	100.0%	98.9%
14. Meridian Health Plan	# of processed forms	1548	818	716	332	3414
	# of valid forms	1540	817	714	331	3402
	% of valid forms	99.5%	99.9%	99.7%	99.7%	99.6%
15. Mississippi Primary Health Care Association	# of processed forms	1673	707	575	1066	4021
	# of valid forms	1666	694	572	1066	3998
	% of valid forms	99.6%	98.2%	99.5%	100.0%	99.4%
16. Oklahoma Health Care Authority	# of processed forms	120	42	34	73	269
	# of valid forms	111	42	34	72	259
	% of valid forms	92.5%	100.0%	100.0%	98.6%	96.3%
17. Providence Health Foundation of Providence Hospital	# of processed forms	1292	470	252	46	2060
	# of valid forms	1193	462	247	46	1948
	% of valid forms	92.3%	98.3%	98.0%	100.0%	94.6%
18. Signature Medical Group	# of processed forms	739	218	183	250	1390
	# of valid forms	722	217	183	249	1371
	% of valid forms	97.7%	99.5%	100.0%	99.6%	98.6%
19. St. John Community Health Investment Corp.	# of processed forms	53	24	54	39	170
	# of valid forms	50	24	54	39	167
	% of valid forms	94.3%	100.0%	100.0%	100.0%	98.2%
20. Texas Tech University Health Sciences Center	# of processed forms	319	116	73	0	508
	# of valid forms	302	116	73	0	491
	% of valid forms	94.7%	100.0%	100.0%	N/A	96.7%
21. United Neighborhood Health Services	# of processed forms	560	225	162	289	1236
	# of valid forms	541	223	157	288	1209
	% of valid forms	96.6%	99.1%	96.9%	99.7%	97.8%

Awardee	Processed and Valid Forms	Intake Forms	Third Trimester Surveys	Postpartum Surveys	Exit Forms	Total
22. University of Alabama at Birmingham	# of processed forms	510	210	214	146	1080
	# of valid forms	456	210	213	146	1025
	% of valid forms	89.4%	100.0%	99.5%	100.0%	94.9%
23. University of Kentucky Research Foundation	# of processed forms	391	170	95	0*	656
	# of valid forms	391	170	95	0*	656
	% of valid forms	100.0%	100.0%	100.0%	N/A	100.0%
24. University of Puerto Rico Medical Sciences Campus	# of processed forms	405	229	159	231	1024
	# of valid forms	379	228	159	230	996
	% of valid forms	93.6%	99.6%	100.0%	99.6%	97.3%
25. University of South Alabama	# of processed forms	850	239	125	139	1353
	# of valid forms	828	236	123	139	1326
	% of valid forms	97.4%	98.7%	98.4%	100.0%	98.0%
26. University of Tennessee Health Sciences Center	# of processed forms	140	66	19	0	225
	# of valid forms	140	66	19	0	225
	% of valid forms	100.0%	100.0%	100.0%	N/A	100.0%
27. Virginia Commonwealth University	# of processed forms	520	103	81	217	921
	# of valid forms	507	101	77	217	902
	% of valid forms	97.5%	98.1%	95.1%	100.0%	97.9%
Total	# of processed forms	19838	8857	7053	6706	42454
	# of valid forms	19155	8704	6949	6669	41477
	% of valid forms	96.6%	98.3%	98.5%	99.4%	97.7%

Note: *Kentucky did not submit Exit Form data in time for the Q1 2015 report. These data will be included in subsequent reports.

The following awardee **DID NOT** submit data for Q1 2015:

- University of Tennessee Health Sciences Center

B. Missing Data

2. Research Variables

Among questions that should be answered by every respondent, there were several items for which greater than 10 percent of data were missing: two items from the Intake Form, two items from the Third Trimester Survey, 13 items from the Postpartum Survey, and 21 items from the Exit Form. The majority of these items were most likely missing because the questions did not apply to respondents, and there was not a “Not Applicable” option (e.g., “Are you homeless or living in a shelter right now?”), or because participants were uncomfortable answering sensitive questions. On the Exit Form, items may be missing because individuals who entered the data skipped questions when their answers were “No” or “Not Known”. Additionally, some participants may have had missing values for almost all the questions on the Postpartum Survey and Exit Form because they were lost to follow up. The following table lists survey items for which greater than 10 percent of data were missing, along with possible explanations for these missing data.

Table D.2. Survey Items with Missing Proportion Greater than 10 Percent, Q1 2015

Survey Question	Overall Missing Proportion	Possible Reasons for Missing Data
Items from Intake Form		
“Did any of your parents have a problem with drug use?”	10%	This is a sensitive question.
“Do you have a college degree?”	11%	This is a sensitive question or participants whose education levels are high-school graduate or lower may have skipped this question.
Items from Third Trimester Survey		
“Do you plan to have a support person with you during labor?”	11%	This might be a sensitive or unclear question to some participants.
“Are you homeless or living in a shelter right now?”	10%	This might be a sensitive question to some participants.
Items from Postpartum Survey		
“Did you have any medicine during labor to help you with pain?”	17%	Some participants might not have adequate information to answer this question. Quite a few participants from several awardees were unable to be contacted to complete the Postpartum Surveys. Therefore, they had missing values for most of the questions in the Postpartum Survey. The high proportions of missing data for these variables were merely due to the fact that participants were lost to follow-up, but not caused by survey questions themselves.
“How did you deliver this baby?”	12%	
“Did a doctor, nurse, or midwife try to induce your labor (start your contractions using medicine)?”	13%	
“Did a doctor, nurse, or midwife try to speed up your labor using medicine?”	13%	
“Did a doctor, nurse, or midwife break your bag of water to start or speed up your labor?”	13%	
“How satisfied were you with your delivery experience?”	13%	
“How would you rate your level of overall satisfaction with the prenatal care you received?”	13%	
“What is your relationship status now?”	14%	
“Did you ever breastfeed or pump breast milk to feed your baby after delivery, even for a short period of time?”	13%	
“Where did you deliver this baby?”	12%	
“After your new baby was born, did a doctor, nurse, or other health care worker talk with you about using birth control?”	14%	
“Did you have a support person with you during labor?”	13%	
“Are you or your spouse/partner/boyfriend doing anything now to keep from getting pregnant?”	16%	
Items from Exit Form		
Enhanced Encounters – Mental Health Care	37%	Persons who entered the data skipped these questions instead of selecting “No” or “Not Known”. Additionally, some of this may be due to information not being available to the person who is filling out the forms.
Enhanced Encounters – Doula	35%	
Enhanced Services – Health Education	48%	
Enhanced Services – Home Visits	32%	
Enhanced Services – Self-Care	49%	
Enhanced Services – Nutrition Counseling	15%	
Enhanced Services – Substance Abuse Service	16%	
Participant risk factors prior to current pregnancy – Type II diabetes	36%	
Risk factor during pregnancy – Cervical incompetence	36%	
Risk factor during pregnancy – Placenta previa	36%	
Risk factor during pregnancy – other risk factor	15%	
Treatment prior to or during labor – Progesterone injections	40%	
Treatment prior to or during labor – Vaginal progesterone	40%	
Treatment prior to or during labor – Tocolytics	38%	
How many fetuses were identified?	11%	

Survey Question	Overall Missing Proportion	Possible Reasons for Missing Data
How many infants were live born?	13%	Quite a few participants were lost to follow up, thus the information was not available
How many infants were still born?	99%	The question was skipped if there was no still born.
Height of mother at first prenatal visit	15%	The height information at first prenatal visit might not be available for some participants.
Weight of mother at last prenatal visit	13%	The weight information at last prenatal visit might not be available for some participants.
Method of Delivery	14%	Quite a few participants were lost to follow up, thus the information was not available
Please indicate the type of facility where the participant's delivery occurred.	12%	Quite a few participants were lost to follow up, thus the information was not available

3. Date Completed

The date the survey was completed determines the quarter in which data will be reported. For example, if a form is completed in April 2015 and is submitted with the Q1 2015 data, we would hold the data and report it with Q2 2015 data. In this section, we report the number of forms for which the “date completed” field was erroneously skipped. Here, we call these instances “omission errors.” There were 33 omission errors on Intake Forms, 54 omission errors on Third Trimester Surveys, 229 omission errors on Postpartum Surveys and 204 omission errors on Exit Forms.

Table D.3. Number of Intake Forms for which “Date Completed” is Missing, by Awardee, Q1 2015

Awardee	# of Errors
1. Access Community Health Network	2
2. Albert Einstein Healthcare Network	2
3. American Association of Birth Centers	2
4. Health Insight of Nevada	3
5. Johns Hopkins University	2
6. Mississippi Primary Health Care Association	2
7. Providence Health Foundation of Providence Hospital	8
8. Texas Tech University Health Sciences Center	1
9. University of South Alabama	1
10. Virginia Commonwealth University	10
Total	33

Table D.4. Number of Third Trimester Surveys for which “Date Completed” is Missing, by Awardee, Q1 2015

Awardee	# of Errors
1. Access Community Health Network	1
2. Albert Einstein Healthcare Network	6
3. Amerigroup Corporation	8
4. Central Jersey Family Health Consortium	9
5. Grady Memorial Hospital Corporation DBA Grady Health System	2
6. HealthInsight of Nevada	8
7. Johns Hopkins University	1
8. Los Angeles County Department of Health Services	5
9. Medical University of South Carolina	1
10. Mississippi Primary Health Care Association	3

Awardee	# of Errors
11. Oklahoma Health Care Authority	1
12. Providence Health Foundation of Providence Hospital	5
13. University of Alabama at Birmingham	1
14. University of South Alabama	1
15. Virginia Commonwealth University	2
Total	54

Table D.5. Number of Postpartum Surveys for which “Date Completed” is Missing, by Awardee, Q1 2015

Awardee	# of Errors
1. Access Community Health Network	2
2. Albert Einstein Healthcare Network	70
3. American Association of Birth Centers	13
4. Amerigroup Corporation	8
5. Central Jersey Family Health Consortium	12
6. HealthInsight of Nevada	3
7. Johns Hopkins University	37
8. Maricopa Special Health Care District	1
9. Medical University of South Carolina	6
10. Mississippi Primary Health Care Association	6
11. Providence Health Foundation of Providence Hospital	5
12. St. John Community Health Investment Corp.	46
13. University of South Alabama	5
14. Virginia Commonwealth University	15
Total	229

Table D.6. Number of Exit Forms for which “Date Completed” is Missing, by Awardee, Q1 2015

Awardee	# of Errors
1. Amerigroup Corporation	4
2. HealthInsight of Nevada	15
3. Medical University of South Carolina	1
4. Mississippi Primary Health Care Association	2
5. Oklahoma Health Care Authority	1
6. Virginia Commonwealth University	181
Total	204

4. Awardee-Specific Issues

Key variables are defined as items that every participant should answer. In Tables 7 to 10, we identify the number of forms for which greater than 60% of key variables were missing, aggregated by awardee. In addition, we identify the number of forms for which all key variables were missing except for the study ID and/or the date completed. We will be conducting data quality check-ins with the awardees to resolve these issues for future data submissions.

Table D.7. Number of Intake Forms for which Greater Than 60% of Key Variables Were Missing, by Awardee, Q1 2015

Awardee	Number of Forms with Greater than 60% of Key Variables Missing	Number of Forms with ALL the Key Variables Missing
1. Access Community Health Network	7	1
2. Albert Einstein Healthcare Network	4	1
3. American Association of Birth Centers	25	0
4. Amerigroup Corporation	1	0
5. Central Jersey Family Health Consortium	7	1
6. Florida Association of Healthy Start Coalitions	1	0
7. Grady Memorial Hospital Corporation DBA Grady Health System	2	0
8. Harris County Hospital District	2	1
9. HealthInsight of Nevada	2	0
10. Johns Hopkins University	2	0
11. Los Angeles County Department of Health Services	10	0
12. Maricopa Special Health Care District	1	0
13. Mississippi Primary Health Care Association	48	1
14. Providence Health Foundation of Providence Hospital	5	0
15. Signature Medical Group	16	0
16. Texas Tech University Health Sciences Center	28	0
17. United Neighborhood Health Services	2	0
18. University of Alabama at Birmingham	2	0
19. University of Kentucky Research Foundation	20	13
20. University of Puerto Rico Medical Sciences Campus	4	0
21. University of South Alabama	6	0
22. University of Tennessee Health Sciences Center	66	0
23. Virginia Commonwealth University	69	40
Total	330	58

Table D.8. Number of Third Trimester Surveys for which Greater than 60% of Key Variables were Missing, by Awardee, Q1 2015

Awardee	Number of Forms with Greater than 60% of Key Variables Missing	Number of Forms with ALL the Key Variables Missing
1. Access Community Health Network	4	0
2. Albert Einstein Healthcare Network	6	0
3. American Association of Birth Centers	9	1
4. Amerigroup Corporation	3	3
5. Central Jersey Family Health Consortium	9	7
6. Florida Association of Healthy Start Coalitions	1	0
7. Grady Memorial Hospital Corporation DBA Grady Health System	1	0
8. HealthInsight of Nevada	3	0
9. Medical University of South Carolina	1	0
10. Mississippi Primary Health Care Association	6	3
11. Oklahoma Health Care Authority	1	1
12. Providence Health Foundation of Providence Hospital	4	2
13. Signature Medical Group	4	4
14. United Neighborhood Health Services	7	7
15. University of Kentucky Research Foundation	3	0
16. University of Puerto Rico Medical Sciences Campus	1	0
17. Virginia Commonwealth University	4	1
Total	67	29

Table D.9. Number of Postpartum Surveys for which Greater than 60% of Key Variables were Missing, by Awardee, Q1 2015

Awardee	Number of Forms with Greater than 60% of Key Variables Missing	Number of Forms with ALL the Key Variables Missing*
1. Access Community Health Network	5	0
2. Albert Einstein Healthcare Network	2	0
3. American Association of Birth Centers	6	2
4. Central Jersey Family Health Consortium	4	1
5. Florida Association of Healthy Start Coalitions	1	0
6. Harris County Hospital District	3	2
7. Johns Hopkins University	12	11
8. Los Angeles Department of Health Services	4	0
9. Meridian Health Plan	1	1
10. Mississippi Primary Health Care Association	7	4
11. Providence Health Foundation of Providence Hospital	1	1
12. Signature Medical Group	1	1
13. United Neighborhood Health Services	13	1
14. University of South Alabama	1	0
15. Virginia Commonwealth University	7	0
Total	68	24

Note: *Postpartum Surveys with all the key variables missing because participants were unable to be contacted to complete the form were excluded from the calculation.

Table D.10. Number of Exit Forms for which Greater than 60% of Key Variables were Missing, by Awardee, Q1 2015

Awardee	Number of Forms with Greater than 60% of Key Variables Missing
1. Albert Einstein Healthcare Network	2
2. Amerigroup Corporation	36
3. Florida Association of Healthy Start Coalitions	1
4. Harris County Hospital District	1
5. HealthInsight of Nevada	4
6. Johns Hopkins University	1
7. Los Angeles County Department of Health Services	1
8. Meridian Health Plan	1
9. Mississippi Primary Health Care Association	7
10. Oklahoma Health Care Authority	6
11. Providence Health Foundation of Providence Hospital	6
12. Signature Medical Group	4
13. University of Alabama at Birmingham	1
14. Virginia Commonwealth University	213
Total	284

C. Duplicates

Duplicate forms are forms that were assigned the same study ID. Below, we summarize the list of duplicates. There were three cases of duplicate Intake Forms, seven cases of duplicate Third Trimester Surveys, four cases of duplicate Postpartum Surveys, and 27 cases of duplicate Exit Forms. There was one case of duplicate Exit Forms which did not have an assigned awardee ID, which we have labeled as 'unmatched'. We are in the process of following up with the awardees to resolve these inconsistencies.

Table D.11. Number of Duplicate Intake Forms, by Awardee, Q1 2015

Awardee	# of Duplicates
1. Meridian Health Plan	1
2. University of Kentucky Research Foundation	1
3. University of South Alabama	1
Total	3

Table D.12. Number of Duplicate Third Trimester Surveys, by Awardee, Q1 2015

Awardee	# of Duplicates
1. American Association of Birth Centers	1
2. Amerigroup Corporation	5
3. Mississippi Primary Health Care Association	1
Total	7

Table D.13. Number of Duplicate Postpartum Surveys, by Awardee, Q1 2015

Awardee	# of Duplicates
1. American Association of Birth Centers	3
2. Mississippi Primary Health Care Association	1
Total	4

Table D.14. Number of Duplicate Exit Data Forms, by Awardee, Q1 2015

Awardee	# of Duplicates
1. Albert Einstein Healthcare Network	22
2. Johns Hopkins University	1
3. Oklahoma Health Care Authority	1
4. United Neighborhood Health Services	1
5. University of Puerto Rico Medical Sciences Campus	1
6. Unmatched	1
Total	27

D. Unmatched Study IDs

We checked for instances where the study ID on the received data did not match any study ID on the submitted crosswalk, which tracks all personally identifiable information for Strong Start enrollees, enabling the evaluation team to connect participant data to a particular person while minimizing the risk of a confidentiality breach. There were a total of 1,027 instances across 23 awardees. These instances cover data submitted from Q1 2014 to Q1 2015. We are in the process of following up with the awardees to resolve these inconsistencies.

Table D.15. Number of Study IDs with Received Data that is Not Matched to an Assigned Study ID on the Crosswalk, by Awardee, Q1 2014 to Q1 2015

Awardee	# of Study IDs
1. Access Community Health Network	168
2. Albert Einstein Healthcare Network	7
3. American Association of Birth Centers	64
4. Amerigroup Corporation	173
5. Central Jersey Family Health Consortium	11
6. Grady Memorial Hospital Corporation DBA Grady Health System	7
7. Harris County Hospital District	1
8. HealthInsight of Nevada	4
9. Johns Hopkins University	4
10. Los Angeles County Department of Health Services	9
11. Maricopa Special Health Care District	1
12. Meridian Health Plan	9
13. Mississippi Primary Health Care Association	42
14. Oklahoma Health Care Authority	3
15. Providence Health Foundation of Providence Hospital	21
16. Signature Medical Group	1
17. Texas Tech University Health Sciences Center	170
18. United Neighborhood Health Services	1
19. University of Alabama at Birmingham	6
20. University of Kentucky Research Foundation	21
21. University of South Alabama	115
22. University of Tennessee Health Sciences Center	186
23. Virginia Commonwealth University	3
Total	1,027

E. Multiple Selection Responses

Multiple selection responses are instances where the participant provided two or more answers to a question where only one answer was expected. Below, we summarize the list of multiple selection responses. There were 370 cases of multiple selection responses for Intake Forms, 105 cases for Third Trimester Surveys, 51 cases for Postpartum Surveys, and 166 cases for Exit Forms. We will be conducting data quality check-ins with the awardees to resolve these issues for future data submissions.

Table D.16. Number of Multiple Selection Responses on Intake Forms, by Awardee, Q1 2015

Awardee	# of Multiple Selection Responses
1. Access Community Health Network	27
2. Albert Einstein Healthcare Network	22
3. American Association of Birth Centers	103
4. Amerigroup Corporation	14
5. Central Jersey Family Health Consortium	10
6. Florida Association of Healthy Start Coalitions	3
7. Grady Memorial Hospital Corporation DBA Grady Health System	9
8. HealthInsight of Nevada	10
9. Johns Hopkins University	1
10. Maricopa Special Health Care District	5
11. Medical University of South Carolina	2
12. Mississippi Primary Health Care Association	23
13. Oklahoma Health Care Authority	7
14. Providence Health Foundation of Providence Hospital	53

Awardee	# of Multiple Selection Responses
15. St. John Community Health Investment Corp.	3
16. Texas Tech University Health Sciences Center	7
17. United Neighborhood Health Services	14
18. University of Alabama at Birmingham	37
19. University of Puerto Rico Medical Sciences Campus	11
20. University of South Alabama	9
Total	370

Table D.17. Number of Multiple Selection Responses on Third Trimester Surveys, by Awardee, Q1 2015

Awardee	# of Multiple Selection Responses
1. Access Community Health Network	5
2. Albert Einstein Healthcare Network	9
3. American Association of Birth Centers	29
4. Amerigroup Corporation	5
5. Central Jersey Family Health Consortium	7
6. Grady Memorial Hospital Corporation DBA Grady Health System	8
7. HealthInsight of Nevada	9
8. Johns Hopkins University	4
9. Los Angeles County Department of Health Services	5
10. Maricopa Special Health Care District	1
11. Mississippi Primary Health Care Association	1
12. Oklahoma Health Care Authority	2
13. Providence Health Foundation of Providence Hospital	10
14. Texas Tech University Health Sciences Center	4
15. United Neighborhood Health Services	3
16. University of Puerto Rico Medical Sciences Campus	3
Total	105

Table D.18. Number of Multiple Selection Responses on Postpartum Surveys, by Awardee, Q1 2015

Awardee	# of Multiple Selection Responses
1. Access Community Health Network	3
2. Albert Einstein Healthcare Network	3
3. American Association of Birth Centers	11
4. Central Jersey Family Health Consortium	1
5. Florida Association of Healthy Start Coalitions	5
6. HealthInsight of Nevada	9
7. Los Angeles County Department of Health Services	1
8. Maricopa Special Health Care District	1
9. Mississippi Primary Health Care Association	3
10. Providence Health Foundation of Providence Hospital	7
11. United Neighborhood Health Services	4
12. University of Alabama at Birmingham	3
Total	51

Table D.19. Number of Multiple Selection Responses on Exit Data Forms, by Awardee, Q1 2015

Awardee	# of Multiple Selection Responses
1. Albert Einstein Healthcare Network	15
2. Amerigroup Corporation	5
3. Central Jersey Family Health Consortium	5
4. Florida Association of Healthy Start Coalitions	4

Awardee	# of Multiple Selection Responses
5. Harris County Hospital District	1
6. HealthInsight of Nevada	39
7. Johns Hopkins University	4
8. Los Angeles County Department of Health Services	29
9. Medical University of South Carolina	1
10. Mississippi Primary Health Care Association	21
11. Oklahoma Health Care Authority	17
12. Providence Health Foundation of Providence Hospital	7
13. United Neighborhood Health Services	12
14. University of South Alabama	6
Total	166

**APPENDIX E: TECHNICAL ASSISTANCE STATE BACKGROUND
BRIEF**

Strong Start TA Background Brief Template

Strong Start Awardee Information	
I. Awardee Name	
A. Awardee Program Director, Contact information	
B. Approach Type	
C. Total Ever Enrolled through most recent quarter	
Medicaid Program Information	
II. Department within which Medicaid is located	
A. Department Director, Contact information	
B. Medicaid Agency Administration	
1. Agency Director, Contact information	
2. Agency Data Coordinator, Contact Information	
3. Other Department/Agency staff responsible for regulations, data sharing, privacy, contact information	
C. Upper Income Eligibility Threshold	
D. Total covered births in most recent year	
Vital Statistics Program Information	
III. Department within which Vital Statistics is located	
A. Department Director, Contact information	
B. Vital Statistics Agency Administration	
1. Agency Director, Contact information	
2. Agency Data Coordinator, Contact Information	
3. Other Department/Agency staff responsible for regulations, data sharing, privacy, contact information	
C. Total state births in most recent year	
Other Key Informants of Possible Relevance	
IV. Types of contacts	
A. Contacts surveyed by CMMI/Caitlin (Names, Contact information)	
B. Strong Start Letters of Support contacts (names, contact information, Summary of commitment made)	
C. Academy Health Workshop Participants/Resources (names, contact information)	
D. National Organization Contacts (e.g., Vital Statistics Directors, HIPAA/Privacy Orgs., Medicaid Directors, MCH Directors)	

Strong Start Awardee Information	
Current and/or Previous State-Level Data Linkage/Evaluation Efforts	
V. Previous efforts	Yes/No
A. <i>If yes, Project #1</i>	
1. Source of information	
2. Project Name	
3. Summary Description (including data sets linked, years, and findings)	
4. Agency/organization responsible	
5. Project leader, Contact information	
B. <i>Repeat for additional projects</i>	
Initial/Overall Assessment of Viability of Linkage	
VI. Probability of success	High/Medium/Low
A. Facilitating factors	
B. Primary barriers	
Next Steps	
VII. Outline and sequence of next steps (including contacts)	

**APPENDIX F: TECHNICAL ASSISTANCE EXECUTIVE BRIEF
TEMPLATE**

Supporting Data Linkage for the Strong Start II Initiative in [state name] to Improve Health Outcomes and Reduce Medicaid Spending

What is Strong Start?

The Strong Start II initiative aims to improve maternal and infant outcomes for women enrolled in Medicaid and the Children Health Insurance Program (CHIP) through three innovative evidence-based enhanced prenatal care approaches: maternity care homes, group prenatal care, and birth centers. The goal is to determine whether these new care approaches improve maternal and infant health outcomes, including reducing the prevalence of preterm births.

According to the March of Dimes, “Preterm birth is the leading cause of newborn death, and babies who survive an early birth often have breathing problems, cerebral palsy, intellectual disabilities and other health challenges.” Thus, Strong Start’s success would mean an increase in the proportion of babies who are not burdened with the health risks of a preterm birth. In turn, reduced preterm birth rates could mean that states would see a decrease in the total cost of medical care over the first year of life for children born to high risk mothers. The Centers for Medicare & Medicaid Services (CMS) has funded # awardees in [state name] to provide enhanced prenatal care services over a three-year period that began February 2013. These awardees include: [list awardees].

What Can Your State Do to Support Strong Start?

[State Name] can support Strong Start by assisting with a CMS-funded evaluation to measure the impact of the initiative on health outcomes, health care delivery, and cost of care. A central part of this evaluation utilizes the data from birth certificates (vital records), and Medicaid and CHIP enrollment and utilization. We need support from [name of State Agencies] to either develop matched birth certificate and Medicaid/CHIP administrative data files, OR provide birth certificates and Medicaid/CHIP data to the evaluation team so that it can perform the linkage necessary to conduct the impacts evaluation. Specific steps that would likely be involved in either approach would include: (1) gaining approvals for linking data, (2) releasing patient level data, and (3) sharing the requested data between states agencies and with CMS-funded evaluators. Similar data linkage efforts have been effectively leveraged to evaluate programs and improve public health.

STRONG START EVALUATION IS AN INVESTMENT IN [STATE NAME]’S FUTURE

- Reducing the proportion of births that are preterm gives more babies a healthy start in life. Preterm babies are at additional risk for a host of serious health problems.
- Improving birth outcomes is critical for health disparities elimination efforts. Currently, African American women and low-income women are much more likely to have preterm births.
- A conservative estimate of the average societal costs associated with a preterm birth is over \$60,000.

Why Support the Evaluation of Strong Start in [state name]?

- In [state name], XX percent of births are preterm, ranking # highest in the number of preterm births nationally.
- Prior research has noted that identifying effective interventions to reduce preterm births can reduce costs to the public sector (e.g., Medicaid). In [state name], early gestational births account for an estimated [\$\$\$] per year in Medicaid costs alone—reducing preterm births could result in major savings in both the short and long term.
- To determine how best to reduce the number and cost of preterm births, it is critical to evaluate Strong Start II.
- Customized technical assistance is available to support states in building their capacity to link vital record and Medicaid/CHIP data, or in sharing sensitive data with the evaluation team.
- Limited financial support will be available to states to partially offset the cost of performing the data linkage and/or sharing the data.

How can [state name] get help linking data?

CMS has hired a team of experts from the Urban Institute (UI), the American Institutes for Research (AIR), Health Management Associates (HMA) to assist states as part of the Strong Start evaluation.

- AIR is providing technical assistance to help states understand and navigate the legal and regulatory aspects of sharing and linking data, including compliance with HIPPA and Institutional Review Boards requirements.
- HMA is helping state officials to link birth certificate and Medicaid/CHIP data, including providing trainings to develop each state’s capacity to link data.

This support will be tailored to reflect the unique environment and goals of each state. For more information about how AIR and HMA can help you link your data, contact XXXXXX.

About the authors

The Center for Medicare and Medicaid Innovation (CMMI) of CMS has contracted with the Urban Institute and its subcontractors—the American Institutes for Research (AIR), Health Management Associates (HMA), and Brilljent—to conduct an independent evaluation of Strong Start II. HMA, AIR, and the Urban Institute will collaborate and assist states in developing and providing the data needed to conduct the evaluation.

References:

[Note: Once the template is approved, this section will be updated with correct references for each state where applicable.]

APPENDIX G: INFORMATION NEEDS DOCUMENT

Strong Start for Mothers and Newborns Evaluation

Overview of Information Needs for the Impact Analysis

PROJECT OVERVIEW

The Strong Start for Mothers and Newborns initiative (Strong Start II), funded under the Affordable Care Act, aims to improve maternal and infant outcomes for women enrolled in Medicaid and the Children’s Health Insurance Program (CHIP) through the funding of three innovative evidence-based enhanced prenatal care approaches: birth centers, maternity care homes, and group prenatal care visits. The initiative, which consists of 27 awardees and 182 provider sites across 32 states, the District of Columbia, and Puerto Rico, will serve up to 80,000 women over three-to-four years beginning in 2013. In your state, the awardees are: [insert awardee name(s)] in [insert city].⁵⁰

The Center for Medicare and Medicaid Innovation (CMMI) of the Centers for Medicare and Medicaid Services (CMS) has contracted with the Urban Institute and its subcontractors—the American Institutes for Research (AIR), Health Management Associates (HMA), and Brilljent—to conduct an independent evaluation of Strong Start II. This five-year evaluation will monitor the implementation of Strong Start interventions and evaluate the impact of Strong Start on health care delivery, health outcomes, and cost of care. The evaluation is built around three principle data collection efforts: qualitative case studies; participant surveys; and an impact analysis, which aims to measure the various outcomes among Strong Start mothers and infants against a comparison group.

The impact analysis is designed to answer the following three broad evaluation questions:

- What are the impacts of the enhanced prenatal care approaches supported by Strong Start on rates of preterm birth, birth weight, and cost, relative to traditional Medicaid?
- Do impacts differ across awardees and across the three Strong Start approaches? If so, how?
- How does the case study analysis help explain the impact findings?

Should someone in your state request it, the evaluation team is prepared to offer technical assistance for constructing files that we need for the impact analysis (such as the linkage between birth certificates and Medicaid eligibility files). If your state is unable to conduct the linkage, we will work with you to obtain access to birth certificate and Medicaid data so that the Urban Institute could conduct the linkage.

LINKAGE PROCESS AND INFORMATION NEEDS

⁵⁰ [If state wrote letter of support for awardee’s application, note here. Include supporting agency, signatory, and date written. **Suggested language:** “Note that when [awardee] first submitted its application to participate in Strong Start, a letter of support was submitted by [agency] on [date], signed by [name].”

To conduct the impact analysis, the Urban Institute must obtain data from birth certificates, Medicaid/CHIP eligibility data, and Medicaid claims/encounter data for Strong Start mothers and infants as well as for a comparison group. These data must be linked to each other. The Urban Institute's Institutional Review Board (IRB) has reviewed our plans for data linkage and has determined that our study meets the criteria for a waiver of informed consent based on our study design and the data protection protocols outlined in our IRB package (which can be sent, upon request).

We are requesting your state's help in performing the required linkages. To accomplish this, the following steps, or some similar process, will likely be needed to identify and link all the records we are requesting from the state.

1. The evaluation team will provide you a list of Strong Start participants.⁵¹ This list will contain enough information to link participants to birth certificates, Medicaid eligibility data, and Medicaid claims/encounter data. In addition to Medicaid number and Strong Start participant ID, it will include name, address, and birthdate, among other information. This list would be used to identify the Strong Start participants in birth certificate files.
2. For each Strong Start site in your state, the evaluation team will give you a list of geographic areas (counties or zip-codes) where Strong Start participants reside so that a comparison group of Medicaid covered women who are not enrolled in Strong Start can be identified.⁵²
3. Birth certificates for both Strong Start participants and all women in the geographic areas identified for the comparison group will then be merged to Medicaid eligibility records. The comparison group will only include Medicaid covered women, so this step will identify women on the birth certificates who are covered by Medicaid. This merge can be accomplished through a variety of processes, including ones you may have used in the past for similar purposes.
4. The state will then send the evaluation team the de-identified birth certificates for Strong Start participants and all Medicaid births in the identified geographic areas. We would ask that you append three key variables to each record in this data set: (1) a unique ID number that links to your Medicaid eligibility and claims/encounter records (this does not need to be the Medicaid ID number, as long as you retain a cross-reference to that number); (2) an indicator of whether the woman was enrolled in Strong Start; and (3) an indicator of the Strong Start site (provided to you in step two).
5. As a final step, the state will link this file to Medicaid claims/encounter data for mother and infant, for one year prior to and following the infant's birth date. These linked data—containing birth certificates, Medicaid eligibility data, and Medicaid claims/encounter data for the Strong Start and comparison group enrollees—would be returned to the evaluation team for analysis after all Medicaid claims/encounter data were available for the year following birth.

⁵¹ This information would be shared via an encrypted CD or secure File Transfer Protocol (FTP) process.

⁵² All Medicaid covered births in the identified geographic area will be included in our comparison group and propensity score weighting will be used to assure the treatment and comparison groups are similar along a variety of dimensions.

Please Note: After the state performs the linkage, the evaluation team would NOT need identifiable birth certificates or Medicaid eligibility and claims/encounter data. De-identified, linked data which contain randomly assigned IDs that links women across both types of records (birth certificates and Medicaid files) will fully meet our research needs.

Once again, the process described above would apply if your state is able to perform the data linkage required for our evaluation. However, if the state is unable to perform the linkage, we would be happy to work with you to develop a process that would allow the Urban Institute to obtain the needed birth certificate and Medicaid data so that we could conduct the linkage ourselves.

Exhibits 1 and 2 outline examples of the variables the evaluation team would construct from your Medicaid files and birth certificates for use in the impact analysis. Linked data returned to the evaluation team would need to include the variables that could be used to construct these analysis variables. The precise list of variables (and variable names) we obtain from you would depend on the content of your files and would be negotiated with you as part of the request process. We would also need to acquire a list of codes (and their meanings) from you at the time we acquire the files.

Exhibit 1: Medicaid Eligibility and Claims/Encounter Variables

Variable	Specification
Eligibility Group/Insurance Status (for mother and infant, by month)	
Basis of Medicaid Eligibility	Disabled, receiving cash assistance, Section 1931 eligibility, ACA expansion
Managed Care Enrollment	Whether the mother or infant was enrolled in a risk-based managed care plan
Other insurance Status	Private, Medicare
Medicaid Expenditures	
Total Medicaid Expenditures for Mother in Year Prior to and After Delivery	Continuous variable that equals total Medicaid payments for mother from year prior to delivery to one year after delivery. This variable would be calculated by evaluator based on payment fields over the time period.
Total Medicaid Expenditures for Infant in First Year of Life	Continuous variable that equals total Medicaid payments for infant from delivery to first birthday. This variable would be calculated by evaluator based on payment fields over the time period.
Utilization Variables	
Hospital Days for Mother	Number of hospital days for mother at delivery and in first year after birth. Would be calculated by evaluator based on ICD-9-CM, CPT-4, HCPCS and other codes on claims data.
Hospital Days for Infant	Number of hospital days for infant at delivery and in first year after birth. Would be calculated by evaluator based on ICD-9-CM, CPT-4, HCPCS and other codes on claims data.
Neonatal ICU Days for Infant	Number of neonatal ICU days for infant at delivery and in first year after birth. Would be calculated by evaluator based on ICD-9-CM, CPT-4, HCPCS and other codes on claims data.

Exhibit 2: Birth Certificate Variables

Variable	Specification
Demographic Characteristics	
Mother's Age	Actual age (1 year increments)
Mother's Race	White non-Hispanic, Black non-Hispanic, Puerto Rican, other Hispanic, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, Asian, mixed race, other
Mother's Education	Eighth grade or less, no high school degree (age related), no high school degree, GED (if available), high school degree, some college no degree, associate's degree, bachelor's degree, master's degree, doctorate or professional degree
Marital Status	Married, not married and paternity acknowledgement signed, not married and paternity acknowledgement not signed
Zip code and Census Tract	Zip code and/or census tract
Behavioral Risk Factors	
Smoking	Number of cigarettes smoked in three months prior to pregnancy
Prenatal Care Initiation	Date of prenatal care initiation
Medical Risk Factors	
Plurality	Single, twin, triplet, four or more
Previous Live Births	First birth, second birth, third birth, etc.
Previous Preterm birth	Mother has had a previous pre-term birth
Previous Other Poor Pregnancy Outcome	Mother has had previous perinatal death, or small for gestational age birth
Inter-pregnancy interval (live birth)	Time since last live birth less than 6 months, 6 to 17 months, 18 to 23 months, 24 months or more
Inter-pregnancy interval (other pregnancy outcome)	Time since last other birth outcome less than 6 months, 6 to 17 months, 18 to 23 months, 24 months or more
Pre-pregnancy Diabetes	Mother had diabetes prior to pregnancy
Pre-pregnancy Hypertension	Mother had hypertension prior to pregnancy
Mother's BMI pre-pregnancy	Underweight, normal weight, overweight, obese
Hospital is participating in Hospital Engagement Network (HEN)	Delivery hospital is in HEN network
Key Outcomes	
Birth weight	Continuous variable
Gestational Age	Continuous variable calculated by dates
Process Outcomes	
Weekend Delivery	Day of delivery
Early Term Delivery	Gestational Age
Cesarean Section	= 1 if Delivery by Cesarean Section = 0 if Vaginal Delivery
Vaginal Birth After Cesarean	= 1 if Cesarean Section = 0 & Previous Cesarean Section = 1 = 0 if Cesarean Section = 1 & Previous Cesarean Section = 1 Only defined for those with Previous Cesarean Section = 1
Apgar Score	Categorical Variable



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