



**BABY & ME –  
Tobacco Free**  
Evaluation Report  
December 5, 2017





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# Introduction



# Introduction

The State of Ohio has identified reducing infant mortality as a primary focus for the Ohio Department of Health (ODH). Smoking during pregnancy remains one of the most common preventable causes of infant mortality. Among women giving birth in Ohio, 12 percent smoke during the third trimester of pregnancy, a rate that is double that of the nation.<sup>1</sup> Smoking cigarettes during pregnancy has been identified as one of the most significant factors contributing to poor pregnancy outcomes including miscarriage, premature delivery, stillbirth, and low birth weight.

The Ohio Partners for Smoke Free Families (OPSFF) program was developed in 2006 at ODH in collaboration with the Smoke Free Families National Dissemination Office in Chapel Hill, North Carolina. The program goals are to 1) reduce prevalence of smoking among women before, during, and after pregnancy, and 2) increase adoption, reach, and impact of evidence-based smoking cessation programs for women before, during, and after pregnancy.

To meet these goals, OPSFF researched existing smoking cessation programs tailored for pregnant women and identified Baby & Me – Tobacco Free (BMTF) as the best program to support in Ohio. BMTF is a smoking cessation program targeting pregnant, smoking, low-income women, with the objective of helping them quit smoking during pregnancy and stay quit postpartum. The goal is to increase the percentage of babies born at a healthy weight and gestational age to women in the program. The program consists of four prenatal counseling cessation sessions to assist women in becoming tobacco free and then monthly postpartum sessions to help them stay tobacco free. Starting with the third prenatal visit, women receive diaper vouchers, good for any brand and size of diapers at Walmart, if they test as tobacco free via carbon monoxide monitoring. Women must remain tobacco free in the postpartum sessions to stay in the program and they earn a diaper voucher at each postpartum visit.


BMTF offers a one-day training class to staff from agencies providing the BMTF program. The training is generally in-person, although staff can also receive training by other means if necessary. Once trained, staff are able to enroll women into the program. BMTF offers monthly technical assistance calls to provide updated information and materials, help agencies order program materials, and discuss any concerns or issues they might have.

Several independent analyses of the BMTF program have supported the effectiveness of the program in meeting its objectives. A study of BMTF programs in upstate New York found that a majority of clients had quit tobacco in the prenatal phase.<sup>2</sup> The study also found that the likelihood of staying quit in the postpartum period tripled for each prenatal BMTF class the client attended. A 2016 review

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<sup>1</sup> Curtin SC, Mathews TJ. Smoking prevalence and cessation before and during pregnancy: Data from the birth certificate, 2014. National vital statistics reports; vol 65 no 1. Hyattsville, MD: National Center for Health Statistics. 2016.

<sup>2</sup> Gadowski, A., Adams, L., Tallman, N., Krupa, N., & Jenkins, P. (2010). Effectiveness of a Combined Prenatal and Postpartum Smoking Cessation Program. *Maternal and Child Health Journal*, 15(2), 188-197. doi:10.1007/s10995-010-0568-9



of Tennessee's BMTF program found that participants who attended at least three prenatal sessions smoked statistically significantly fewer cigarettes than non-participants or participants who attended two or fewer prenatal sessions.<sup>3</sup> In the Tennessee study, attending at least three prenatal sessions led to a statistically significant reduction in the odds of a child being born at a low weight as compared to clients who attended fewer than three sessions or were not involved in the program. An evaluation of the BMTF program in Colorado from 2012 to 2015 found that over half (53percent) of women in the program remained smoke free during their pregnancy and 78 percent were smoke-free at their last prenatal visit before delivery.<sup>4</sup>

In July 2014, OPSFF began supporting the BMTF program in local agencies. In November 2015, OPSFF solicited proposals from other agencies serving pregnant and postpartum women from low-income or vulnerable populations, bringing the number of agencies funded to 36. Initially, agencies offering BMTF were funded through a traditional grant process, where funding was granted and distributed on a pre-arranged schedule. In the second and subsequent rounds of funding, agencies have been funded on a deliverable-based model, where they receive funds after completing deliverables and submitting documentation. Currently, ODH supports the BMTF program in a total of 28 agencies. To assess the successful implementation and determine the impact of Baby & Me – Tobacco Free in Ohio, the OPSFF Evaluation Planning Team identified several data sources to use, including:

- Results from a series of key informant (agency staff) interviews conducted during site visits of agencies implementing the program;
- A comparison of birth outcomes (birth weight and gestational age) of babies born to women enrolled into Baby & Me – Tobacco Free with a group of demographically similar women smokers who were not enrolled into the program; and
- Data collected during interviews of BMTF participants who agreed to take part in three follow-up surveys: one conducted a month prior to their due date, one conducted three months after their due date, and one conducted six months after their due date.

These data sources were analyzed to assess the successful implementation and the impact of the BMTF program in Ohio. The analysis performed for each source of data and the resulting findings are described in the sections that follow.

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<sup>3</sup> Zhang, X., Devasia, R., Czarnecki, G., Frechette, J., Russell, S., & Behringer, B. (2016). Effects of Incentive-Based Smoking Cessation Program for Pregnant Women on Birth Outcomes. *Maternal and Child Health Journal*, 21(4), 745-751. doi:10.1007/s10995-016-2166-y

<sup>4</sup> Crume, T. L., Dr, Lambert, J., & Shapiro, A. (2015, June). Baby and Me Tobacco Free: Evaluation of Colorado Programs, 2012-2015 (Rep.). Retrieved June 6, 2017, from Community Epidemiology & Program Evaluation Group website: [http://www.ucdenver.edu/academics/colleges/PublicHealth/community/CEPEG/WkProducts/Reports/Documents/BMTF\\_FinalReport\\_2015.pdf](http://www.ucdenver.edu/academics/colleges/PublicHealth/community/CEPEG/WkProducts/Reports/Documents/BMTF_FinalReport_2015.pdf)

# Executive Summary

The Baby & Me – Tobacco Free (BMTF) program was evaluated using a triangulated approach comprised of three elements: interviews conducted with program staff during site visits, analysis of birth outcomes data from vital statistics records, and follow-up interviews with program participants conducted both prenatally and postpartum.

To assess the implementation of the BMTF program for the process evaluation component, Strategic Research Group (SRG) conducted site visits to BMTF agencies during the summer of 2016. Program staff sizes were small and were composed of staff members who often only worked on the program a limited number of hours per week while also working on other programs or tasks. BMTF seemed to incorporate well with agencies who are taking part in the program, and respondents perceived it as important to the work they do. Most agencies said the communication between their agency and ODH was good and that they were able to obtain help they need from ODH in a timely manner.


Initial recruitment goals were modest, and programs tended to take a more passive role in their recruitment. Other, more active, recruitment efforts such as marketing, community outreach, and word of mouth were reported much less frequently by the agency staff interviewed. Although not a requirement of the program, some programs conducted home visits with their clients, which they believed improves retention rates.

The most frequently-mentioned success was that women were becoming and staying tobacco-free during their time in the program. The primary challenges mentioned in implementing the BMTF program were helping motivate clients, client retention, and referrals and recruiting. Agency staff reported that clients not consistently attending sessions was a barrier to their success and that working with a population of clients who were more likely to be low income, lower education, transient, and dealing with other substance abuse presented additional challenges.

To determine the impact of the BMTF program on birth outcomes, BMTF clients who had singleton births in 2015 and 2016 were matched with demographically similar non-program participants in the Ohio Resident Live Birth file who had also had singleton births in those years. Using propensity score matching, each BMTF mother was matched to a mother not involved in the BMTF program from their county who was demographically similar. Demographics used for matching included mother's age, mother's race, mother's WIC status, mother's Medicaid status, if this was the mother's first birth, and total number of prenatal care visits.

Independent sample t-test means analysis, chi-square tests, and regression were used to examine the association of program participation with birth weights and gestational age. The difference of means test found statistically significant differences in both birth outcomes. Babies born to BMTF mothers averaged about 0.4 pounds heavier than those born to mothers in the control group and the average gestational weeks is about 2 days greater for the BMTF mothers. The chi-square test showed that BMTF mothers had a significantly lower rate of low birth weight babies than the control group (5.8% compared to 9.8 %). Although not statistically significant ( $p=0.104$ ), when looking at the percentage of babies born prematurely, only 6.5 percent of babies born to BMTF mothers were premature, compared to 8.1 percent of those born to mothers in the control group. Together these findings





present evidence that women enrolled in the BMTF program have better birth outcomes in terms of gestational age and birth weight than demographically similar women who are not enrolled in the program.

Follow-up interviews were conducted with BMTF clients around eight months into their pregnancy, three months postpartum, and six months postpartum. At all stages, respondents who were active in the program were very unlikely to have used tobacco recently, as well as e-cigarettes. Respondents who stayed active in the program tended to complete high numbers of sessions, which they indicated were very helpful. They most commonly indicated that the educational content and the support provided during the sessions were the most beneficial aspects.

Women who were still active later in the program (during the three-month and six-month interviews) indicated a more positive outlook in terms of both the difficulty of their quit attempt and their perceived difficulty in staying quit in the future.

A notable number of respondents indicated that they lived with a fellow smoker, particularly inactive clients, and that this provided challenges to their quit attempt. However, those respondents who indicated they had a partner who attempted to quit with them during the BMTF program found it very helpful, even in cases where the partner was not successful in their quit attempt.

There were not many barriers to program participation discussed by respondents. Few women mentioned challenges in attending sessions, but it was more likely to occur among women who were no longer active in the program. Often the challenges related to personal situations, moving, or other factors that could not be controlled for or addressed by the program. Inactive clients tended to say their sessions lasted longer than active clients, which may factor into their decision to not continue the program. Conversely, some active clients indicated they would like longer and more detailed sessions.

Several recommendations evolved from these evaluation efforts. One that has already been implemented was the creation of a questionnaire sent by BMTF to agency staff each month allowing them to share their challenges and concerns anonymously. During the site visits, SRG evaluators realized many agency staff conveyed they felt they were the only ones experiencing difficulties and, therefore, were reluctant to share them. The anonymous questionnaire provides them routine access to do so.

Other recommendations include:

- **Persistent follow-up with clients:** One of the reasons given by those no longer in the BMTF program for why they are no longer in the program was that no one from the agency followed up with them. Therefore, we recommend a more persistent follow up by BMTF agency staff when they lose contact with enrollees. Such efforts may be able to reduce dropout rates.
- **Tailor session length:** Inactive participants tended to say their sessions lasted longer than active participants, indicating that shorter sessions might minimize client time burden and help keep them engaged. Others suggested sessions should be longer or include more information. Therefore, it appears that the preferred session length may vary by participant. BMTF facilitators may want to consider tailored brief sessions for clients who indicate time is an issue and extra information or discussion points for clients who would prefer more from their sessions.

- **Addressing barriers to program participation:** While a relatively small percentage of clients indicated barriers to program participation, inactive clients were more likely to mention barriers; thus, finding helpful solutions for these clients may be key to engagement. The most common barriers mentioned related primarily to transportation. Offering public transportation or travel vouchers may not be feasible for more rural locations or more resource-limited programs; in those cases, alternate approaches such as meeting clients at their homes or in easily accessible public locations may help. Many respondents indicated that scheduling of sessions, hectic schedules, and availability of hours were barriers to attending sessions or continuing in the program. If possible, agencies should consider ways to allow for greater session availability, such as evening or weekend flex hours.
- **Continue to encourage and support quit partners:** A notable number of clients stated that they live with a current tobacco user. They also indicated this posed a challenge to their own quit efforts. These clients tended to indicate that having a quit partner was helpful in their own attempts. When combined with the benefit of possibly converting that live-in tobacco user to a non-user, encouraging partners to quit can not only improve the likelihood of success of the mother's quit effort, but can also add the partner to the ranks of the tobacco-free.
- **Focus on retention:** Over time, women who stayed in the program indicated that their quit attempt was easier and they were less concerned about relapsing in the future. While the previous recommendations may have a benefit in terms of increasing retention, additional specific efforts strictly focused on retention should be used as well. The recommendation is for each agency to work to identify areas leading to drop outs and focus on lessening these occurrences, whether that is by ongoing outreach to women (both those who are attending sessions and those who have stopped doing so) or by discussing the benefits of staying engaged in the program. This should in turn improve success rates for quitting among program participants.
- **Marketing:** Several respondents commented that the BMTF programs were not well known in their areas. While the national BMTF program offers assistance in ideas and materials for marketing, local agencies might consider soliciting marketing ideas from current clients to see if there are unique opportunities to market the program in their areas.

# Understanding the Need for Perinatal Smoking Cessation in Ohio

During 2016, 19 percent of live births in Ohio were to women who smoked at some time in the three months before pregnancy or during pregnancy. Of those, 40 percent quit either prior to pregnancy or at some point during the pregnancy, while the remaining 60 percent continued to smoke in the third trimester. Thus, 12 percent of all women in Ohio who gave birth in 2016 smoked during the third trimester.

The 2004 Surgeon General's Report, *The Health Consequences of Smoking*, concluded that there is sufficient evidence to infer a causal relationship between prenatal smoking and premature rupture of the membranes (PROM), placenta previa, placental abruption, preterm delivery, fetal growth restriction and sudden infant death syndrome (SIDS). Additionally, it has been estimated that five percent of infant deaths in the United States are attributable to maternal smoking while pregnant, with variations among race/ethnicities.<sup>5</sup>

In order of frequency, the five leading causes of infant death in Ohio in 2016 were prematurity related conditions including short gestation and low birth weight; congenital anomalies; SIDS; obstetric conditions including PROM, placenta previa, and placental abruption; and external injuries.<sup>6</sup> Given that all of the conditions listed above have a causal relationship with perinatal smoking, smoking cessation is a vital component of our infant mortality reduction efforts.

In Ohio in 2016, 12 percent of singleton babies born to mothers who smoked in the third trimester were premature (less than 37 weeks gestation) compared to 8 percent born to women who did not smoke. The table below displays the percentage of infants experiencing smoking-related selected birth outcomes by the mother's smoking status.

*Table 1. Singleton birth outcomes by mother's smoking status, Ohio, 2016*

Birth Outcome	Mother is Non-Smoker	Mother Quit Before Pregnancy	Mother Quit During Pregnancy	Mother Smoked Third Trimester
Premature (<37 weeks)	7.9%	7.9%	11.2%	12.1%
Low Birth Weight (<2500 g)	5.9%	6.1%	9.8%	13.1%
Small for Gestational Age (< 10th percentile for gestational age)	8.8%	9.9%	12.6%	20.1%

Source: Ohio Department of Health, Bureau of Vital Statistics

<sup>5</sup> Salihu HM1, Aliyu MH, Pierre-Louis BJ, Alexander GR. Levels of excess infant deaths attributable to maternal smoking during pregnancy in the United States. *Matern Child Health J.* 2003; Dec: 7(4):

<sup>6</sup> 2016 Ohio Infant Mortality Report. Available online at <http://www.odh.ohio.gov/odhprograms/cfhs/octpim/latestoimd.aspx>



# The BMTF Program in Ohio

## Program Overview

BMTF is an evidence-based smoking cessation program targeting pregnant, smoking, low-income women, with the objective of helping them quit smoking during pregnancy and stay quit postpartum. The BMTF program was founded by Laurie Adams, a certified cessation educator, with the goal of increasing the percentage of babies born at a healthy weight and gestational age. The program currently operates in 19 states across the country, including Ohio.

Programs are generally administered by local and state agencies that provide prenatal or postpartum services for women. However, any agency that services pregnant women can be trained to provide the program. BMTF offers a one-day training class to staff from agencies providing the BMTF program. The training is generally in-person although staff can also receive training by other means if necessary. Trained staff receive a BMTF program manual that includes a detailed description of the program, resources available from BMTF, copies of informational guides, worksheets, and handouts, for facilitators to copy and share with program participants, as well as a certificate that they have completed the training.

Each agency is responsible for recruiting and enrolling women into the program. However, BMTF provides marketing materials and advice for how to market the program and recruit clients. The most common practice for recruitment is for agencies to work with other local agencies and offices who serve women in the targeted populations, such as WIC agencies. BMTF also offers monthly technical assistance calls to provide updated information and materials, help agencies order program materials, and discuss any concerns or issues they might have.

Eligible women include pregnant women who are current smokers or who were daily smokers at least three months prior to becoming pregnant. There are no income eligibility requirements for the program. Women who are not current smokers are required to provide proof of previous smoking status from a reliable source (such as the agency's previous records, other agencies, or medical professionals).

As the program is designed, women take part in four prenatal sessions and 12 postpartum sessions. These sessions can be scheduled independently, or in conjunction with other services a woman may be receiving through the local agency. Additionally, sessions may take place within the agency or in other places (such as public locations or even in the client's home, if the agency has the means to do so).

Once a woman is recruited and enrolled into the program, she takes part in a series of four prenatal cessation sessions. The prenatal sessions are designed as 10-15 minute brief interventions that take place on an approximately monthly basis; however, if women enroll in the program early in their pregnancy, programs can administer prenatal sessions more than once or alter the time frame to space better across the pregnancy. These sessions are relatively structured, with talking points, educational materials, and concrete steps provided by the BMTF program. Women agree to quit using tobacco and establish a quit date, learn to deal with stress and triggers, learn the importance and benefits of becoming a non-smoker, and submit breath tests via a carbon monoxide (CO) monitor at each visit. Women are expected to make a quit attempt by the third session. If a woman is unable to

complete the fourth session due to unforeseen circumstances (such as being placed on bedrest or an early delivery), the fourth session may be completed postpartum.

After the baby is born, women take part in 12 postpartum visits, once per month. These visits involve additional CO monitoring to ensure quit status, as well as providing ongoing support in the women's quit attempts. While there are no formalized materials or content for the postpartum sessions, program staff can refer back to previous content as necessary and supplement with other cessation-related content. Women who successfully pass the CO monitoring receive a \$25 voucher which can be used on diapers (and only diapers) at a local Walmart or other store that has established an agreement with the program. If women fail the CO monitor test, they are not given a diaper voucher; however, they may be given a voucher if they pass the subsequent test.

More recently, the BMTF program has made several changes to improve their program. These include:

1. **Quit partners.** Some programs were given the opportunity to also enroll a “quit partner” along with their pregnant clients. The partner could be a spouse, the baby's father, the person the mother lives with, or another support person. If that person was successful in their CO monitor testing, they would also be given diaper vouchers on behalf of the mother, effectively doubling the incentive for women who took part with a quit partner.
2. **Prenatal incentives.** While the original design only allowed for vouchers to be provided postpartum, the program was revised to allow vouchers to be awarded in the third and fourth prenatal sessions, which allows a mother to earn diapers in advance and be prepared for when the baby arrives.
3. **Electronic vouchers.** The BMTF program has gone from a paper gift certificate style voucher to electronic vouchers; in addition to being easier to use and track, the electronic vouchers can be used for baby wipes in addition to diapers.

Facilitators and agency staff enter information about each client they enroll into the BMTF program into the program's client online data portal. The information collected through the online portal includes detailed enrollment data, such as demographic information about the mother, the baby's due date, the mother's smoking history, and contact information; data from facilitated BMTF sessions, including date, which session was provided, CO monitor readings, and anything else noteworthy about the session; and birth outcome data<sup>7</sup> once the baby is born, including birth date, birth weight, and gestational age at birth.

## Implementation in Ohio

Since ODH began supporting the BMTF program in Ohio in July 2014, a total of 44 local agencies in 42 counties have been trained to implement the program. The data provided below are a summary of the BMTF data entered into the online data portal and provided quarterly to SRG. Due to the fact that BMTF must first review and reconcile data before reporting it out to ODH and SRG, the data summaries reported here encompass the time period from the beginning of service provision through June 30, 2017.

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<sup>7</sup> This information is only collected if agency staff are in contact with the mother after the birth.

## Enrollment Data

BMTF provides enrollment numbers by county, which are presented in the tables below.<sup>8</sup> As of June 30, 2017, there were 1,948 women enrolled in Ohio's BMTF program. As can be seen in the following tables, among the 42 counties, there are 46.4 clients per program on average, with enrollment numbers ranging from 2 (Delaware and Ottawa County) to 263 (Cuyahoga County).

With regard to community environment, agencies in metropolitan areas had the highest enrollment rates per agency (90.8), while agencies in rural non-Appalachian had the lowest enrollment rates per agency (21.0). Inactive rates are similar across county types, with rural Appalachian having a slightly higher inactive rate (67.0 %) than other county types and rural non-Appalachian counties experiencing a slightly lower inactive rate (54.5%).

One question of interest was, what percentage of eligible pregnant women in a region were enrolling in a BMTF program? To establish the percentage of mothers who gave birth in 2015 or 2016 who were eligible for the BMTF program, SRG began with the number of women in the vital statistics data in each region or community type who had smoked at least one cigarette in their first trimester. This number was divided by the total number of women who, according to vital statistic records, gave birth in the community type to get the percentage of mothers eligible for BMTF.

The percentage of eligible mothers who enrolled in BMTF was calculated by counting all the women who attended at least one session in the county of the BMTF program office by the end of 2016 divided by the number of eligible women in those counties. All counties were included, even if there was not a BMTF program operating in that county, because programs could enroll women from outside the county of the program.

*Table 2. Eligibility rate and enrollment rate by region*

	Mothers Eligible for BMTF	Eligible Mothers Enrolled in BMTF
Northwest	17.0%	2.6%
Northeast	14.8%	2.2%
Central	13.3%	2.3%
Southwest	14.1%	4.7%
Southeast	26.5%	6.9%
Total	15.2%	3.3%

<sup>8</sup> It should be noted that, because the results are provided by county and not by provider, this is not a full breakout of providers; at one time Franklin County had three separate programs offering the BMTF program, so data for these three programs are given collectively.



**Table 3. Eligibility rate and enrollment rate by county type**

	<b>Mothers Eligible for BMTF</b>	<b>Eligible Mothers Enrolled in BMTF</b>
Metropolitan	12.8%	2.6%
Suburban	13.6%	3.1%
Rural Non-Appalachian	18.4%	2.1%
Rural Appalachian	23.2%	5.7%
<b>Total</b>	<b>15.2%</b>	<b>3.3%</b>

As seen in the tables on page 12, one region (southeast) and one county type (rural Appalachian) stand out as having notably higher percentages of mothers eligible for BMTF. However, the driving factor there is Appalachian status, as all southeast counties (as well as one southwest county, Highland, which is responsible for the higher percentage of eligible mothers enrolled in the southwest) are Appalachian counties.

That being said, it is clear that Appalachian counties are an area of particular need for cessation services, as the percentage of mothers who are eligible is much higher than for other county types. From the second column in Table 2, it is apparent that the BMTF programs in those Appalachian counties are enrolling a higher percentage of eligible mothers than other county types, so it appears that the services are being implemented more in the area of greatest need.

Looking at region, agencies in the southwest had the highest enrollment rates per agency (64.4), while agencies in the northwest had the lowest enrollment rates per agency (29.8). Inactive rates varied by region, with agencies in the central region experiencing a higher inactive rate (72.5%) than other regions and northeast agencies experiencing a lower inactive rate (50.8%).

SRG created estimates of “inactive cases” using the length of time since a client attended their last session. These estimates are based on session data through June 30, 2017. While BMTF facilitators can use the data portal to report that a client has dropped out of the program, a review of the data showed that a number of clients had gone several months (in some cases, six months or longer) without completing the next session, which raised concerns that not all cases where clients had left the program were being recorded.

A review of the session data through September 30, 2016 determined that roughly 95 percent of clients attended a prenatal session within three months of their previous session and approximately 94 percent of clients attended a postpartum session within two months of their previous session. As such, SRG set three months without attendance as the criteria for a prenatal inactive case, and two months without attendance as the criteria for a postpartum inactive case. Using these criteria and the data through September 30, 2016, SRG identified 422 of the 444 dropouts noted in the BMTF session data; however, SRG also identified an additional 206 potential inactive cases not documented in the BMTF data. It should be noted that this estimation may slightly inflate inactive case numbers in the short term (particularly in postpartum sessions), but as clients return and complete their subsequent sessions, these estimation errors will be reduced.

*Table 4. Average number of clients*

	Number of counties	Mean	SD
All counties	42	46.4	63.3

*Table 5. Number of clients by community environment*

County Type	Agencies	Clients	%	Clients per agency	Inactive	Inactive %
Metropolitan	8	726	37.3	90.8	448	61.7
Rural Appalachian	15	727	37.3	48.5	487	67.0
Rural Non-Appalachian	11	231	11.9	21.0	126	54.5
Suburban	8	264	13.6	33.0	155	58.7
<b>Total</b>	<b>42</b>	<b>1,948</b>	<b>100.0</b>	<b>46.5</b>	<b>1,216</b>	<b>62.4</b>

*Table 6. Number of clients by region*

County Type	Agencies	Clients	%	Clients per agency	Inactive	Inactive %
Central	6	240	12.3	40.0	174	72.5
Northeast	11	475	24.4	43.2	242	50.9

*Table 7. Number of clients by county*

County	Clients	%	Inactive	Inactive %	County	Clients	%	Inactive	Inactive %
Ashtabula	4	0.2	4	100.0	Lucas	65	3.3	64	98.5
Athens	170	8.7	115	67.6	Mahoning	18	0.9	11	61.1
Belmont	8	0.4	8	100.0	Marion	28	1.4	23	82.1
Butler	29	1.5	22	75.9	Medina	5	0.3	0	0.0
Carroll	4	0.2	4	100.0	Miami	58	3.0	31	53.4
Clark	110	5.6	59	53.6	Montgomery	113	5.8	74	65.5
Clermont	3	0.2	3	100.0	Muskingum	86	4.4	44	51.2
Coshocton	9	0.5	4	44.4	Ottawa	2	0.1	0	0.0
Cuyahoga	263	13.5	115	43.7	Preble	13	0.7	7	53.8
Defiance	10	0.5	1	10.0	Richland	18	0.9	18	100.0
Delaware	2	0.1	2	100.0	Ross	39	2.0	29	74.4
Erie	69	3.5	40	58.0	Sandusky	21	1.1	11	52.4
Franklin	171	8.8	121	70.8	Seneca	7	0.4	1	14.3
Fulton	3	0.2	1	33.3	Shelby	20	1.0	11	55.0
Greene	58	3.0	39	67.2	Stark	14	0.7	7	50.0
Hancock	41	2.1	25	61.0	Summit	53	2.7	27	50.9
Highland	261	13.4	184	70.5	Trumbull	51	2.6	31	60.8
Hocking	24	1.2	16	66.7	Tuscarawas	36	1.8	21	58.3
Jackson	5	0.3	5	100.0	Union	8	0.4	8	100.0
Knox	11	0.6	5	45.5	Vinton	9	0.5	8	88.9
Licking	20	1.0	15	75.0	Warren	9	0.5	2	22.2
					<b>Total</b>	<b>1,948</b>	<b>100.0</b>	<b>1,216</b>	<b>62.4</b>

## Session Data

Tables summarizing data related to counseling sessions are provided below. The session data provided information about each visit including a unique identifier for the mother, the date, the session number, CO level, a drop date if the mother is no longer participating, and the agency providing the sessions.

It should be noted that sometimes sessions are not completed or data about a planned session that was never held is entered into the data portal. Therefore, the number of sessions indicated in the data does not always reflect the true number of sessions the provider has completed with a given client. However, if these situations can be identified via facilitator notes or through contact with the agencies, these session entries are removed from the analysis. Therefore, while the data presented in the tables below are not error-free, they do reflect a close approximation of the sessions carried out by BMTF facilitators.

Approximately 7,400 sessions were held by BMTF facilitators between September 2014 and June 2017. About 36.9 percent (719) of clients enrolled in the BMTF program by June 2017 have only completed one prenatal session and about 30.7 percent (598) of those enrolled have completed all four prenatal sessions. Of the clients who continued past the prenatal phase, 74.0 percent have had at least one postpartum session and over a quarter have had at least seven sessions. Thus far, only about 9.7 percent of clients who advanced from the prenatal sessions have completed all 12 postpartum sessions.

*Table 8. Number of prenatal sessions attended by clients*

Number of Sessions	Number of Clients	Percentage Completing Exact Number of Sessions	Percentage Completing at Least this Number of Sessions
0	9	0.5	100.0
1	719	36.9	99.5
2	386	19.8	62.6
3	236	12.1	42.8
4	598	30.7	30.7
<b>Total</b>	<b>1,948</b>	<b>100.0</b>	<b>-</b>



*Table 9. Number of postpartum sessions attended by clients who completed the prenatal sessions*

Number of Sessions	Number of Clients	Percentage Completing Exact Number of Sessions	Percentage Completing at Least this Number of Sessions
0	183	26.0	100.0
1	115	16.3	74.0
2	74	10.5	57.7
3	47	6.7	47.2
4	31	4.4	40.5
5	40	5.7	36.1
6	30	4.3	30.4
7	21	3.0	26.1
8	25	3.6	23.2
9	21	3.0	19.6
10	31	4.4	16.6
11	18	2.6	12.2
12	68	9.7	9.7
<b>Total</b>	<b>704 <sup>9</sup></b>	<b>100.0</b>	<b>-</b>

Table 10 summarizes which program session was the last session attended by clients as of June 30, 2017, as well as the percentage of clients who have become inactive after that session. The first two columns show the number and percentage of clients who have completed each of the sessions in the program. The third column shows the number of clients for whom that session is the last session they attended (either because it is their most “current” session if they are still active, or because it is the last session they attended before becoming inactive). The fourth and fifth columns show the number and percentage of clients who did not continue to the next session because they became inactive. The percentage of clients who did not continue is based on all the clients who participated in that specific session.

As might be expected, the percentage of clients who become inactive is higher for the prenatal sessions than the postpartum sessions. In other words, women are more likely to discontinue the program early on; the longer they stay in the program, the more likely they are to continue.

<sup>9</sup>Total starting or eligible to start postpartum (704) is greater than number finished all four prenatal sessions (598) because some clients were allowed to continue postpartum sessions without finishing all prenatal sessions.

*Table 10. Attendance and inactivity rate by session*

Session	Number of clients completing session	Percent of clients completing session	Number of clients for whom this is the last completed session	Number of clients who became inactive after session	Percent of clients who became inactive after session
Pre 1	1945	99.8	701	515	26.5
Pre 2	1244	63.9	357	236	19.0
Pre 3	887	45.5	183	116	13.1
Pre 4	704	36.1	183	121	17.2
Post 1	521	26.7	115	84	16.1
Post 2	406	20.8	74	42	10.3
Post 3	332	17.0	47	24	7.2
Post 4	285	14.6	31	11	3.9
Post 5	254	13.0	40	20	7.9
Post 6	214	11.0	30	8	3.7
Post 7	184	9.4	21	4	2.2
Post 8	163	8.4	25	10	6.1
Post 9	138	7.1	21	6	4.3
Post 10	117	6.0	31	11	9.4
Post 11	86	4.4	18	8	9.3
Post 12	68	3.5	68	--	--

## Agency Session Data

To examine session data across different agencies, SRG used the calculated inactive case indicator, discussed earlier, to compare activity rates for prenatal and postpartum sessions. Table 11 provides the percentage of clients who started the prenatal and postpartum sessions and either completed all available sessions or were still actively participating in those sessions. Among all agencies, 53.2 percent of women who started the prenatal sessions were either still active in the prenatal phase or completed all four sessions by the end of June 2017. For postpartum sessions, among all agencies, 50.4 percent of women were still active in the postpartum phase or had completed all 12 sessions. The successful continued participation in each session type varies across the agencies. Some agencies, for example, had under 30 percent of the clients who entered prenatal sessions finish all four sessions or remain active, while others had 80 percent or more prenatal clients complete these sessions or remain active. Additionally, some agencies experienced much higher retention in one session type (prenatal or postpartum) than in the other.

*Table 11. Average number of sessions per participant by agency*

Agency	Clients	% Active or Completed Prenatal	% Active or Completed Postpartum	Inactive Cases
Ashtabula Co. Health Dept.	4	0.0	-	4
Athens Medical Associates Ob/Gyn	94	59.6	58.3	46
Belmont Co. General Health District	8	0.0	-	8
Carroll Co. Health Dept.	4	25.0	0.0	4
Clark Co. Combined Health Dept.	110	65.5	51.9	59
Clermont Co. Community Services	3	100.0	0.0	3
Columbus Public Health	170	40.6	44.7	120
Coshocton Co. Maternal & Child Health Center	9	66.7	25.0	4
Defiance Co. General Health District	10	90.0	100.0	1
Delaware General Health District	2	50.0	0.0	2
Erie Co. Community Health Center	69	60.9	53.6	40
Friendly Inn Settlement House	263	65.0	70.5	115
Fulton Co. Health Dept.	3	66.7	-	1
Greene Co. Combined Health District	58	56.9	50.0	39
Hancock Public Health	41	68.3	33.3	25
Highland Co. Community Action	261	42.9	48.6	184
Hocking Co. Health Department	24	41.7	60.0	16
Hopewell Health Care Centers	9	11.1	0.0	8
Jackson Co. Health Dept.	5	20.0	0.0	5
Knox Co. Health Dept.	11	81.8	57.1	5
Licking County Health Dept.	20	30.0	75.0	15
Mahoning Co. Public District Board of Health	18	44.4	60.0	11
Marion Public Health	28	50.0	18.2	23
Medina Co. Health Dept.	5	100.0	100.0	0
Miami Co. Public Health	58	55.2	66.7	31
Ohio Hispanic Coalition	1	100.0	0.0	1
Ohio Univ. Community Health Programs	76	34.2	12.5	69
Ottawa County Health Department	2	100.0	-	0
Preble Co. Public Health	13	33.3	75.0	7
Public Health (Montgomery Co.)	113	31.3	41.2	74
Richland Public Health	18	84.2	0.0	18
Ross Co. Health District	39	38.5	44.4	29
Sandusky Co. Health Dept./Help Me Grow	21	52.4	75.0	11
Seneca Co. General Health District	7	85.7	100.0	1
Stark Co. Health Dept.	14	78.6	28.6	7
Summit Co. Public Health	53	56.6	73.1	27

Agency	Clients	% Active or Completed Prenatal	% Active or Completed Postpartum	Inactive Cases
The Alcohol & Chemical Abuse Council	29	62.1	29.4	22
Toledo-Lucas Co. Health Dept.	65	26.2	5.6	64
Trumbull Co. Health Dept.	51	56.9	47.1	31
Tuscarawas Co. Health Dept.	36	80.6	22.2	21
Union Co. Health Dept.	8	75.0	0.0	8
Warren County Combined Health	9	77.8	100.0	2
Wilson Health	20	60.0	40.0	11
Zanesville-Muskingum Co. Health Dept.	86	59.3	71.1	44
<b>TOTAL</b>	<b>1,948</b>	<b>53.2</b>	<b>50.4</b>	<b>1,216</b>

## Ohio Data Summary

To summarize, from July 2014 to June 2017 Ohio agencies implementing BMTF have served 1,948 women. On average, as of June 2016, at some point, roughly 60 percent of the women who enrolled in the program became inactive.

Metropolitan agencies had the highest enrollment rates while rural non-Appalachian agencies had the lowest. Although rates of clients becoming inactive did not differ much by community type, rural non-Appalachian agencies had the lowest inactivity rate, indicating they were retaining more of those they did enroll in the program than agencies in other areas. Rural Appalachian agencies had the highest inactivity rate. Looking at geographic regions, there is a bit more variation. Agencies in the southwest had the highest enrollment rates, while agencies in the northwest had the lowest. Agencies in the northeast had the lowest client inactivity rate, whereas central region agencies experienced a higher inactive rate.

While BMTF session data is not error-free, it appears that approximately 7,400 sessions have been held by BMTF facilitators between September 2014 and June 2017. About 37 percent of clients currently enrolled in BMTF had only completed one prenatal session by June 2017 and about 31 percent of those enrolled had completed all four prenatal sessions. Of the clients who continued past the prenatal phase, 74.0 percent had at least one postpartum session and over a quarter had at least seven sessions. As of June 2017, only about 10 percent of clients who advanced from the prenatal sessions had completed all 12 postpartum sessions.



## Site Visit Evaluation



# Site Visit Evaluation

## Overview

One of the earliest evaluation efforts undertaken by OPSFF's external evaluator, Strategic Research Group (SRG) was to assess the implementation of Baby & Me—Tobacco Free (BMTF) program in each of the 36 agencies ODH was funding the program in at the time. SRG conducted site visits to these agencies during the summer of 2016. This section of the report summarizes the results of a series of site visits and key informant interviews conducted with local-level BMTF programs funded by the Ohio Department of Health. This effort was a part of the larger overall evaluation effort examining the impact of the BMTF program on pregnant women in Ohio. Key local program staff were interviewed to better understand the scope, function, challenges, and successes of their early implementation efforts.

While the size and logistical functioning of the agencies implementing the BMTF programs vary, agencies tended to have three or four staff members working on the program in various capacities (e.g., directors, administrators, facilitators), with nearly all respondents working on programs or tasks in addition to BMTF. Over half of the directors interviewed reported that their staff spent 11 hours or fewer per week on BMTF tasks, and facilitators reporting reported spending an average of about eight hours per week on BMTF tasks, indicating that BMTF is not a full-time occupation for most staff. Nearly two-thirds of agency staff only interacted with BMTF clients through the program. The remainder generally interacted with them through prenatal or WIC services.

The BMTF program training was positively received by respondents, and many indicated they would prefer to receive further training. Respondents tended to be engaged in and pleased with the technical assistance (TA) provided by the national BMTF program, both in terms of the TA calls and individual technical assistance. Most respondents said they had participated in at least one of the TA calls, and over half have taken part in every call. Overall, respondents seemed to find the calls useful, with over three-quarters saying the calls were somewhat or very useful. Suggested improvements to the TA calls included more training on, or assistance with, recruitment, outreach, retention, and engagement.

Agencies also seemed pleased with the assistance and communication from ODH. Most said the communication between their agency and ODH was good and that they were able to obtain help they need from ODH in a timely manner. Issues that were mentioned included not being able to get questions answered and not being able to reach the proper ODH staff member. One important suggestion for improvement was for ODH to provide better information up-front about how the program would operate (e.g., providing realistic understanding of the efforts needed for recruiting clients, the challenges that would be encountered in getting clients to sessions, how to deal with retention challenges, and how to handle situations where clients struggle to pass the CO tests).

Initial recruitment goals were modest, with two-thirds of respondents estimating they would serve 30 women or fewer in their first year. Programs tended to take a more passive role in their recruitment, with over 80 percent expecting to receive referrals from WIC programs and just over half expecting to

receive referrals from healthcare providers. Other, more active, recruitment efforts such as marketing, community outreach, and word of mouth were reported much less frequently by respondents; this may be a factor in recruitment challenges. Programs worked with about 20 clients on average, with many agencies working with 10 or fewer clients and a few working with more than 50 clients. Most facilitators meet with clients at the BMTF agency. However, although not a requirement of the program, two-fifths conducted home visits with their clients, which they believed improves retention rates.

The most frequently-mentioned success was that women were becoming and staying tobacco-free during their time in the program, indicating that these agencies were experiencing success with the program. The primary challenges mentioned in implementing the BMTF program were helping motivate clients, client retention, and referrals and recruiting. Respondents reported that clients not consistently attending sessions was a barrier to their success and that working with a population of clients who were more likely to be low income, lower education, transient, and dealing with other substance abuse presented additional challenges. Some strategies that respondents reported engaging in to overcome these challenges included continually educating clients about effects of tobacco and potential health outcomes, contacting clients via phone calls, text messages, and postcards, and conducting home visits for clients with transportation issues.

## Purpose

As part of the evaluation of the implementation and impact of the BMTF program, SRG conducted site visits to each of the 36 agencies OPSFF funded during fiscal year 2015-2016. The purpose of the site visits was to gather more information about the various programs and to assess the implementation of the BMTF program.

SRG evaluators conducted in-depth interviews with program staff to determine how implementation was taking place, how the BMTF program was integrated into the agencies' services, how staff were trained, how staff viewed the technical assistance (TA) provided by the program and the support provided by ODH, each staff member's role in the program, and any challenges or successes the agencies were experiencing.

Results from these visits were shared with agencies during the December 7, 2016 Baby & Me – Tobacco Free Quarterly Webinar.

## Methodology

Prior to the site visits taking place, SRG developed site visit interview protocols. These protocols were developed with several factors in mind:

- First, it was apparent that some programs had different staff members handling the counseling and the administrative components of the program, while other programs had a single staff member handling all responsibilities. As such, distinct protocols had to be developed for the differing types of roles.

- Second, the protocols needed to address certain evaluation questions for the BMTF program, particularly those relating to program implementation, barriers to implementation, and recruitment efforts.
- Third, the protocols needed to allow for a wide variation in terms of how the program was being implemented and what kinds of responses would be expected.

As such, three distinct protocols were developed: one for individuals who only provided counseling/direct client contact, one for individuals who only worked on administrative tasks, and one for individuals who combined both roles. The questions were wide-ranging, but focused largely on how the program was implemented, how the program meshed with the agency's other initiatives, what barriers they encountered, and how they dealt with those barriers. The format was predominantly open-ended, to allow for a wider range of responses. These protocols can be found in Appendix A.

After the protocols were developed, several SRG research associates were trained to conduct the site visits. Each site visit involved meeting in person with the Program Manager or Director who oversees the implementation of the BMTF program at the agency, as well as with the staff members directly administering the program (known as facilitators) to the clients, and any other agency staff who are involved in the program (such as recruiters or session schedulers).

A total of 36 site visits were conducted, starting in late April 2016 and concluding in late August 2016. On a few occasions where it was not possible to schedule an in-person site visit, interviews were conducted by telephone. All interviews were digitally recorded and interviewers also took notes.

Once site visits were completed, the interview recordings were transcribed. Then, research associates experienced in qualitative data analysis developed coding schemes to pull common themes from the interviews and to identify key findings. Two research associates coded each interview's responses independently, with a senior researcher reviewing the final coding results from both coders and reconciling any differences between the two.

## Results

The results of the site visit interviews are presented in the following sections:

- Program staff and how they spend their time
- How staff were trained
- Details about the agency and how BMTF relates to its work
- How the BMTF program is implemented
- How the individual sessions are conducted
- Interactions with the BMTF parent program
- Interactions with the Ohio Department of Health
- Successes and barriers experienced in implementing the program

(Tables of findings can be found in Appendix B.)

## Staffing and Effort

Respondents were asked a number of questions related to the staff involved with their BMTF program. Questions included how many staff members were involved, how many hours they spent on BMTF tasks, what other responsibilities they had, and other questions related to their role in the program.

Administrators were asked how many employees performed tasks related to the BMTF program, as well as their roles and how many hours they work per week. BMTF program staffs tended to be small and did not spend large amounts of time on BMTF tasks. On average, directors indicated that 3.12 staff members worked on BMTF tasks, with responses ranging from one to seven. The largest percentage of directors (50.0%) said they had three to four employees working on BMTF tasks. The most commonly mentioned staff roles were facilitators (87.5%), supervisors (45.8%), and administrators (29.2%). The majority of those staff (56.5%) spent 11 hours or fewer per week on BMTF tasks, with another 30.4 percent working 25 or more hours per week on BMTF.

All respondents were asked about their personal roles with the program. Respondents were commonly involved in direct service, and to a lesser extent, related tasks; they tended to have other non- BMTF responsibilities as well. The most commonly-mentioned task was conducting counseling sessions (58.7%). Another 32.6 percent said they engage in client recruitment or outreach, and the same percentage said they essentially took part in all aspects of the program. They were also asked what else they do at their agency; only 10.9 percent said they worked exclusively on BMTF. The most common responses were serving as a program coordinator (34.8%), working as a health educator (30.4%), and working as a nurse (17.4%). Only 10.9 percent said they worked exclusively on BMTF.

When asked how long they had been working on the BMTF program, respondents had not generally worked on the program very long. The largest portion (34.1%) had been working six months or less on the program, with another 29.5 percent working on it for 7-12 months. They also tended to devote relatively few hours to BMTF tasks. On average, respondents said they spent 8.34 hours per week on BMTF tasks, with over half of respondents (52.2%) spending five or fewer hours per week. Just one respondent worked the equivalent of full-time (31 hours or more per week) on BMTF.

Administrators, when asked if they worked with BMTF clients in ways other than the program, tended to say they did not; only 35.7 percent said they did. Among those, only providing prenatal appointments (60.0%) and providing WIC services (40.0%) were mentioned as additional client interactions.

Finally, those in combined roles were asked if they worked as a tobacco cessation counselor in any other capacity than in the BMTF program. Most (80.0%) said they did not.

## Training

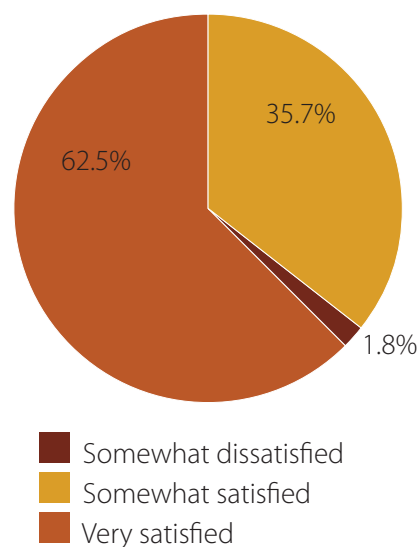
Respondents were also asked what training they received, both in terms of training about the BMTF program and other tobacco cessation training they might have received. They were also asked about their satisfaction with the training and what elements they appreciated or thought were lacking.

It appears that those who took part in the in-person training (which was the majority, 77.1%) were pleased with the results; if anything, participants indicated they would prefer to receive further training. Most respondents in facilitator roles (both stand-alone and combined roles) had participated in BMTF training (77.8%). They most commonly participated in the in-person training provided by BMTF, rather than webinars, telephone training, or being trained by other staff members. Overall, they were generally satisfied with the training; mean satisfaction was 3.61 on a four-point scale (with 1 indicating “not satisfied” and 4 indicating “very satisfied”).

When asked what they thought was good about the training, the most common responses were that it provided useful information (50.0%), the presenter was good (48.3%), and that it provided a quality overview of the program/process (31.0%). They were also asked what improvements could be made, to which the most common response was “nothing” (30.0%). Among the suggestions given, the most common was “longer/additional training” (19.2%).

Facilitators were asked if they had received other tobacco-related training; there was a roughly even split. Approximately 47.8 percent had no other tobacco-related training, while 41.3 percent had undergone tobacco treatment specialist training. The remainder had gone through training related to 5A's<sup>10</sup> (a brief intervention protocol) or other tobacco training.

*Satisfaction with training*



## Agency Details

Several questions were asked about how the BMTF program fits into the overall mission and approach of the provider agency. The interviewer also asked about other programs, both within the agency and in partner agencies, and how they interface with their BMTF efforts.

<sup>10</sup> The 5 A's is a brief intervention used to address tobacco cessation with patients entailing asking all patients if they use tobacco, advising them to quit if they do, assessing their readiness to make a quit attempt, assisting them in finding cessation services, and arranging a follow-up to assess their quit status and progress.



BMTF seems to incorporate well with agencies who are taking part in the program, and respondents perceived it as important to the work they do. In terms of the overall mission of their agency, the majority of respondents said that BMTF overlaps with their prioritization of community health (52.5%). The second-most common comment related to decreasing smoking rates or increasing cessation (42.5%), followed by improving health outcomes for mothers and children (32.5%). When asked to rate the importance of BMTF in their agency on a five-point scale (with 1 indicating “not at all important” and 5 indicating “very important”), the mean score was 4.42; no respondents gave a response lower than 3.

Most respondents (89.7%) stated that their agency works with pregnant women for things other than BMTF. The most common other ways they worked with pregnant women included providing WIC services (61.8%), serving as a prenatal clinic or doctor’s office (35.3%), and providing immunizations (29.4%). When asked how those other programs or services interfaced with their BMTF program, nearly all respondents (84.4%) said the other programs provided referrals. A handful said that the other programs determined smoking status (9.4%) or provided additional support or education (6.3%).

There was a nearly even split between those agencies that offered other cessation programs (47.4%) and those that did not (52.6%). Among those who did, most programs used the 5A’s (73.7%), and another 21.1 percent employed a certified tobacco treatment specialist. The final remaining respondent offered the “Not on Tobacco” program for youth, which can include pregnant teens. Many programs (61.5%) worked with other agencies or had cooperative agreements for the BMTF program, and another 17.9 percent had some sort of informal agreement with other programs. When asked to describe those arrangements, nearly all respondents said that area healthcare providers made referrals to their program (90.0%). The second-most commonly mentioned arrangement was that a WIC clinic provided referrals; in fact, all but two agencies had relationships with other agencies or organizations providing referrals.

**On a scale of 1-5, how important is Baby & Me to your agency?**

**“I would say four, because I think the program and the purpose is maybe a five, but the number of people that we’re affecting by it at the moment is very small.”**

***—Program Director***

## Program Logistics

Several questions in the interviews related to the logistics of how the agency's BMTF program is run. Topics included recruitment and referrals, determining client eligibility, how sessions are scheduled, and where they are conducted.

Initially, recruitment goals for BMTF programs were relatively modest. When asked what their original goals were, two-thirds estimated they would serve 30 women or fewer, and 21.3 percent estimated they would serve 10 women or fewer.

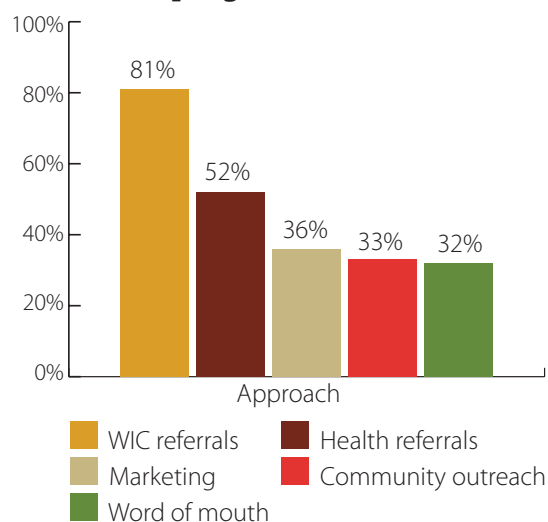
In terms of how programs expected to recruit participants, they tended to take a more passive role. The vast majority (81.2%) expected to receive referrals from WIC programs, and just over half (52.2%) expected to receive referrals from healthcare providers. More active efforts such as marketing, community outreach, and word of mouth were much less commonly mentioned (none was mentioned by more than 36.2% of respondents). This may be a factor in why some programs have struggled with recruitment.

The process of engaging a woman into the program appears to be consistent across agencies. In determining eligibility, nearly all programs say a facilitator is responsible (94.4%). A handful said that a nurse (8.3%), the person doing recruitment (2.8%), or a referring agency (2.8%) was responsible. If a woman agrees to take part in the program, the majority begin enrollment (57.1%), while some others educate the woman about the program (28.6%) or even attempt to conduct the first session on the spot (14.3%). If the woman says "no," then most programs (73.3%) attempt to educate the woman or continue to reach out to her, while a few provide Quit Line information (13.3%).

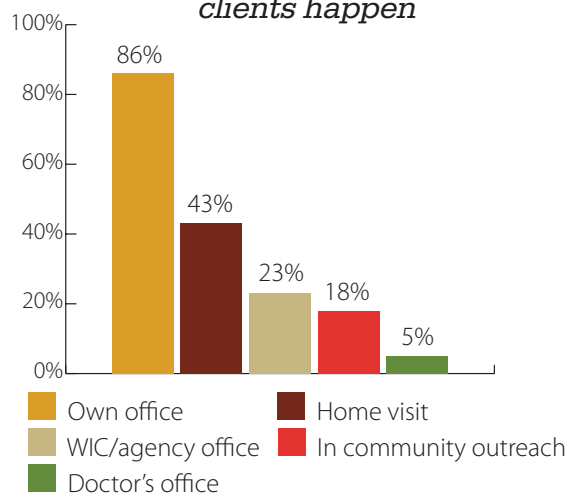
Generally speaking, client caseloads tended to be low. Approximately 69.6 percent of respondents said they were currently working with 20 clients or fewer, and 41.3 percent of respondents indicated they were working with 10 clients or fewer. However, a few programs did have larger numbers; 15.2 percent of respondents said they had over 50 clients. The mean number of clients across all programs was 19.8.

Nearly all respondents, when asked about scheduling clients, indicated that they did the scheduling themselves (97.8%). In terms of where they met with clients, the most common response was at the respondent's office

*How program recruits women*



*Where meetings with clients happen*



(86.4%), followed by home visits (43.2%) and WIC offices (22.7%). Most respondents (71.8%) said it was the same for both prenatal and postpartum sessions. Conducting home or off-site visits is not a requirement of the program, but many facilitators stated they thought meeting the clients where they were was important for keeping them in the program.

Half of respondents said they sometimes administer the final prenatal counseling session after the baby is born. In most cases (76.2%), this is due to a premature birth rather than a mom being on bedrest (14.3%) or other reasons (9.5%). Administering the final prenatal session postpartum tended to be an uncommon issue, however; only 5.9 percent of respondents said it happened often, and 23.5 percent of respondents said they had never done so.

When facilitators were asked if they worked with BMTF clients in other ways, over two-thirds (67.7%) said they did. The most common ways they said they provided other services included connecting them with other services (27.3%) and providing Help Me Grow services (18.2%).

## Details About Sessions

Respondents were asked a series of questions about the content of the BMTF sessions, including the topics covered (including non-tobacco-related topics), how those sessions are generally received by clients, how the postpartum sessions differ from the prenatal sessions, and what happened when a client tests positive for tobacco use on the CO monitor.

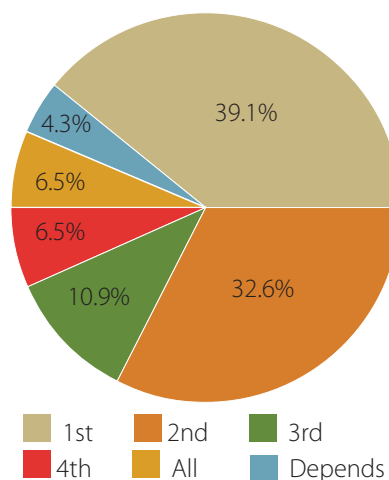
### *Prenatal Sessions*


Respondents were first asked what materials they used in the prenatal sessions. As would be expected, every respondent indicated they used the materials provided by BMTF. Forty percent of respondents also indicated that they used additional information or pamphlets from other sources, and 8.9 percent said they used additional visual materials. Also, 8.9 percent said they used additional incentives during the prenatal sessions, which are generally cessation items the agencies have acquired from ODH or CDC, including pencils, stress balls, cessation emergency kits with suckers and gum, and smoke-free homes magnets and coasters.

In terms of content and what the facilitators discuss with the clients, responses varied notably. The most frequently mentioned elements were discussing barriers, triggers, or challenges (51.4%); the results of the CO monitoring (34.3%); and client feelings or needs (31.4%). Most facilitators (78.6%) indicated they discussed non-tobacco topics with their clients as well. The most common topics were stressors or home life issues (50.0%) and healthcare topics (34.6%).

When asked how well they thought the sessions resonated with clients, most counselors (73.0%) said they did resonate well. Another 18.9 percent said it depended on the client and their receptiveness

*Prenatal session that resonates best*





or motivation. Facilitators were also asked which sessions they felt resonated the best with clients; responses indicated that the earlier sessions resonated better. Over half (52.9%) said the first session, while only 8.8 percent said the fourth session. A small percentage (8.8%) said “all sessions,” while a few less (5.9%) said it depended on the client. There were more mixed results when facilitators were asked which sessions did not resonate well. The most common response was that all the sessions did well (48.5%), and no other prenatal session was selected more than 21.2 percent of the time. This indicates that while all of the BMTF prenatal sessions appear to resonate well with clients, the earlier sessions describing the risks to their babies and the benefits of quitting were especially well-received.

### *Postpartum Sessions*

Facilitators were also asked about the structure and content of the postpartum sessions, since these visits are less structured than the prenatal sessions. Nearly four-fifths (79.4%) said that all the postpartum sessions are similar in structure to one another. This is also reflected in the follow-up question where they were asked what they did during those sessions; whereas the prenatal topics varied more widely, responses in the postpartum sessions were generally similar. The most common response was that they used the CO monitor (75.7%), followed by sharing baby development educational materials (62.2%), and dispensing diaper vouchers (45.9%).

In this section of the interview, respondents were also asked what they do when a client tests positive for tobacco use on the CO monitor (or what they should do, if they had not had that happen yet). The largest portion (70.0%) said they would schedule a re-test on the CO monitor, and 36.4 percent said they offer support and encouragement. When asked if they would still give the woman the diaper voucher, nearly all (94.1%) said they would not. The remaining two respondents said they would, or that it would depend on the circumstances, which they acknowledged does not comply with program fidelity. Facilitators were then asked what they would do if the client tested positive a second consecutive time. Responses varied more for this item; 59.5 percent said the woman would be disqualified from the program and 18.9 percent said the woman would be given the opportunity to retest again. A few others mentioned giving a saliva test, asking BMTF staff for clarification, or that it might depend on the circumstances.

### *Technical Assistance from Baby & Me*

Another series of questions related to the technical assistance (TA) that agencies receive from the BMTF program, both in terms of monthly conference calls and any one-on-one discussion of needs directly with BMTF. Respondents were asked about how often they sit in on the monthly calls, how useful they find the technical assistance calls to be, how the technical assistance offered can be improved, and so on.

Respondents tended to be engaged in and pleased with the technical assistance process, both in terms of the TA calls and individual technical assistance. Most respondents (87.5%) said they had participated in at least one of the TA calls, and over half (57.1%) had taken part in every call. Overall, respondents seemed to find the calls moderately useful; on a four-point scale with a response of one (1) indicating “not at all useful” and four (4) indicating “very useful,” the mean score was 3.05. Over half (58.1%) said the calls were “somewhat useful.”

Respondents were asked what areas of focus would be helpful on the TA calls. While the most common response was “none,” a few suggestions were made. About 18.2 percent of respondents said they would like discussion relating to retention strategies, and 15.9 percent would like more discussion regarding outreach and recruitment. They were also asked how the TA calls could be improved to better prepare providers for BMTF, and responses were similar to the previous item. While 47.1 percent said no changes were necessary, the most common other response was to focus on recruitment and engagement. As a follow-up question, respondents were asked for what aspects they felt unprepared. Apart from the 42.1 percent who said there were no areas in which they felt unprepared, the most common responses related to recruitment and engagement (21.1%), lack of experience in conducting the program (18.4%), and using the CO monitors (15.8%).

Respondents were asked if they had ever asked for assistance directly from the BMTF program, apart from the TA calls. Over two-thirds (68.6%) stated that they had done so. The most frequent reasons for contacting BMTF were clarifications on client procedures or eligibility (28.3%), ordering supplies or materials (26.1%), and talking about budget or contract information (13.0%). When asked how helpful BMTF was in that situation, 79.3 percent said they were very helpful. Furthermore, 91.3 percent of respondents said BMTF was able to provide them with the assistance they needed.

## Interaction with ODH

Respondents were asked about their interaction with ODH program staff as well. Questions covered the quality of communication with ODH, areas of potential improvement, and areas in which ODH does well in providing assistance.

Overall, respondents seemed pleased with the assistance and communication from ODH. When asked to describe the communication between their agency and ODH, many respondents (65.6%) said the communication was good. Another 18.8 percent said it varied, and 12.5 percent mentioned specific issues (including getting questions answered and issues in reaching the proper staff member). Respondents were also asked if they were able to acquire assistance from ODH in a timely manner, to which 67.6 percent said they were able to do so; 17.6 percent had mixed results and 8.8 percent had not tried to get assistance.

**94%**  
of respondents  
indicated they  
were able to  
acquire timely  
assistance from  
ODH when needed.

Respondents were asked to provide suggestions for areas in which ODH could improve their efforts to provide assistance in implementing and sustaining the BMTF program. Apart from the 40.6 percent who indicated no improvements were necessary, responses varied. The most common responses were the provision of additional incentives and providing better information up-front about how the program would operate and the challenges they were likely to face (both 12.5%), as well as improving communication and providing funding for marketing materials (both 9.3%).

Conversely, respondents were also asked what ODH does well in terms of providing assistance. The most frequently-mentioned aspects were being responsive to questions (58.3%), open communication (33.3%), and providing funding (33.3%).



## Successes, Challenges, and Barriers

Respondents were asked a series of questions relating to overall successes, challenges, and barriers that the respondent's BMTF program had experienced. During this discussion respondents were asked what challenges they had experienced (and how they attempted to overcome those challenges), which parts of the program had not gone as smoothly as intended, and what success they had achieved in implementing the program.

As has been mentioned previously, respondents reported difficulties with issues like recruiting and retaining clients. The primary challenges mentioned in implementing the BMTF program were helping motivate clients (33.8%), client retention (31.0%), and referrals and recruiting (28.2%). Most respondents, when asked if there were program aspects that sometimes did not go smoothly, said there were not (62.3%). Among those who had encountered difficulties, similar themes arose: retention and engagement were the most commonly mentioned difficult aspects of the program to implement.

Respondents were also able to identify a number of successes in implementing BMTF. The most frequently reported success was seeing direct success in the form of witnessing the program work and clients successfully quit (71.0%), followed by having clients complete all of the sessions (24.6%), and providing education to clients (23.2%).

**Are there any aspects of the program that sometimes don't go as smoothly as you'd like?**

“Putting the program into action. I don't know how you get them here, that's it. That's a big issue. Getting them from sitting there and telling the WIC people that they want to do this to then getting here. I don't know what that piece is.”

— *Program Facilitator*



## Birth Outcomes Evaluation

# Birth Outcomes Evaluation

## Introduction

One of the goals of the Baby & Me – Tobacco Free program is to improve birth outcomes, specifically as they relate to two measures: gestational age and birth weight. Evidence has shown prenatal smoking can cause premature births and low birth weights.<sup>11</sup> As such, the program encourages women to quit tobacco use while they are pregnant, with the goal of achieving more births with healthy weight and appropriate gestational age.

The aim of this evaluation is to determine the impact of the BMTF program on birth outcomes for women in the targeted population (i.e., low-income women and vulnerable populations). By matching the BMTF clients to a demographically comparable group, we want to answer the following evaluation questions:

1. Do women who enrolled in BMTF have better birth outcomes in terms of gestational age and birth weight than demographically similar women who are not enrolled in the program?
2. What impact does the number of sessions have on these birth outcomes?
3. Does amount of time spent in the program impact birth outcomes?

## Methods

This portion of the evaluation involved comparing the birth outcomes of the women in the BMTF program to a demographically similar group of “control” mothers who are as similar as possible but did not participate in the program. For this evaluation, it is important to control for as many predictor variables as possible. For example, pregnancies involving two or more babies have higher risks of being preterm or low birth weight. Therefore, this analysis only included cases of singleton birth. As another example, we know that smoking is associated with poorer birth outcomes, so the control group will consist of women whose Vital Statistics records indicate they smoked in the first trimester. This way, BMTF mothers, who were smokers enrolling in the program to attempt to quit smoking during their pregnancy, will be matched with non-BMTF women who smoked early in their pregnancy. Of note, there were BMTF mothers who indicated on the birth certificate that they did not smoke during the first trimester. However, the exhaled carbon monoxide readings from the first BMTF session is evidence that indicates they were smokers. Therefore, they were matched with non-BMTF mothers who indicated they smoked during the first trimester. Underreporting of smoking is

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<sup>11</sup>U.S. Department of Health and Human Services. The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014. Printed with corrections, January 2014.

a known limitation of birth certificate data. However, women almost never report smoking on the birth certificate when they are not smokers. Therefore, we are confident that true smokers are being matched with true smokers. A limitation of this method is that smokers who do not report smoking on the birth certificate may be different from smokers who do report. These non-reporters would not be represented in the control group.<sup>12</sup>

The data source for this evaluation was Ohio birth records. Women participating in the BMTF program and having a live birth in 2015 through 2016 constitute the intervention group. First, births to program participants were identified within the Ohio Resident Live Birth file. BMTF participant births were identified using Link Plus, a software program developed by the CDC which links cases from two datasets and assigns a probability score for each match, which are then manually reviewed. Link Plus matched BMTF clients to cases in the Ohio Resident Live Birth files based on first name, middle name, last name, mother's birthday, child's birthday (when available), address, and zip code. Matches were then manually reviewed and any potential matches that could not be confirmed were discarded. While most non-exact matches were due to slight data entry errors or slightly different versions of a name (e.g., Kathrine in the birth files might be Kathy in the BMTF data), some involved missing or incomplete data; and while a missing zip code could be easily verified by a street address, a missing birth date was likely to lead to a rejected match. Despite challenges with data quality, 86.2 percent of BMTF clients were initially identified in the birth records (972 out of 1,128). SRG and ODH staff reached out to local BMTF agencies to verify or update information for the 156 unmatched BMTF clients in an attempt to obtain better information for matching. This effort led to an additional 39 cases being successfully matched, resulting in 89.6 percent of births to BMTF clients being identified in the Ohio birth records.

After the BMTF client births were identified, each BMTF program birth was "matched" through propensity score to a control birth from the same county or similar bordering county and whose mother smoked in early pregnancy. Propensity score matching is a statistical matching technique commonly used to gauge the effect of a treatment or intervention by attempting to account for the covariates (factors) that might also impact the outcome. The propensity score acts as a summary of key background characteristics, weighted by their importance, which was then used to match participants with non-participants. For this analysis, the background characteristics include the following: mother's age, mother's race, mother's WIC status, mother's Medicaid status, if this was the mother's first birth, and total number of prenatal care visits. A propensity score was assigned to each birth using this combination of demographic and behavioral characteristics. Using this score each BMTF mother was matched to a mother not involved in the BMTF program from their county with the same propensity score to the tens-thousandth decimal place, indicating a very close match. Matching to the .001 threshold is aligned with the standard of matching propensity scores to the .01 or .001 level. If multiple matches were available for a BMTF mother, one non-BMTF mother was chosen at random. If a same county match could not be found at the tens-thousandth decimal

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<sup>12</sup> A study of NYC and Vermont birth certificates found that birth certificates underestimated smoking by 24.3 % before pregnancy and 26.2 % during pregnancy compared to medical records. Moreover, under-reporting was more like among women who were privately insured, had a prior birth, and had higher educational attainment. Source: Howland, Renata E., Mulready-Ward, Candace, Madsen, Ann M., et. al. (2015). Reliability of Reported Maternal Smoking: Comparing the Birth Certificate to Maternal Worksheets and Prenatal and Hospital Medical Records, New York City and Vermont, 2009. *Matern Child Health Journal*, 19(9): 1916–1924. doi:10.1007/s10995-015-1722-1.



place, a match was made with a mother from a bordering county with the same state typology (e.g., urban, suburban, rural) and similar poverty rate to the tens-thousandth decimal. If the mother was still unmatched, a match to the thousandths decimal place was made prioritizing the same county before matching with a similar, bordering county. If there was still not a match after this process, the mother was left out of the analysis.

The propensity score matching started with 959 mothers in the BMTF program that had singleton births. To calculate a propensity score, there cannot be missing demographic information, which meant that a total of 27 BMTF mothers were excluded for missing information in the vital statistics. This process resulted in two groups of 909 mothers with similar demographics and behaviors, differentiated by participation in the BMTF program. A total of 23 BMTF mothers were not matched with a non-BMTF mother because there was not a similar enough propensity score in their county or similar bordering county. Encountering unmatched participants is a common occurrence in propensity matching analysis because the distributions of the group that received the treatment is different than the group that did not receive the treatment. Table 10 below provides the demographic and behavior characteristics of the 909 BMTF mothers and their matched control counterparts. The two groups are demographically very similar, indicating we have selected a viable control group.

***Table 10. Demographic and Behavior Characteristics of Mothers in Propensity Match Analysis***

	<b>BMTF</b>	<b>Control Group</b>
White %	78.5	77.9
Black %	18.7	19.0
Hispanic %	4.3	3.0
WIC %	51.5	53.7
Medicaid %	53.5	53.1
Previous Birth %	70.3	70.0
Prenatal Doctor Visits (Average)	11.3	11.3
Mothers Age (Average)	27.3	27.2
Number of Mothers	909	909

To determine the impact of the program on birth outcomes, independent t-tests means analysis, chi-square tests, and regression were used to examine the association of program participation with birth weights and gestational age. The independent t-test was used to compare the BMTF group with the comparison group created from the propensity matching process. This analysis compares the means for each group and the difference between the groups to determine if there is a significant difference in the average outcome between the groups. Chi-square tests were used to determine if the percentages of premature (< 37 weeks) and low birth weight (<2500 grams, <5.5 lbs.) births differed between the two groups.



Regression models were used to examine the impact of number of BMTF sessions and length of time in the BMTF program on birth outcomes. The regression models allow for the examination of the impact of the level of exposure to the BMTF program on birth outcomes for BMTF mothers, while controlling for other factors that can affect these outcomes (i.e., mother's race, mother's age, Medicaid payer status,<sup>13</sup> the number of prenatal care visits,<sup>14</sup> whether the mother has had a previous birth, and the CO level from the first BMTF prenatal session).

## Results

The tables below provide the descriptive statistics and significance test results for the comparison of birth outcomes between the BMTF mothers and the control group. The independent t-test found a statistically significant difference in both birth outcomes. Babies born to BMTF mothers averaged about 0.4 pounds heavier than those born to mothers in the control group and the average gestational weeks is about 2 days greater for the BMTF mothers.

**Table 11. Birth Outcomes in BMTF Participants and Non-Participants (difference of means t-test)**

Birth Outcome	Group	Mean	Standard Deviation	Standard Error Mean
Birth weight (Grams)	BMTF	3316.0	521.3	17.3
	Non BMTF	3130.7	543.5	18.0
Gestational Weeks	BMTF	38.72	1.50	0.05
	Non BMTF	38.43	1.83	0.06

**Table 12. Difference in Birth Outcomes by Group**

Birth Outcome	Mean Difference	T-Score	Significance	95% Confidence Interval
Birth weight (Grams)	185.3	7.42	0.000	136.3-234.3
Gestational Weeks	0.287	3.66	0.000	0.133-0.441

\*Positive difference means that mothers in BMTF had heavier babies and longer gestation periods

The table below provides the results of the chi-square tests examining the differences in the percentages of babies born prematurely (at less than 37 weeks of gestational age) and low birth weight (less than 2500 grams or 5.5 pounds) between the BMTF mothers and the control group. Results show that BMTF mothers had a significantly lower rate of low birth weight babies than the control group.

Although not statistically significant, when looking at the percentage of babies born prematurely, only 6.5% of babies born to BMTF mothers were premature, compared to 8.1% of those born to mothers in the control group.

<sup>13</sup>Analysis was also run using WIC status, which provided similar results. Data coverage was better for Medicaid payer status (which is highly correlated with WIC status), so Medicaid was selected for final analyses.

<sup>14</sup> OB/GYN visits, not BMTF sessions.

**Table 13. Birth Outcomes in BMTF Participants and Non-Participants (Chi-square t-test)**

	BMTF	Non BMTF	p-value
% below 5.5 lbs.	5.8%	9.8%	0.001
% less than 37 weeks	6.5%	8.1%	0.104

SRG conducted regression analysis using only mothers who were involved with the BMTF program to determine the impact of the number of prenatal sessions and length of time spent in the BMTF program (measured as the number of days between the mother's first BMTF session and baby's date of birth) had on birth outcomes. The regression model used was a univariate factorial ANOVA.<sup>15</sup> Independent control variables included race, the number of prenatal doctor visits, the month of the first prenatal doctor visit, the age of the mother, if the mother had previously given birth, if the mother received Medicaid, and the CO level from the first BMTF prenatal session.<sup>16</sup> While both models overall were statistically significant in predicting birth weight or gestational weeks, neither the number of prenatal BMTF sessions or time spent in the BMTF program were statistically significant in the model. For models predicting birth weight, being white, having more prenatal OB/GYN visits, having given birth previously, and having lower CO levels at the first BMTF session were the strongest predictors of heavier birth weights. For models predicting gestational age, having more prenatal OB/GYN visits and having lower CO levels at the first BMTF session were the strongest predictors of longer gestational periods.

## Conclusions

Applying these results to the three evaluation questions this analysis addresses, we do find evidence that women enrolled in the BMTF program have better birth outcomes in terms of gestational age and birth weight than demographically similar women who are not enrolled in the program. Results from the comparison of the percentages of low birth weight babies are consistent with those found by Zhang et al. (2016).<sup>17</sup> This indicates positive returns for the BMTF program in the form of better birth outcomes for BMTF mothers. When examining the impact of the number of prenatal BMTF sessions and the time spent in the BMTF program, however, we do not find these program variables to have a measurable impact on birth outcomes.

Most of the existing literature on the impact of the BMTF program (see the introduction of this report) focuses on maternal smoking status (number of cigarettes smoked postpartum and quit status). Unfortunately, the Vital Statics data only contain information for cigarettes smoked in the third trimester and not postpartum. Additionally, there is evidence to suggest that smoking is underreported on birth certificates, as was mentioned earlier. Therefore, we are unable to make comparisons here to the studies mentioned earlier with the exception of Zhang et al. (2016). It would be of interest to conduct a similar future study in which postpartum smoking could be established through medical records.

<sup>15</sup> All models were tested for collinearity and models were simplified to determine how control variable interacted to ensure model complexity was not suppressing results.

<sup>16</sup> These control variables were selected through discussions with ODH epidemiologists working on this evaluation to ensure that demographic and other variables known to affect birth weight and/or gestational age would be accounted for in the analysis.

<sup>17</sup> Zhang, X., Devasia, R., Czarnecki, G., Frechette, J., Russell, S., & Behringer, B. (2016). Effects of Incentive-Based Smoking Cessation Program for Pregnant Women on Birth Outcomes. *Maternal and Child Health Journal*, 21(4), 745-751. doi:10.1007/s10995-016-2166-y