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Executive Office of Health and Human Services
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December 7, 2021

Steven T. James
House Clerk
State House Room 145
Boston, MA 02133

William F. Welch
Senate Clerk
State House Room 335
Boston, MA 02133

Dear Mr. Clerk:

Pursuant to Chapter 313 of the Acts of 2010, please find enclosed a report from the Department of Public Health entitled "CY19 Summary of Activities related to Screening for Postpartum Depression."

Sincerely,

A handwritten signature in cursive script that reads "Margaret Cooke".

Margaret Cooke
Acting Commissioner
Department of Public Health

Cc: Representative James O'Day, Co-Chair of the Ellen Story PPD Legislative Commission
Senator Joan Lovely, Co-Chair of the Ellen Story PPD Legislative Commission Co-Chair

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MARGRET R. COOKE
ACTING COMMISSIONER

CY19 Summary of Activities Related to Screening for Postpartum Depression

December 2021



Legislative Mandate

The following report is hereby issued pursuant to Chapter 313 of the Acts of 2010 as follows:

The Department of Public Health “shall issue regulations that require providers and carriers to annually submit data on screening for postpartum depression. Following the receipt of data, the commissioner of public health shall issue an annual summary of the activities related to screening for postpartum depression, including best practices and effective screening tools. The department shall annually file the summary with the commissioner of public health and the clerks of the house of representatives and the senate not later than June 30; provided, however, that the first report is due not later than June 30, 2011.”

Executive Summary

About one in nine American birth parents experienced depressive symptoms after delivery. Untreated postpartum depression (PPD) has negative consequences for both children and birth parents. To promote the health and well-being of birth parents, children, and family, on August 19, 2010, Chapter 313 of the Acts of 2010, *An Act Relative to Postpartum Depression*, was signed into law in Massachusetts. Pursuant to this law, a PPD Special Legislative Commission was established, and the PPD Regulations (105 CMR 271.000) were promulgated in December 2014 requiring data reporting by both carriers and providers for routine clinical appointments in which medical services are provided to a person who has given birth within the previous six months.

To further improve PPD screening data reporting and to investigate the status of perinatal mental health and its impacts on birthing parents and their children, the Massachusetts Department of Public Health adopted depressive symptom questions in the Pregnancy Risk Assessment Monitoring System (PRAMS) in FY11 and starting in FY14, funded PPD screening at community health centers and home visiting programs serving pregnant and parenting families.

Introduction

About one in nine American mothers experienced depressive symptoms after delivery in 2012.¹ Untreated postpartum depression (PPD) has negative consequences for both children and birth parents. Children born to individuals with PPD were more likely to have poor cognitive functioning, behavioral inhibition, emotional maladjustment, violent behavior, externalizing disorders, or psychiatric and medical disorders.²⁻⁹ Furthermore, individuals with PPD were more likely to have weight problems, alcohol and illicit drug use, social relationship problems, breastfeeding problems, or persistent depression.¹⁰⁻¹⁵ A recent study of 2017 births in the United States further estimated that untreated mood and anxiety disorders in birth parents cost a total of \$14 billion from conception to 5 years postpartum, with an average of \$31,800 per mother-infant dyad.¹⁶

To promote the health and well-being of birth parents, children and families, on August 19, 2010, Chapter 313 of the Acts of 2010, *An Act Relative to Postpartum Depression*, was signed into law. This legislation has two primary components: (1) establishing a postpartum depression (PPD) Legislative Commission and (2) requiring that the Massachusetts Department of Public Health (DPH) promote a culture of awareness, de-stigmatization, and screening for postpartum depression.

Specifically, DPH is charged with:

- Developing standards for effective PPD screening;
- Making recommendations to health plans and health care providers for PPD screening data reporting;
- Issuing regulations that require health plans and health care providers to annually submit data on screening for postpartum depression; and
- Issuing an annual summary of the activities related to screening for postpartum depression including best practices and effective screening tools.

A legislative requirement outlined in Chapter 313 of the Acts of 2010, *An Act Relative to Postpartum Depression*, is the implementation of PPD Screening Regulations, which requires providers to report their PPD screening data through the submission of service codes to the All Payors Claims Database (APCD). Due to challenges in accessing the APCD data from the Center for Health Information and Analysis (CHIA) and linking it to the birth data from Vital Records, there have been considerable delays in meeting this annual reporting component. This report provides a summary of activities for calendar year 2019.

Report

The Massachusetts Department of Public Health (DPH) collects postpartum depression (PPD) data and funds several programs in PPD service provision. Below is a summary of the PPD data collected and activities conducted in calendar year 2019 (CY19).

PPD Regulations - 105 CMR 271.000

An Act Relative to Postpartum Depression, Chapter 313 of the Acts of 2010 charged DPH to issue regulations that require carriers and health care providers to annually submit data on screening for PPD. This data reporting is intended to help DPH understand statewide PPD screening patterns and outcomes, to improve the detection of this prevalent condition and ultimately facilitate treatment for birthing parents in need of help.

The PPD Regulations (105 CMR 271.000) were promulgated in December 2014 and require annual reporting by a provider that conducts or oversees screening for PPD, using a validated screening tool, during a routine clinical appointment in which medical services are provided to a person who has given birth within the previous six months. The regulation also applies to a carrier that receives a claim for this PPD screening.

Provider Data

Providers responsible for adhering to these regulations are obstetrician-gynecologists (OB-GYNs), Family Medicine Practitioners, and Advanced Practice Nurses (including Nurse Midwives and Nurse Practitioners), and Physician Assistants, who practice in a family medicine or OB-GYN setting.

Data collection from providers began in calendar year 2015. Providers may report their PPD Screening data to DPH in one of two ways:

1. Providers are able to submit an annual written report to DPH by March 1 for the previous calendar year using the “Annual PPD Data Reporting Form” available on the [DPH webpage dedicated to PPD](#).
2. Alternatively, providers may use the Healthcare Common Procedure Coding System (HCPCS) code of S3005 (Performance Measurement, Evaluation of Patient Self-Assessment, Depression) with a diagnostic range Z39.2 (Routine Postpartum follow up, formerly ICD9 V24 - Screening for Postpartum Depression) and with a modifier as a mechanism for reporting PPD screening (see below).

Servicing Provider	Modifier for use with a positive PPD screen	Modifier for use with a negative PPD screen
<i>OB-GYNs, Family Medicine Practitioners, Advanced Practice Nurses including Nurse Midwives and Nurse Practitioners, & Physician Assistants</i>	U1	U2

Depending on the private carrier, the service code is set to pay at \$0.00 or at \$0.01. Private carriers have been accepting this service code from the servicing providers identified above and are reporting it directly to the [All-Payer Claims Database \(APCD\)](#) at the Massachusetts [Center for Health Information and Analysis \(CHIA\)](#), as required under PPD Regulations.

Effective May 16, 2016, MassHealth began paying perinatal care providers for the administration of standardized depression screening during pregnancy and the postpartum period utilizing the above HCPCS code.

PPD Data Collected through Claims Codes & Linkage with APCD

Chapter 313 of the Acts of 2010, *An Act Relative to Postpartum Depression*, called for submission of data on postpartum depression (PPD) screening to examine the frequency and scope of PPD among new parents in Massachusetts. PPD defined as depression occurring within 12 months after giving birth, includes feelings of sadness, hopelessness and anhedonia—the loss of interest in previously pleasurable activities. PPD is an important public health issue with profound long-term consequences for birthing parents and families if left untreated, including impaired parent-infant bonding, delayed social and cognitive development in children, and increased risk of maternal suicide and infant death.¹⁷ It is recognized that greater than 50% of mothers with PPD are not identified and thus do not seek help from a health care or mental health professional.¹⁸

The [All-Payer Claims Database \(APCD\)](#) collected by the [Center for Health Information and Analysis \(CHIA\)](#) were linked to the Massachusetts birth certificate data for calendar year 2017. CHIA has created a new APCD Master Patient Index (MPI) that assigns a single unique surrogate key to each person, regardless of how many different insurance carriers have submitted data about the person. APCD data obfuscation¹ begins by processing Member Eligibility (ME) data through CHIA's data intake application, called FileSecure, which is implemented at the initial data claims entry at the point of health care service provision. FileSecure prepares Member Eligibility data for use in the APCD MPI. All legacy APCD data submitted to CHIA prior to the FileSecure application deployment has been prepared and securely hashed² using the same logic that FileSecure uses to process newly submitted data. Birth certificate data were also standardized and hashed using the same logic. First name (hashed), last name (hashed), date of

¹ **Data obfuscation:** Also called “data masking,” the process of modifying sensitive data in such a way that it is of no or little value to unauthorized intruders while still being usable by software or authorized personnel.

² **Hashing:** Passing data through a formula that produces a result.

birth (hashed), and zip code (5 digit) were used in APCD MPI matching scoring. CHIA's MPI solution employs a probabilistic approach that uses these fields to generate a score that represents how well a record matches to another record. When two records are compared, each field is given a CHIA-assigned weight based on whether the field values being compared agree, disagree, or if either of the fields is empty. Techniques used to accommodate minor variations such as misspellings and digit transpositions cannot be applied to hashed data. The weights from each field comparison are summed to determine the total record score. If the record score exceeds the CHIA-defined threshold, the records are considered a match and are linked together as a single entity (person). Records linked together are assigned a surrogate key known as a Member Enterprise ID, or MEID for short.

From January 2017 through December 2017, there were 69,672 unique deliveries from birth certificate, of which 52,380 (75.2%) were linked to an APCD claim. The numbers of birthing parents screened for PPD within 6 months after delivery ranged from 691 in January 2017 to 914 in December 2017 (Figure 1). From January 2017 through December 2017, 10,048 (19.1%) out of 52,380 deliveries were screened for PPD, and 1,256 (12.5%) had a positive screen.

The proportion of birthing parents who were screened for PPD was higher among Asian (23.1%) and American Indian or those who identified as "Other" (21.4%), compared to Hispanic (16.7%), black non-Hispanic (18.3%), and white non-Hispanic birthing parents (19.8). The proportion of PPD screening was lower among preterm deliveries compared to full term deliveries (17.9% vs. 19.3%). A higher proportion of screening was seen among birthing parents with higher levels of education and the highest percentage of screening was observed among birthing parents with an associate or bachelor's degree (20.2%, Table 1).

When we look at the results of screening, Hispanic (17.3%) and American Indian or other (17.4%) had higher proportion of positive screens compared to white non-Hispanic (11.7%), black non-Hispanic (12.4%), and Asian (7.7%). The proportion of positive screens was higher among birthing parents who were covered by Medicaid than those on private insurance (16.3% vs. 6.7%). The proportion of screening was similar among Medicaid participants compared to those with other insurance (19.3% vs. 19.0%). The percentage of positive screens decreased as birthing parents' education level increased, except for birthing parents who had graduate degrees, who had lower rate of positive screens compared to birthing parents with no college education, but higher rates of positive screens compared to birthing parents who only received undergraduate education (Table 2).

PPD Pilot Programs

The Fiscal Year (FY) 2019 and 2020 budgets included language requiring DPH to continue PPD pilot programs at Community Health Centers (CHC) at three sites across the Commonwealth. A procurement waiver was granted and the contracts were re-established. Funding for these contracts totaled \$300,000, distributed evenly across all three sites. This funding allowed these CHCs to continue to employ part time Community Health Workers (CHW) to assist with PPD

screening and referral activities. The three CHCs included: the Family Health Center in Worcester, Holyoke Health Center, and the Lynn Community Health Center.

The CHCs are required to submit PPD screening data on a quarterly basis to DPH, inclusive of all dates during which services were provided.

The following is a summary of the data received from all three sites. Note: Holyoke Health Center did not submit quarterly reports for the time period between July – December 2019.

- CHCs reported 1,081 face-to-face encounters with pregnant individuals during clinical visits, with 937 (86.7%) receiving a PPD screen.
- CHCs reported 830 face-to-face encounters with postpartum individuals during clinical visits, with 666 (80.2%) receiving a PPD screen.
 - Of the 666 postpartum individuals who received a PPD screen, 14 (2.1%) scored either a 10, 11 or 12 on the [Edinburgh Postnatal Depression Scale \(EPDS\)](#) or 1 – 9 on the [Patient Health Questionnaire \(PHQ-9\)](#), indicating mild depressive symptoms.
 - Of the 666 postpartum individuals who received a PPD screen, 14 (2.1%) scored either a 13 or above on the [EPDS](#) or 10 or above on the [PHQ-9](#), indicating moderate to severe depressive symptoms.
- CHCs reported that their CHW provided 739 face-to-face encounters with a parent.
- CHCs reported 2,020 indirect/collateral contacts, including phone calls, made on behalf of the parents serviced by the program, including but not limited to: searches for basic need items, calls to providers to determine availability versus a wait list for services, and referral screens for eligibility with community-based organizations.
- CHCs reported 1,921 referrals initiated with 1,456 (75.8%) referrals completed.

Early Intervention Parenting Partnerships

DPH's [Early Intervention Parenting Partnerships \(EIPP\) Program](#) is a home visiting program for expectant parents and families with infants who are high need due to practical barriers (e.g., low financial resources, housing instability), emotional and/or behavioral health challenges (e.g., depression, substance use), or other stressors (e.g., immigration-related stress). The goals of EIPP are to:

- Connect families with local resources;
- Provide and build families' social support;
- Appropriately engage families in health care systems;
- Provide parenting education;
- Promote positive parent-child attachment and healthy child development; and

- Support families experiencing multiple stressors to prevent child social and emotional delays, and link with Early Intervention (EI) services where appropriate.

EIPP provides home visiting and group services to over 300 families annually by a maternal-child health (MCH) team that includes a MCH nurse, a mental health clinical professional, and a community health worker (CHW). EIPP provides parental and infant health assessment and monitoring, health education and guidance, screening and appropriate referrals, and linkage with the [Women, Infants, & Children \(WIC\) Nutrition Program](#) and other resources.

Programmatic performance measures and parental and infant outcomes range from improved management of alcohol, tobacco and other drugs, improved parenting skills, improved emotional health, increased rates of exclusive breastfeeding, increased attendance at postpartum visits, and improved nutrition.

Data on the 298 EIPP Participants enrolled during CY19 include the following eligibility criteria (participants may meet more than one):

Percent of Participants	Eligibility Criteria
88.6%	High level of stress
66.1%	Inadequate food or clothing
46.6%	History of depression including postpartum depression
28.5%	Homelessness or housing instability
15.1%	Less than a 10 th grade education
14.4%	Tobacco use
8.7%	Substance abuse in the home
3.4%	Violence in the home

At enrollment and at other key stages of program engagement, all EIPP participants receive a Comprehensive Health Assessment (CHA) that assesses the social, emotional, and physical well-being of the participant and infant in the context of their family. This CHA includes both a Social Connectedness screen utilizing a three-question survey and a PPD screen, utilizing the [Edinburgh Postnatal Depression Scale \(EPDS\)](#).

In CY19, 222 participants received the Social Connectedness screening, utilizing a screening tool at 2 months postpartum.

- Twenty-three participants (10.4%) indicated that they felt they were not getting the support they needed from others.

- Twenty-nine participants (13.1%) indicated that they did not have someone to call when they needed someone to care for their baby.
- Twelve participants (5.4%) indicated they did not have someone they could count on to listen to them when they needed to talk.

In addition, 133 PPD screens were conducted with EIPP participants at 2 months postpartum.

- One hundred and eight participants (48.6%) received a score below 9, indicating that they were not experiencing depressive symptoms.
- Twelve participants (5.4%) received a score between 10 – 12, indicating mild depressive symptoms.
- 13 participants (5.9%) reported moderate or high depressive symptoms.

Participants who screen positive for depression are then supported in accessing mental health services including counseling and support groups. In 2019, 100% of EIPP participants identified with depression and/or a mental health disorder were connected to mental health services including individual counseling, support groups, and/or couples/family counseling. Barriers to accessing mental health services in a timely manner included language, stigma, transportation, and lack of insurance for undocumented participants.

Massachusetts Maternal, Infant and Early Childhood Home Visiting (MA MIECHV):

Since the spring of 2010, DPH has been operating the [Maternal, Infant, and Early Childhood Home Visiting Program \(MIECHV\)](#), a federally funded program for states, tribes, and territories to develop and implement one or more evidence-based maternal, infant, and early childhood home visiting model(s). The state's program is referred to as MA MIECHV.

In September 2018, DPH was awarded \$7.2 million in federal funds in support of MA MIECHV (\$200,000 of which was earmarked for an updated statewide Needs Assessment), marking the ninth year of funding. MA MIECHV funds evidenced-based home visiting programs, including [Parents as Teachers](#) and [Healthy Families America](#). MA MIECHV home visiting services prioritized 18 communities for services identified through the 2020 Massachusetts MIECHV needs assessment (list of communities is in the Appendix). The needs assessment ranked communities based on quantitative data indicators in nine domains: (1) socioeconomic status; (2) housing; (3) populations of special interest (e.g., teen births, foreign born residents); (4) substance use; (5) crime; (6) child unintentional injuries; (7) child maltreatment; (8) adverse perinatal outcomes; and (9) child development and health and school outcomes. There are 24 MA MIECHV home visiting programs across the 18 communities.

Depression screening is conducted with all program participants and data are analyzed for all home visiting programs on a quarterly basis. An annual report to the federal funding agency, the Health Resources and Services Administration (HRSA), is submitted every October. Screens are conducted within three months of enrollment and are updated in compliance with model fidelity respective to each evidence-based home visiting program.

In federal FY18, 83% of expected screenings for depressive symptoms were completed within three months of enrollment.

Welcome Family

The [Welcome Family](#) program, funded through MA MIECHV, offers a one-time nurse home visit to all birthing parents with newborns and their families, regardless of age, income, or other criteria, in five Massachusetts communities. The goal of Welcome Family is to promote optimal parental and infant physical and mental well-being and to provide an entry point into a system of care for families with newborns. Each visit is conducted within 8 weeks postpartum, lasts approximately 90 minutes, and is conducted by a nurse with maternal and child health experience. All services are provided at no cost to families. The primary focus of Welcome Family is the birthing parent and their newborn, but any caregiver is eligible for a visit, including fathers, grandparents, adoptive parents, and foster parents.

During the visit, the Welcome Family nurse assesses the following six areas. Each area includes screening, brief intervention, education, and referrals to services as needed:

- Parental emotional health, including a depression screen
- Parental and infant nutrition, including breastfeeding
- Unmet health needs
- Intimate partner violence
- Substance use
- Parental and infant clinical assessment

The nurse also spends time addressing the family's questions or concerns. Participants receive a Welcome Family bag with gifts and information to support parents and baby. In addition, participants receive a follow-up phone call to inquire about the outcome of referrals made during the visit and assess the need for any additional referrals.

Marketing and outreach activities are conducted at the community level to identify and recruit birthing parents with newborns to participate. Relationships are fostered with potential referral sources in the community, including birth hospitals, OB-GYNs, midwives, pediatricians, and WIC.

Welcome Family is available to families living or giving birth in five communities: Fall River, Boston, Lowell, Holyoke, and Springfield. During 2018, 1,756 PPD depression screens were offered during Welcome Family visits. There were 307 positive PPD screens (17%), of which 181 (59%) received a referral to services. Families received brief interventions by the Welcome Family Nurse if the family declined a referral.

"I had some concerns about postpartum depression and being able to talk to the nurse about it helped a lot. I had never had postpartum depression previously so it was helpful to learn more about it from the nurse." - Welcome Family Participant

Pregnancy Risk Assessment Monitoring System (PRAMS)

Since 2007, DPH has monitored the health of birthing parents and children in the Commonwealth with the [Massachusetts Pregnancy Risk Assessment Monitoring System \(PRAMS\)](#), an ongoing survey of new birthing parents. The survey asks a set of two questions related to the experience of postpartum depression. Based on the most recent data available (2017, N=1,399 survey participants), an estimated 10.7% of birthing parents in Massachusetts experience PPD symptoms always or often, 27.9% experience PPD symptoms sometimes, and 61.4% experience PPD symptoms rarely or never (Figure 1).

PRAMS data from 2017 suggest that some Massachusetts birthing parents are more likely to report experiencing PPD symptoms than others. Compared to White non-Hispanic birthing parents (7.7%), Black non-Hispanic birthing parents (18.7%) and Asian non-Hispanic birthing parents (14.5%) were more likely to experience PPD symptoms often or always. Similarly, higher prevalence of PPD symptoms was observed among birthing parents with less than a high school education (17.2%) and high school education (15.6%) compared to birthing parents with a college education (7.1%). Although higher prevalence of PPD symptoms was observed among those who are not married (14.3%) compared to birthing parents who are married (8.9%), this difference was not statistically significant after adjusting for parental race/Hispanic ethnicity and education.

The 2017 PRAMS data also suggests that some Massachusetts birthing parents are less likely to be screened for PPD during their postpartum visit. Overall, 86.5% of birthing parents reported that their health care providers asked if they were depressed (proxy for PPD screening). Compared to White non-Hispanic birthing parents (89.4%), Hispanic birthing parents (79.3%) and Asian non-Hispanic birthing parents (83.6%) were less likely to be screened for PPD. Similarly, lower prevalence of PPD screening was observed among birthing parents with less than a high school education (74.1%) and high school education (80.7%) compared to birthing parents with a college education (90.4%).

Additional Activities

In CY19, additional activities were conducted, and products were developed with the goal of supporting health care providers and health plans, as DPH implements the PPD Legislation.

Activities included:

1. In partnership with the PPD Legislative Commission subcommittee focused on community resources, DPH maintains and updates the web [page dedicated to PPD](#) with additional resources.

2. DPH continues to make available free to the public the brochure entitled “[Being a Mother is A Hard Job](#)” through the Massachusetts Health Promotion Clearinghouse.
3. DPH has funded Tufts University from FY20-FY22 to evaluate the effectiveness of EIPP with focus on PPD Screening and referral services.
4. DPH participated in the quarterly PPD Legislative Commission Meetings and the annual PPD Awareness Day event at the State House.
5. The DPH Maternal Mortality & Morbidity Review Initiative published a [Bulletin on maternal mortality and mental health](#) in CY2019.

Conclusion

Postpartum depression has significant adverse impacts on birthing parents, infants, and their families. Access to appropriate and quality treatment and support are essential.

Massachusetts is leading the way in innovative health policies to address postpartum depression. The Massachusetts Department of Public Health will continue to work diligently to improve the health and wellbeing of all birthing parents and infants across the Commonwealth, by prioritizing comprehensive PPD data collection and analysis, while also promoting early detection and treatment across health sectors.

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Appendix

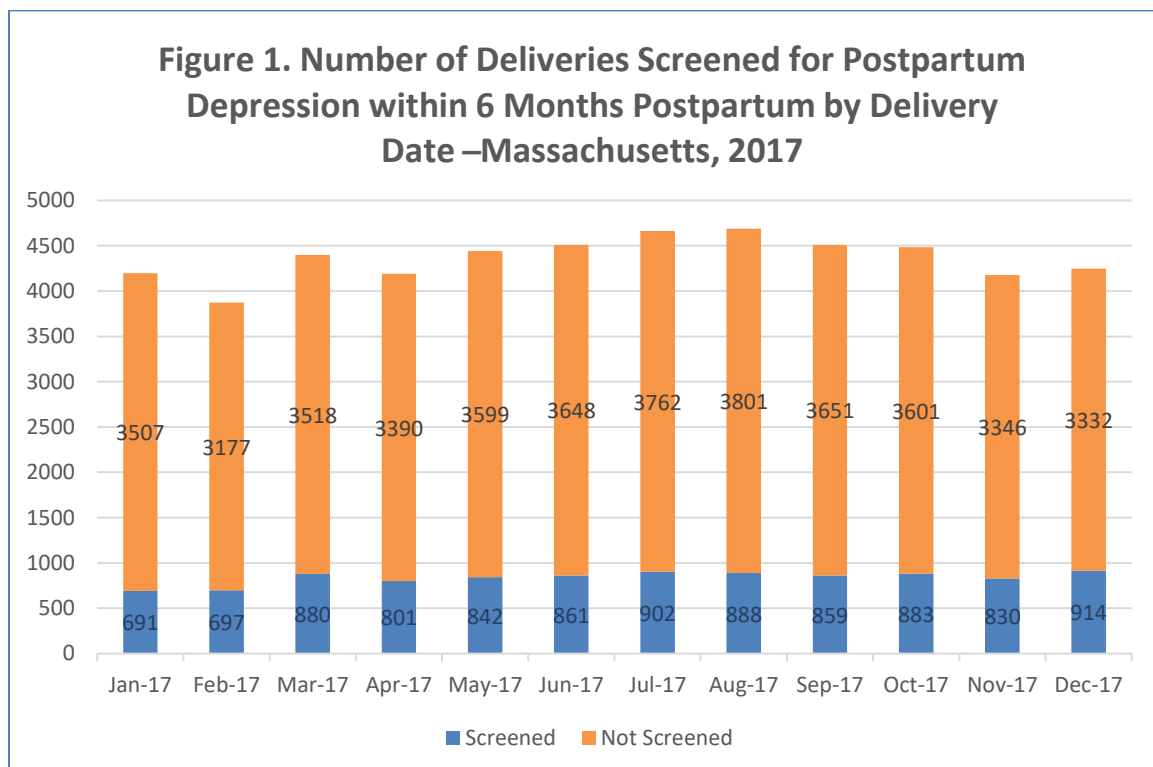


Table 1. Women's Characteristics by Status of PPD Screening, Jan 2017 -Dec 2017, MA

	Screened			
	No		Yes	
	N	%	N	%
<i>Race/Ethnicity[†]</i>				
White non-Hispanic	22,596	80.2	5,593	19.8
Black non-Hispanic	5,097	81.7	1,140	18.3
Asian/PI non-Hispanic	2,970	76.9	893	23.1
Hispanic	10,023	83.3	2,015	16.7
American Indian or Other	423	78.6	115	21.4
unknown	1,223	80.7	292	19.3
<i>Insurance</i>				
Medicaid	25,437	80.7	6,073	19.3
Other	16895	81.0	3975	19.0
<i>Education[†]</i>				
No HS degree	4,763	82.4	1,016	17.6
HS degree or GED	8,195	81.9	1,811	18.1
Associate or Bachelor degree	11,418	79.8	2,892	20.2
Post graduate	7,489	80.5	1,813	19.5
<i>Preterm Birth*</i>				
No	38,732	80.7	9,280	19.3
Yes	3,518	82.1	767	17.9
<i>Plurality</i>				
Singleton	41,592	80.8	9,885	19.2
Multiple	740	81.9	163	18.1
<i>Parity[†]</i>				
1	17,724	80.2	4,384	19.8
2	14,053	79.9	3,534	20.1
3+	10,555	83.2	2,130	16.8
<i>Married[†]</i>				
No	17,236	80.9	4,070	19.1
Yes	24,950	80.7	5,962	19.3

* P <0.05

† P<0.01

Table 2. Women's Characteristics by Results of PPD Screening, Jan 2017 -Dec 2017, MA

	Screen Results			
	Negative		Positive	
	N	%	N	%
<i>Race/Ethnicity[†]</i>				
White non-Hispanic	4,937	88.3	656	11.7
Black non-Hispanic	999	87.6	141	12.4
Asian/PI non-Hispanic	824	92.3	69	7.7
Hispanic	1,666	82.7	349	17.3
American Indian or Other	95	82.6	20	17.4
unknown	271	92.8	21	7.2
<i>Insurance[†]</i>				
Medicaid	5,084	83.7	989	16.3
Other	3708	93.3	267	6.7
<i>Education[†]</i>				
<HS	832	81.9	184	18.1
HS/GED	1,503	83.0	308	17.0
Some College/Associate Degree	2,617	90.5	275	9.5
Bachelor Degree	1,682	92.8	131	7.2
Graduate Degree	2,158	85.8	358	14.2
<i>Preterm Birth[†]</i>				
No	8,156	87.9	1,124	12.1
Yes	635	82.8	132	17.2
<i>Plurality</i>				
Singleton	8,646	87.5	1,239	12.5
Multiple	146	89.6	17	10.4
<i>Parity[†]</i>				
1	3,836	87.5	548	12.5
2	3,154	89.2	380	10.8
3+	1,802	84.6	328	15.4
<i>Married[†]</i>				
No	3,355	82.4	715	17.6
Yes	5,424	91.0	538	9.0

† P<0.01

The 18 MHVI Communities in Massachusetts include:

Boston, Brockton, Chelsea, Everett, Fall River, Fitchburg, Holyoke, Lawrence, Lowell, Lynn, New Bedford, North Adams, Pittsfield, Revere, Southbridge, Springfield, Webster, and Worcester.