



Pennsylvania Pregnancy Risk Assessment Monitoring System (PA PRAMS)

Report: Breastfeeding

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A Survey for Healthier Babies in Pennsylvania

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Introduction

It is widely accepted that the benefits of breastfeeding impact numerous areas of infant health and development. Breastfeeding protects growing babies with milk rich in nutrients and antibodies and ensures their nourishment is naturally balanced to match their changing needs. Breastfeeding is recognized as beneficial to mothers, families and society in general.

Utilizing weighted survey response data obtained through Pennsylvania's Pregnancy Risk Assessment Monitoring System (PA PRAMS), this report examines various topics and variables related to breastfeeding prevalence in Pennsylvania. The data in this report are based on the Phase 5 questionnaire responses from 1,779 Pennsylvania mothers who delivered from June 2007 through December 2008 (19 months, sample size 2,763).

This report begins with an overview of PRAMS in general and the PA PRAMS project specifically. Next, it compares PA PRAMS data with other states' data to establish the context for Pennsylvania's breastfeeding prevalence relative to other states. The report then focuses on Pennsylvania through a series of cross tabulations of breastfeeding and maternal demographic variables. Finally, it examines Pa.'s breastfeeding frequency within the context of mothers' WIC status and pregnancy intention. Appendix A contains a listing of the Phase 5 survey questions related specifically to breastfeeding.

PRAMS Overview

The Pregnancy Risk Assessment Monitoring System (PRAMS) was initiated in 1987 as part of the Centers for Disease Control and Prevention (CDC) initiative to reduce infant mortality and low birthweight. The program was expanded in support of CDC's Safe Motherhood initiative to promote healthy pregnancies and the delivery of healthy infants. The PA PRAMS project was initiated in 2006 and began collecting data in 2007. It is managed within the Division of Child & Adult Health Services. Tony Norwood became the Project Coordinator in October 2009.

PRAMS is an ongoing population-based surveillance system designed to identify and monitor selected maternal experiences and behaviors that occur before and during pregnancy and during the child's early infancy. Forty states and New York City currently participate in

PRAMS, representing approximately 78 percent of all U.S. live births (see participation map on page 28).

The overall goal of PRAMS is to reduce infant morbidity and mortality and to promote maternal health by influencing maternal and child health programs, policies and maternal behaviors during pregnancy and early infancy. The information from PRAMS may lead to improvement in the health of mothers and infants.

PRAMS surveillance combines two modes of data collection: mail and telephone. Because of the advantages of mail surveillance, particularly cost and (in the case of PRAMS) ready access to mailing addresses, this mode is used as the primary form of data collection. Up to three self-administered surveys are mailed to sampled women. Women who do not respond to the mailings are followed up by telephone and encouraged to complete a telephone interview.

PRAMS Websites

To learn more about PRAMS, please visit the following websites:

- CDC PRAMS: <http://www.cdc.gov/PRAMS>
- CPONDER: <http://www.cdc.gov/prams/CPONDER.htm> (See page 7 for a description.)
- PA PRAMS: <http://www.health.state.pa.us/paprams>

Pennsylvania PRAMS (PA PRAMS) Overview

The PA PRAMS project involves sampling Pennsylvania mothers (approximately 1,625 per year) and collecting and analyzing their survey responses on self-reported experiences, behaviors and health conditions before, during and soon after delivery. A random sample of women who have had a recent live birth within the previous 2-9 months are selected from Pennsylvania's birth certificate file. These randomly selected mothers become the PA PRAMS sampling frame. The statewide stratified sample is carefully designed to ensure findings can be extrapolated to the population of mothers statewide. Through a series of mailings and telephone calls, their questionnaire response data is collected and processed. On average, sampled mothers complete the PA PRAMS questionnaire approximately 3-4 months after delivery.

PA PRAMS began collecting data in September 2007. The project has achieved or exceeded the minimum response rate necessary for maintaining scientific validity (65 percent) each year of operations (see Table 1 below).

PA Births in Year:	Sample Size	Overall Weighted Response Rate
2007	1,107 (partial year)	70%
2008	1,656	70%
2009	1,600	69%
2010	1,618	66%
2011	<i>Estimated: 1,640-1,650</i>	<i>Estimated: 67.5% - 68.0%</i>

PA PRAMS Stratified Sample

There is often a particular interest from a public health perspective in certain subpopulations. These subpopulations may not represent a large portion of a state’s overall population. To make inferences about specific subpopulations and make comparisons among several subpopulations, infants in those subpopulations (commonly called strata) need to be oversampled (i.e., sampled at a higher rate than the other subpopulations). The main advantage of stratified sampling is that it permits separate estimates of subgroups of interest and permits comparisons across these subgroups. PA PRAMS currently stratifies by birthweight [low birthweight (< 2,500 g) and normal birthweight (2,500+ g)].

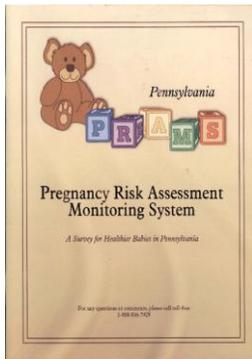
PA PRAMS Questionnaire

The PA PRAMS questionnaire is a critical part of the PRAMS data collection process, as it is the tool with which the program solicits information from new mothers using both self-administered and telephone interviewer formats. The questionnaire is evaluated and revised every 4–5 years. The development of the questionnaire is a collaborative process between participating states and the CDC. The Phase 5 questionnaire was utilized in Pennsylvania with the first sample obtained in 2007. The Phase 6 questionnaire was implemented in April 2009 and remains in use today. Later in 2012, PA PRAMS will implement the Phase 7 questionnaire. The PA PRAMS project collaborated with the Maternal Child Health (MCH)/PRAMS Advisory

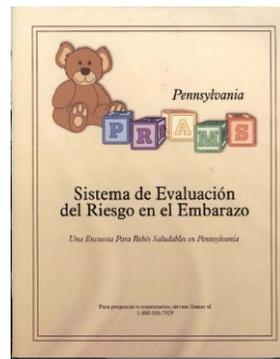
Committee membership in March 2011 to prioritize and select questions for the Phase 7 questionnaire.

Each phase/version of the PA PRAMS questionnaire has consisted of approximately 80 questions (core and standard) across a variety of topics, including:

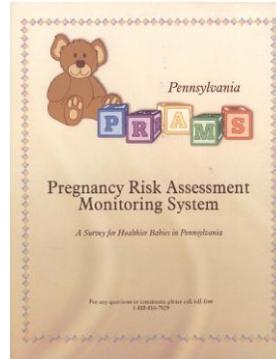
- Household characteristics
- Maternal demographics
- Family planning (contraception, pregnancy intention, etc.)
- Infant health (breastfeeding, child care, infant health care, etc.)
- Maternal behavior/health (alcohol and tobacco use, health care, nutrition, etc.)
- Maternal experiences (abuse, pregnancy intention, stress, etc.)
- Prenatal care (barriers, content, initiation, location, payment, visits, etc.)
- Socio-economic (health insurance mother, health insurance infant, income, WIC, etc.)



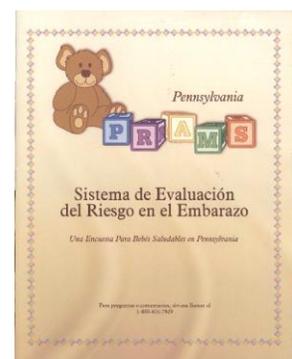
**Phase 5 English
(2007–2008)**



**Phase 5 Spanish
(2007-2008)**



**Phase 6 English
(2009-Present)**



**Phase 6 Spanish
(2009-Present)**

Phase 7 – August 2012 - forward

Breastfeeding Benefits

Breastfeeding is beneficial to infants and mothers. The positive health effects of breastfeeding are well recognized, and for nearly all infants, breastfeeding is the best source of infant nutrition and immunologic protection. Breast milk is uniquely suited to infants' nutritional needs.¹ For most babies, breast milk is easier to digest than formula. It takes time for babies' stomachs to adjust to the proteins in formula made from cow's milk, whereas mothers' breast milk is the uniquely perfect food.²

On their website, the CDC draws attention to the numerous health benefits associated with breastfeeding.^{3, 4} These include a reduced risk of severe lower respiratory tract infection,⁵ diarrhea,⁶ childhood obesity,⁷ type 2 diabetes,⁸ sudden infant death syndrome (SIDS)⁹ and death from any cause. Breastfeeding benefits mothers as well. Benefits to women include a reduced risk of breast¹⁰ and ovarian³ cancers and possibly a reduced risk of postpartum depression.^{11, 12}

Breastfeeding Prevalence by State (Using CPONDER)

CPONDER (CDC's PRAMS ONline Data for Epidemiologic Research) is a Web-based query system created to access data collected through PRAMS surveys. CPONDER is a public system accessible to anyone with Internet access (<http://www.cdc.gov/prams/cponder.htm>). It includes selected indicators for the PRAMS surveillance reports. It allows display of these indicators across states and years. Users have the ability to design their own analysis by choosing from an indexed list of variables.

Utilizing CPONDER, a state comparison was conducted on mothers' response to the survey question: **Did you ever breastfeed or pump breast milk to feed your new baby after delivery?** Based on the 29 participating PRAMS states' 2008 data, Pennsylvania ranked 24th (of 29) with 72.4 percent of mothers answering YES to this question. This positioned Pennsylvania below the 29-state mean (average) of 78.3 percent. To illuminate the range in this 29-state comparison, please note that the highest (rank 1) of the participating states was Oregon with 93.8 percent of mothers responding YES, and the lowest was Mississippi (rank 29) with 49.5 percent responding YES (see Table 2 on page 8 and Bar Chart 1 on page 12).

Table 2: Ever Breastfeed / Pump Breast Milk – State Comparison

Did you ever breastfeed or pump breast milk to feed your new baby after delivery?

Rank (High to Low % Yes)	PRAMS States w/available 2008 data (29 states)	% YES (w/ 95% CI) ¹³	% NO
1	Oregon	93.8% (91.6% - 95.5%)	6.2%
2	Hawaii	92.3% (90.9% - 93.5%)	7.7%
3	Washington*	92.3% (90.3% - 93.9%)	7.7%
4	Alaska	91.8% (89.7% - 93.5%)	8.2%
5	Utah	91.2% (89.7% - 92.5%)	8.8%
6	Colorado	90.4% (88.5% - 92.1%)	9.6%
7	Wyoming	85.4% (82.5% - 87.8%)	14.6%
8	Vermont	85.1% (82.8% - 87.3%)	14.9%
9	Minnesota	84.9% (82.8% - 86.8%)	15.1%
10	Massachusetts	81.6% (78.6% - 84.4%)	18.4%
11	Maryland	81.2% (78.0% - 84.0%)	18.8%
12	Nebraska	80.7% (78.1% - 83.0%)	19.3%
13	New Jersey	80.2% (77.9% - 82.4%)	19.8%
14	Oklahoma	79.0% (75.8% - 81.9%)	21.0%
15	Wisconsin	78.6% (75.5% - 81.4%)	21.4%
16	Maine	78.3% (75.3% - 81.1%)	21.7%
17	Illinois	77.8% (75.5% - 79.9%)	22.2%
18	New York (excluding NYC)	75.6% (72.2% - 78.7%)	24.4%
19	Rhode Island	75.0% (72.0% - 77.8%)	25.0%
20	Delaware	74.0% (71.4% - 76.4%)	26.0%
21	Michigan	73.4% (70.8% - 75.9%)	26.6%
22	North Carolina	73.2% (70.3% - 75.8%)	26.8%
23	Georgia	72.5% (67.9% - 76.6%)	27.5%
24	Pennsylvania[^]	72.4% (69.3% - 75.4%)	27.6%
25	Ohio	70.2% (66.8% - 73.3%)	29.8%
26	Arkansas	66.5% (63.4% - 69.5%)	33.5%
27	Tennessee	66.4% (61.8% - 70.7%)	33.6%
28	West Virginia	58.4% (55.4% - 61.3%)	41.6%
29	Mississippi	49.5% (46.2% - 52.8%)	50.5%
29 State Mean =		78.3%	21.7%

* Washington is ranked 3rd here, one below Hawaii (2nd), based only on the slightly wider 95% confidence interval for the same 92.3% indicating YES.

[^] Pennsylvania's percent YES for the combined 2007 and 2008 response data is 70.3% (95% CI = 67.6% - 72.8%)

Note: These reported results exclude respondents whose babies have died or are not living with the respondents now. Cell size percentages are weighted to population characteristics. Data Source: CDC's PRAMS On-line Data for Epidemiologic Research (CPONDER) - Available data for 2008. <http://www.cdc.gov/prams/CPONDER.htm>

Within the PRAMS dataset, there is an indicator of breastfeeding for four or more weeks. It is obtained through respondents' answers to the following two questions: **(1) Are you still breastfeeding or feeding pumped milk to your new baby?** and **(2) How many weeks or months did you breastfeed or pump milk to feed your new baby?** The indicator of breastfeeding for four or more weeks is obtained by coding YES if the baby was breastfed four or more weeks/one or more months and NO if the baby was not breastfed or breastfed for less than four weeks/one month. All analysis using this variable excludes respondents whose baby has died or is not living with them.

Using CPONDER to examine the 2008 data, it is noted that Pennsylvania ranked 21st (of 29 participating states) with 59.8 percent of Pennsylvania mothers' indicating YES to breastfeeding for four or more weeks. This 29-state comparison ranged from a high of 84.2 percent indicating YES in Oregon to a low of 35.6 percent indicating YES in Mississippi, with a 29-state mean (average) of 65.5 percent (see Table 3 on page 10, and Bar Chart 1 on page 12).

An examination of the prevalence of breastfeeding for eight or more weeks reveals that Pennsylvania is again ranked 21st (of 29 participating states) with 48.3 percent of this state's mothers indicating YES. This comparisons ranged from a high of 75 percent indicating YES in Oregon to a low of 26.5 percent indicating YES in Mississippi. The 29-state mean (average) percentage of mothers indicating YES for breastfeeding for eight or more weeks is 55.7 percent (see Table 4 on page 11, and Bar Chart 1 on page 12).

Table 3: Breastfeeding / Pumping Breast Milk for 4 Weeks or More – State Comparison

Indicator of whether mother was still breastfeeding 4 weeks after delivery.

Rank (High to Low % Yes)	PRAMS States w/available 2008 data (29 states)	% YES (w/ 95% CI)	% NO
1	Oregon	84.2% (81.0% - 87.0%)	15.8%
2	Hawaii	81.9% (80.0% - 83.8%)	18.1%
3	Utah	81.3% (79.3% - 83.1%)	18.7%
4	Alaska	80.5% (77.5% - 83.2%)	19.5%
5	Colorado	79.6% (77.0% - 82.1%)	20.4%
6	Washington	79.4% (76.5% - 82.1%)	20.6%
7	Minnesota	74.3% (71.7% - 76.7%)	25.7%
8	Vermont	74.0% (71.1% - 76.6%)	26.0%
9	Wyoming	73.2% (69.7% - 76.4%)	26.8%
10	Massachusetts	70.9% (67.5% - 74.1%)	29.1%
11	Wisconsin	68.3% (64.8% - 71.6%)	31.7%
12	New Jersey	68.2% (65.5% - 70.7%)	31.8%
13	Maryland	67.8% (64.1% - 71.3%)	32.2%
14	Nebraska	67.2% (64.2% - 70.0%)	32.8%
15	Illinois	65.8% (63.3% - 68.3%)	34.2%
16	Maine	64.7% (61.3% - 67.9%)	35.3%
17	New York (excluding NYC)	63.1% (59.4% - 66.6%)	36.9%
18	Rhode Island	61.4% (58.0% - 64.6%)	38.6%
19	North Carolina	60.6% (57.6% - 63.6%)	39.4%
20	Georgia	60.1% (55.2% - 64.7%)	39.9%
21	Pennsylvania[^]	59.8% (56.4% - 63.1%)	40.2%
22	Oklahoma	58.9% (55.2% - 62.5%)	41.1%
23	Delaware	58.7% (55.8% - 61.5%)	41.3%
24	Michigan	57.5% (54.6% - 60.3%)	42.5%
25	Ohio	57.1% (53.6% - 60.5%)	42.9%
26	Tennessee	51.3% (46.6% - 56.0%)	48.7%
27	Arkansas	47.8% (44.5% - 51.1%)	52.2%
28	West Virginia	45.2% (42.2% - 48.2%)	54.8%
29	Mississippi	35.6% (32.4% - 38.8%)	64.4%
29 State Mean =		65.5%	34.5%

[^] Pennsylvania's percent YES for the combined 2007 and 2008 response data is 56.4% (95% CI = 53.6% - 59.2%)

Note: These reported results exclude respondents whose babies have died or are not living with the respondents now. Cell size percentages are weighted to population characteristics. Data Source: CDC's PRAMS On-line Data for Epidemiologic Research (CPONDER) - Available data for 2008. <http://www.cdc.gov/prams/CPONDER.htm>

Table 4: Breastfeeding / Pumping Breast Milk for 8 Weeks or More – State Comparison

Indicator of whether mother was still breastfeeding 8 weeks after delivery.

Rank (High to Low % YES)	PRAMS States w/available 2008 data (29 states)	% YES (w/ 95% CI)	% NO
1	Oregon	75.0% (71.3% - 78.4 %)	25.0%
2	Utah	73.7% (71.5% - 75.8%)	26.3%
3	Hawaii	72.5% (70.3% - 74.6%)	27.5%
4	Alaska	71.1% (67.8% - 74.2%)	28.9%
5	Colorado	70.8% (67.9% - 73.6%)	29.2%
6	Washington	69.8% (66.5% - 72.8%)	30.2%
7	Vermont	66.3% (63.3% - 69.1%)	33.7%
8	Wyoming	64.0% (60.3% - 67.5%)	36.0%
9	Minnesota	63.2% (60.4% - 65.9%)	36.8%
10	Massachusetts	62.1% (58.6% - 65.6%)	37.9%
11	Maryland	59.7% (56.0% - 63.4%)	40.3%
12	Nebraska	57.7% (54.7% - 60.7%)	42.3%
13	New Jersey	57.6% (54.9% - 60.4%)	42.4%
14	Wisconsin	57.3% (53.6% - 60.9%)	42.7%
15	Maine	56.3% (52.8% - 59.6%)	43.7%
16	Illinois	55.7% (53.1% - 58.3%)	44.3%
17	New York (excluding NYC)	53.6% (49.9% - 57.3%)	46.4%
18	North Carolina	51.9% (48.8% - 54.9%)	48.1%
19	Rhode Island	51.0% (47.7% - 54.3%)	49.0%
20	Delaware	48.4% (45.6% - 51.3%)	51.6%
21	Pennsylvania[^]	48.3% (45.0% - 51.7%)	51.7%
22	Georgia*	48.3% (43.5% - 53.1%)	51.7%
23	Oklahoma	48.1% (44.4% - 51.9%)	51.9%
24	Ohio	47.7% (44.2% - 51.2%)	52.3%
25	Michigan	46.1% (43.2% - 49.0%)	53.9%
26	Tennessee	39.8% (35.3% - 44.4%)	60.2%
27	Arkansas	36.9% (33.7% - 40.2%)	63.1%
28	West Virginia	36.2% (33.4% - 39.2%)	63.8%
29	Mississippi	26.5% (23.7% - 29.5%)	73.5%
29 State Mean =		55.7%	44.3%

[^] Pennsylvania's percent YES for the combined 2007 and 2008 response data is 46.6% (95% CI=43.8% - 49.5%)

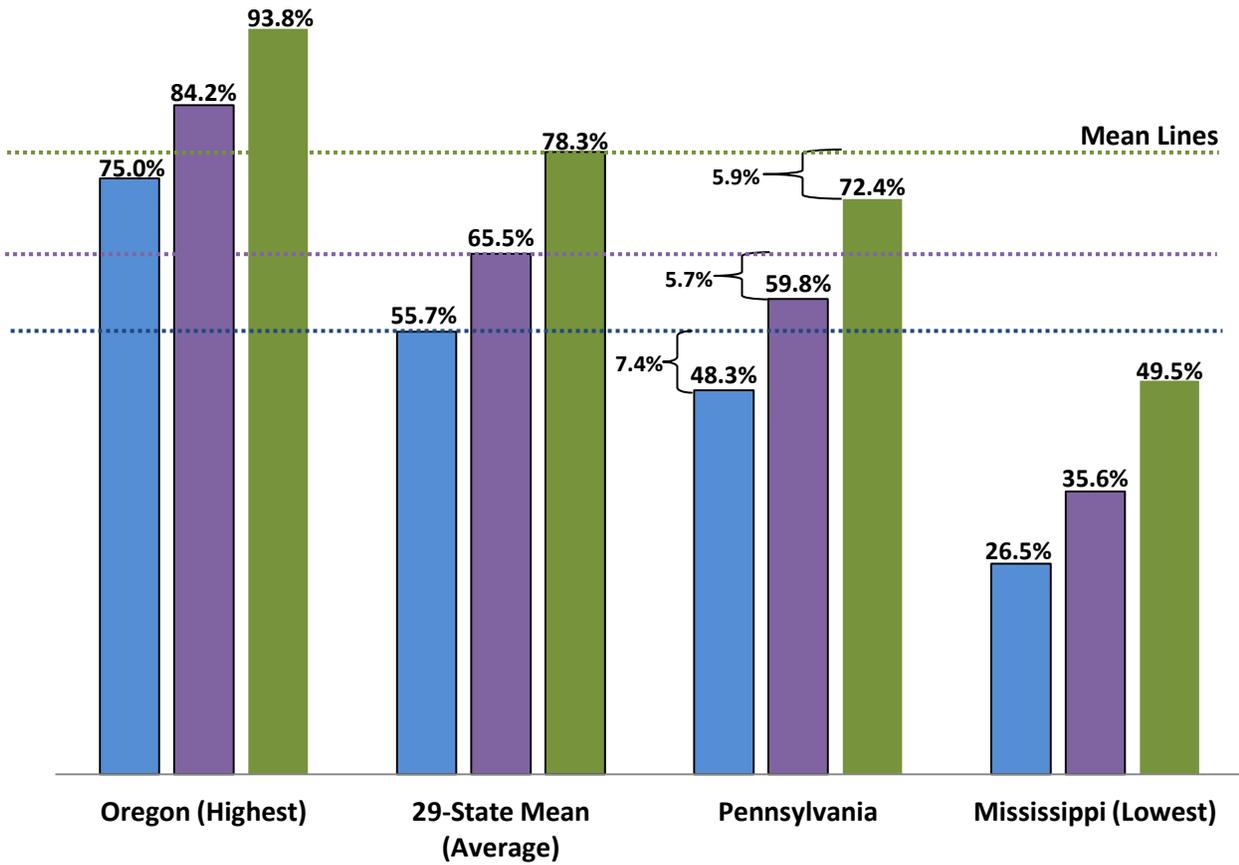
* Georgia is ranked 22nd here, one below Pennsylvania (21st), based only on the wider 95% confidence interval for the same 48.3% indicating YES.

Note: These reported results exclude respondents whose baby has died or is not living with them now. Cell Size Percentages are weighted to population characteristics. Data Source: CDC's PRAMS On-line Data for Epidemiologic Research (CPONDER) - Available data for 2008. <http://www.cdc.gov/prams/CPONDER.htm>

Bar Chart 1: Breastfeeding / Pumping Breast Milk - State Comparison

2008 Breastfeeding / Pump Breast Milk - State Comparison

■ % YES 8 Weeks ■ % YES 4 Weeks ■ % YES Ever



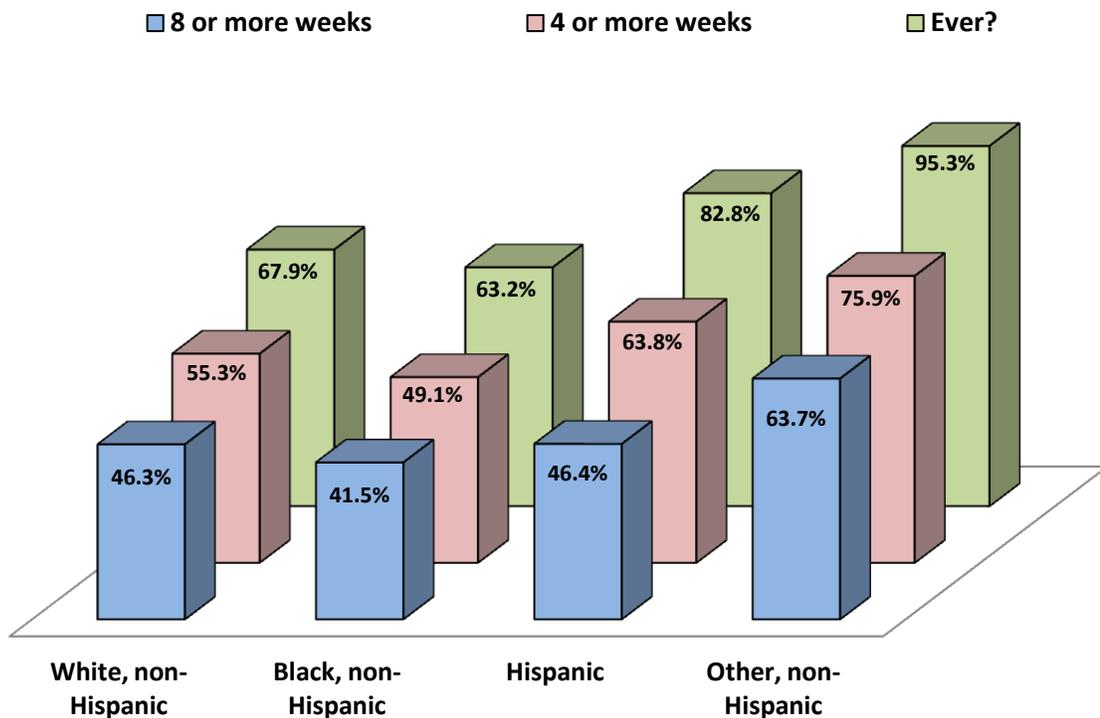
Pennsylvania: Ever Breastfeed / Pump Breast Milk? Crossed with Maternal Demographics

The 2007 and 2008 PA PRAMS weighted response data relating to breastfeeding and maternal demographics were examined with a focus on identifying associations. Responses to the question **Did you ever breastfeed or pump breast milk to feed your new baby after delivery?** were crossed with various maternal demographic variables, and associations were revealed (for overall summary see Bar Chart 5 on page 17).

Race/Ethnicity

- Examining responses to the question – **Did you ever breastfeed or pump breast milk to feed your new baby after delivery?** – prevalence by race/ethnicity is as follows: white, non-Hispanic (67.9 percent); black, non-Hispanic (63.2 percent); Hispanic (82.8 percent); and other, non-Hispanic (95.3 percent) (See Bar Chart 2 on page 14, Bar Chart 5 on page 17, and Tables 8 and 9 on page 24 and Table 10 on page 25).
- Although representing the fewest in the sample, those identified as other, non-Hispanic (not white, not black and not Hispanic) are approximately 1.5 times more likely to respond YES to that question than mothers identified as black, non-Hispanic, and approximately 1.4 times more likely to respond YES to that question than mothers identified as white, non-Hispanic. Please note that maternal race categories are defined using the birth certificate variables for race and ethnicity. For non-Hispanic mothers who have indicated more than one race on the birth certificate, PONDER classifies these as 'other' race for consistency across all PRAMS states.
- Mothers identified as Hispanic are approximately 1.3 times more likely to respond YES to that question than mothers identified as black, non-Hispanic, and approximately 1.2 times more likely to respond YES to that question than mothers identified as white, non-Hispanic.

Bar Chart 2: Race/Ethnicity and Breastfeeding or Pumping Breast Milk



Marital Status

- Examining responses to the question – **Did you ever breastfeed or pump breast milk to feed your new baby after delivery?** – prevalence by marital status is as follows: Married (77.3 percent); Other (60.4 percent). (See Bar Chart 5 on page 17 and table 11 on page 25.)
- Married mothers are approximately 1.3 times more likely to respond YES to that question than mothers identified as other (other than married).

Maternal Age

- Examining responses to the question – **Did you ever breastfeed or pump breast milk to feed your new baby after delivery?** – prevalence by maternal age is as follows: less than 20 years of age (60.9 percent); 20-24 years of age (65.6 percent); 25-34 years of age (75.0 percent); and 35+ years of age (67.4 percent). (See Bar Chart 5 on page 17 and table 12 on page 25.)
- Mothers in the age category 25-34 years are most likely to respond YES to that question. Mothers aged 25-34 years are approximately 1.2 times more likely to respond YES than

mothers less than 20 years of age.

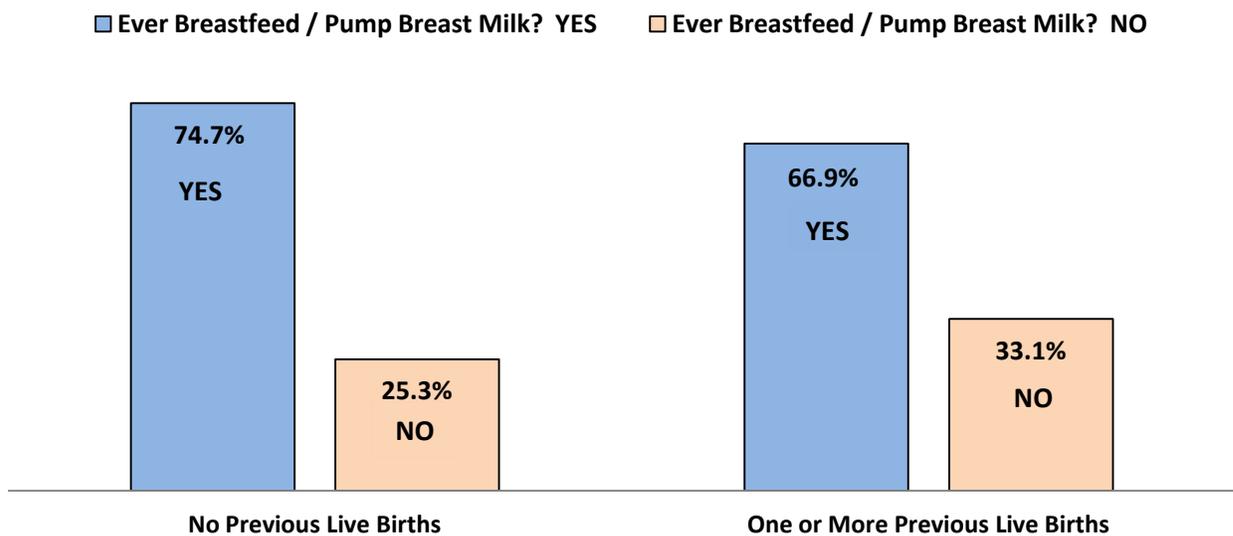
Maternal Education

- Examining responses to the question – **Did you ever breastfeed or pump breast milk to feed your new baby after delivery?** – prevalence by maternal education is as follows: Less than 12 years education (58.6 percent), 12 years education (58.5 percent), and more than 12 years education (79.0 percent). (See Bar Chart 5 on page 17 and Table 13 on page 26.)
- Mothers identified with more than 12 years of education are approximately 1.2 times more likely to respond YES to that question than mothers with 12 or less years of education.

Previous Live Births

- Examining responses to the question – **Did you ever breastfeed or pump breast milk to feed your new baby after delivery?** – prevalence by previous live births is as follows: Mothers with no previous live births (74.7 percent) and mothers with one or more previous live births (66.9 percent). (See Bar Chart 3 below, Bar Chart 5 on page 17, and Table 14 on page 26.)
- Mothers reporting no previous live births are approximately 1.1 times more likely to respond YES to that question than mothers with one or more previous live births.

Bar Chart 3: Ever Breastfeed / Pump Breast Milk and Previous Live Births

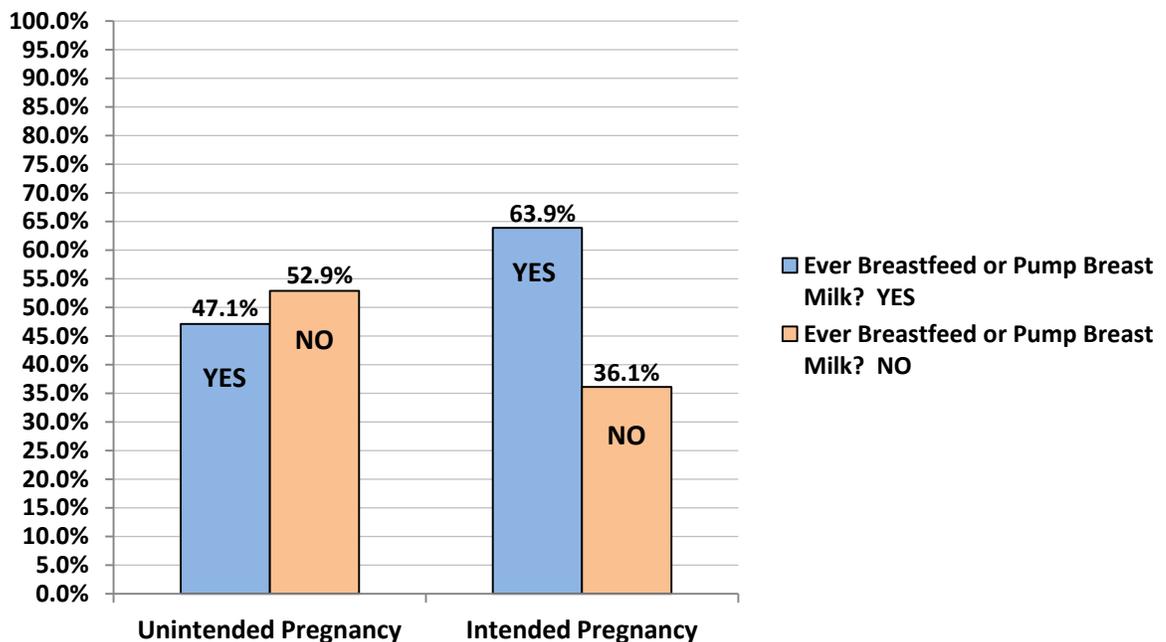


Pregnancy Intention

- Examining responses to the question – **Did you ever breastfeed or pump breast milk to feed your new baby after delivery?** – prevalence by pregnancy intention is as follows: Mothers with **unintended** pregnancies (47.1 percent); mothers within intended pregnancies (63.9 percent). (See Table 5 and Bar Chart 4 below, and Bar Chart 5 on page 17.)
- Mothers with intended pregnancies are approximately 1.4 times more likely to respond YES to that question than mothers with unintended pregnancies.

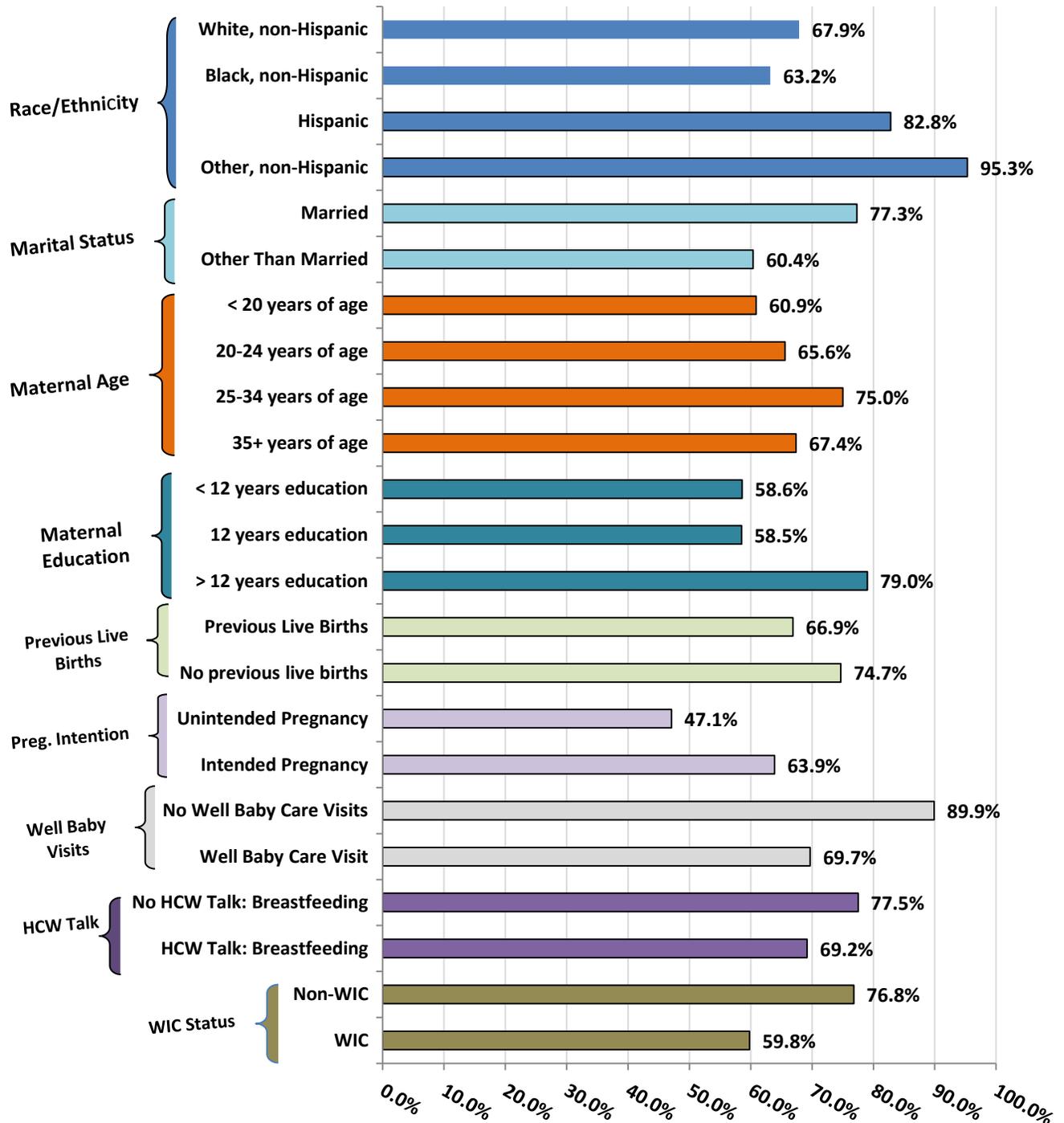
Pregnancy Intendedness		Ever Breastfeed?				Total	
		NO		YES			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
Pregnancy Intendedness	Unintended	47,227	52.9%	42,041	47.1%	89,268	100%
	<i>95% Confidence Interval</i>	48.4% - 57.4%		42.6% - 51.6%		-----	
	Intended	45,471	36.1%	80,435	63.9%	125,906	100%
	<i>95% Confidence Interval</i>	32.6% - 39.85%		60.2% - 67.4%		-----	
TOTAL =		92,698	43.1%	122,476	56.9%	215,174	100%
<i>95% Confidence Interval</i>		40.3% - 45.9%		54.1% - 59.7%		-----	
p < .01							

Bar Chart 4: Ever Breastfeed or Pump Breast Milk by Pregnancy Intention



Bar Chart 5: Ever Breastfeed/Pump Breast Milk Crossed w/ Maternal Demographics - Summary

Ever Breastfeed/Pump Breast Milk? ... Percent Answering YES



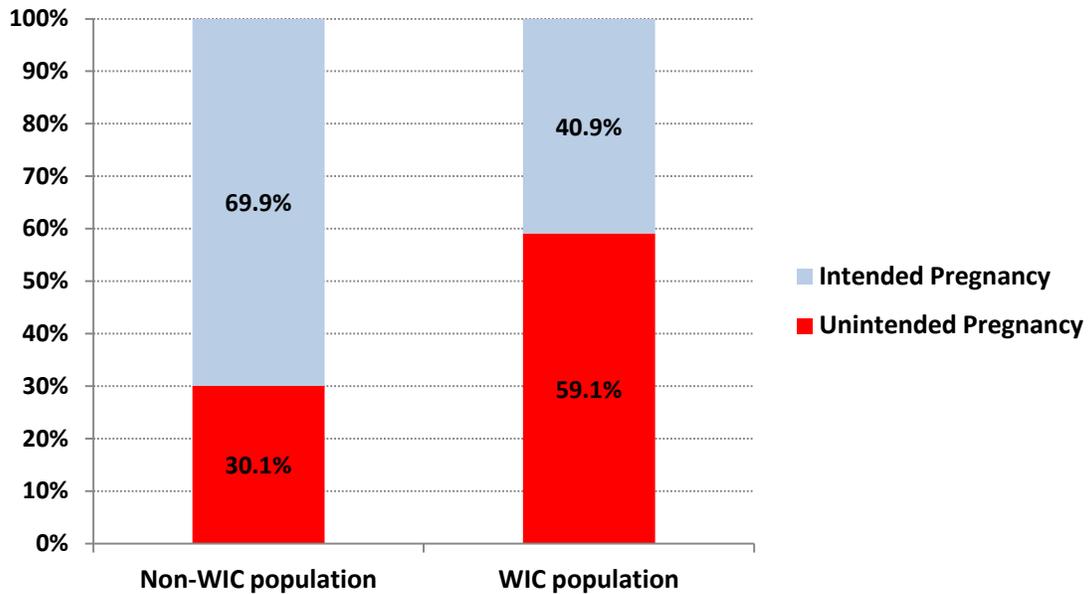
WIC Status and Pregnancy Intention

WIC is a federally funded health and nutrition program for Women, Infants and Children. WIC helps families by providing checks for buying healthy supplemental foods from WIC authorized stores, nutrition education, breastfeeding support, and help finding healthcare and other community services. Participants must meet income guidelines and be pregnant women, new mothers, infants, or children under age five. In Pennsylvania, 24 local WIC agencies provide services locally to over 265,000 women, infants and children each month at 335 sites throughout the state.¹⁴

As the PA PRAMS sample is designed to reflect the general population of new mothers of live born infants statewide, some of the mothers within the sample were on WIC during their pregnancies and some were not. Comparing the sampled population of WIC mothers to the sampled population of non-WIC mothers, it is noted that the WIC mothers are almost two times (1.96 times) as likely to report an unintended pregnancy than are the non-WIC mothers. After weighting the subpopulations, it is noted that 59.1 percent of the mothers identified as being on WIC during their pregnancies also reported an unintended pregnancy, whereas just over 30 percent of non-WIC mothers reported unintended pregnancies (See Table 6 below, and Bar Chart 6 on page 19). Based on the PRAMS data, the Pennsylvania WIC program is clearly serving a higher proportion of mothers with unintended pregnancies as compared to the population of non-WIC mothers.

Table 6: WIC Status During Pregnancy and Pregnancy Intention			
WIC Status ↓	Unintended Pregnancy	Intended Pregnancy	Total
Non-WIC	40,609	94,339	134,947
Row %	30.1%	69.9%	100%
CI Row %	26.9% - 33.5%	66.5% - 73.1%	-----
WIC (On WIC during Pregnancy)	52,029	36,071	88,100
Row %	59.1%	40.9%	100%
CI Row %	54.6% - 63.4%	36.6% - 45.4%	-----
P < 0.01			

Bar Chart 6: WIC Status during Pregnancy and Pregnancy Intention



Mothers with intended pregnancies are approximately 1.4 times more likely to report they breastfeed or pump breast milk to feed their babies than mothers with unintended pregnancies (See Table 5 and Bar Chart 4 on page 16, and Bar Chart 5 on page 17). The data supports the anticipated higher prevalence of breastfeeding and pumping breast milk within the population of non-WIC mothers, given the lower proportion of unintended pregnancies within that population (See Table 6 on page 18 and Bar Chart 6 above). Comparing the WIC status variable with sampled mothers' responses to the question – **Did you ever breastfeed or pump breast milk to feed your new baby after delivery?** – reveals that non-WIC mothers are more likely than WIC mothers to respond YES to that question as expected [(76.8 percent) for non-WIC mothers and (59.8 percent) for WIC mothers] (See Bar Chart 5 on page 17 and Table 15 on page 26). However, in comparing breastfeeding prevalence between WIC and non-WIC populations for eight or more weeks, and controlling for pregnancy intention, it is revealed that WIC mothers with unintended pregnancies are twice as likely as non-WIC mothers with unintended pregnancies to report breastfeeding or pumping breast milk to feed their babies. According to the data, 50.1 percent of mothers with unintended pregnancies and on WIC (during

pregnancy) also report breastfeeding or pumping breast milk to feed their babies for eight or more weeks, whereas only 25 percent of the non-WIC mothers with unintended pregnancies report doing so for eight or more weeks. Therefore WIC mothers with unintended pregnancies are two times more likely to report breastfeeding or pumping breast milk to feed their babies for eight or more weeks than non-WIC mothers with unintended pregnancies (See Table 7 and Bar Chart 7 on page 21).

WIC Status, Pregnancy Intention and Breastfeeding Section Summary

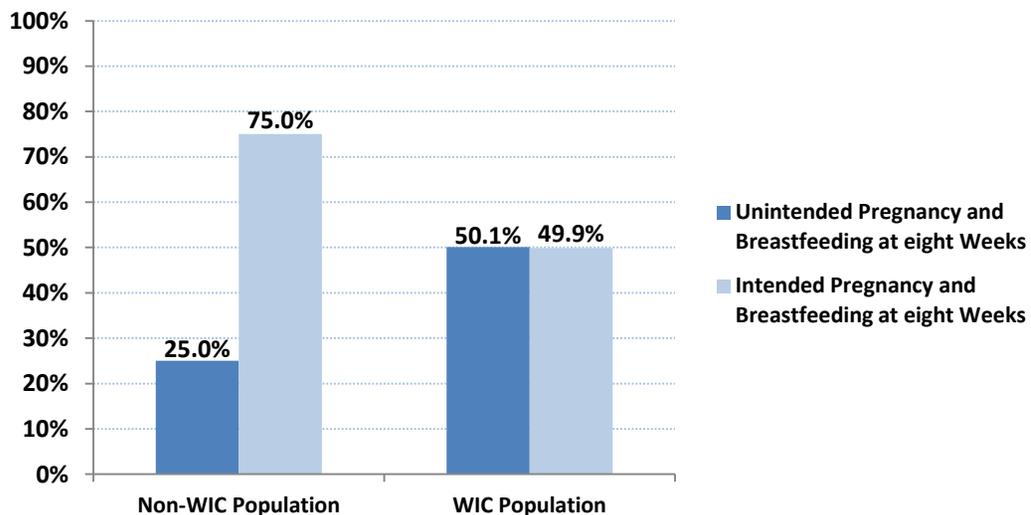
Statewide:

1. Mothers with intended pregnancies are more likely than mothers with unintended pregnancies to report breastfeeding or pumping breast milk to feed their babies after delivery.
2. WIC mothers are more likely than non-WIC mothers to report unintended pregnancies.
3. Non-WIC mothers are more likely than WIC mothers to report breastfeeding or pumping breast milk to feed their babies after delivery. This reflects the higher proportion of intended pregnancies within the non-WIC population.
4. Comparing WIC mothers with unintended pregnancies to non-WIC mothers with unintended pregnancies reveals that WIC mothers with unintended pregnancies are two times more likely to report breastfeeding or pumping breast milk to feed their babies for eight or more weeks. This suggests that WIC is positively intervening to impact breastfeeding prevalence among mothers with unintended pregnancies.

WIC Status, Breastfeeding and Pregnancy Intention

Table 7: WIC Status during Pregnancy, Breastfeeding and Pregnancy Intention						
WIC Status ↓	Breastfeeding at 8 weeks			Not Breastfeeding at 8 weeks		
	Unintended Pregnancy & Breastfeeding at 8 weeks	Intended Pregnancy & Breastfeeding at 8 weeks	Total	Unintended Pregnancy & Not Breastfeeding at 8 weeks	Intended Pregnancy & Not Breastfeeding at 8 weeks	Total
On WIC During Pregnancy	13,172	13,121	26,293	36,000	21,122	57,122
Row %	50.1%	49.9%	100%	63.0%	37.0%	100%
CI Row %	42.2% - 58.0%	42.0% - 57.8%	-----	57.5% - 68.2%	31.8% - 42.5%	-----
p < 0.01						
Not On WIC During Pregnancy	18,554	55,623	74,177	20,778	35,392	56,171
Row %	25.0%	75.0%	100%	37.0%	63.0%	100%
CI Row %	21.0% - 29.4%	70.6% - 79.0%	-----	31.7% - 42.6%	57.4% - 68.3%	-----
p < 0.01						

Bar Chart 7: WIC Status during Pregnancy, Breastfeeding and Pregnancy Intention



Other Cross Tabulations (breastfeeding and prenatal care and well baby care visits)

For additional cross tabulation frequencies, please refer to Tables 16, 17 and 18 on page 27 of this report. Variables related to prenatal care source and content, and well-baby care visits are crossed with breastfeeding variables within these tables.

Report Summary

The Pennsylvania Department of Health's (Department) Bureau of Family Health (BFH) has established the health of pregnant women, infants and children as a top priority. In an effort to develop and implement an ongoing, population-based surveillance system to monitor maternal behaviors and experiences before, during, and after pregnancy, the Division of Child & Adult Health Services initiated the PA PRAMS project in 2007. PA PRAMS has been collecting survey response data from sampled Pennsylvania mothers since September 2007. A complex sample design ensures that survey responses from approximately 1,625 mothers annually are scientifically valid and representative of new mothers statewide. This weighted survey response data affords the Department an effective avenue for evaluating the efficacy and impact of programs and services statewide.

This report examines various topics and issues related to breastfeeding prevalence in Pennsylvania. It reflects cross tabulation analysis conducted on various breastfeeding and maternal demographic variables within the 2007 and 2008 weighted data. A comparison to other PRAMS states reveals that overall Pennsylvania is below the mean percentage for breastfeeding prevalence across three levels of frequency – ever breastfed, breastfeeding four or more weeks, and breastfeeding eight or more weeks.

Whether or not women intended to get pregnant (pregnancy intention) appears to significantly impact breastfeeding frequency. Pennsylvania mothers with intended pregnancies are approximately 1.4 times more likely than mothers with unintended pregnancies to report breastfeeding or pumping breast milk to feed their babies after delivery. Comparing mothers in various age categories, we see that mothers within the age category 25-34 are most likely to report breastfeeding. Mothers with more than 12 years of education are approximately 1.2 times more likely to indicate breastfeeding or pumping breast milk to feed their babies than

mothers with 12 or less years of education. Mothers reporting no previous live births are 1.1 times more likely to report breastfeeding or pumping breast milk to feed their babies after delivery than mothers reporting one or more previous live births.

The WIC program appears to be positively impacting the population of mothers with unintended pregnancies it serves. Mothers with unintended pregnancies receiving WIC services are two times as likely to report breastfeeding or pumping breast milk to feed their babies for eight or more weeks than non-WIC mothers with unintended pregnancies.

Table 8: Race/Ethnicity and Ever Breastfeed?							
Maternal Demographic: Race/Ethnicity		Ever Breastfeed?				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
Race/Ethnicity	White, non-Hispanic	50,777	32.1%	107,568	67.9%	158,345	100%
	<i>95% Confidence Interval</i>	28.9% - 35.5%		64.5% - 71.1%		-----	
	Black, non-Hispanic	10,334	36.8%	17,766	63.2%	28,099	100%
	<i>95% Confidence Interval</i>	30.4% - 43.7%		56.3% - 69.6%		-----	
	Hispanic	3,806	17.2%	18,344	82.8%	22,149	100%
	<i>95% Confidence Interval</i>	12.3% - 23.6%		76.4% - 87.7%		-----	
	Other, non-Hispanic	513	4.7%	10,441	95.3%	10,953	100%
	<i>95% Confidence Interval</i>	1.9% - 11.0%		89.0% - 98.1%		-----	
TOTAL =		65,429	29.8%	154,118	70.2%	219,547	100%
<i>95% Confidence Interval</i>		27.2% - 32.5%		67.5% - 72.8%		-----	
p < .01							

Table 9: Race/Ethnicity and Breastfeeding 4 or More Weeks							
Maternal Demographic: Race/Ethnicity		Breastfed 4 or more weeks?				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
Race/Ethnicity	White, non-Hispanic	70,406	44.7%	86,927	55.3%	157,333	100%
	<i>95% Confidence Interval</i>	41.3% - 48.2%		51.8% - 58.7%		-----	
	Black, non-Hispanic	14,054	50.9%	13,553	49.1%	27,607	100%
	<i>95% Confidence Interval</i>	44.0% - 57.8%		42.2% - 56.0%		-----	
	Hispanic	7,960	36.2%	14,043	63.8%	22,003	100%
	<i>95% Confidence Interval</i>	29.1% - 43.9%		56.1% - 70.9%		-----	
	Other, non-Hispanic	2,630	24.1%	8,290	75.9%	10,920	100%
	<i>95% Confidence Interval</i>	15.0% - 36.4%		63.6% - 85.0%		-----	
TOTAL =		95,050	43.6%	122,813	56.4%	217,863	100%
<i>95% Confidence Interval</i>		40.8% - 46.5%		53.5% - 59.2%		-----	
p < .01							

Table 10: Race/Ethnicity and Breastfeeding 8 or More Weeks							
Maternal Demographic: Race/Ethnicity		Breastfed 8 or more weeks?				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
Race/Ethnicity	White, non-Hispanic	84,544	53.7%	72,789	46.3	157,333	100%
	<i>95% Confidence Interval</i>	50.3% - 57.2%		42.8% - 49.7%		-----	
	Black, non-Hispanic	16,140	58.5%	11,467	41.5%	27,607	100%
	<i>95% Confidence Interval</i>	51.4% - 65.2%		34.8% - 48.6%		-----	
	Hispanic	11,793	53.6%	10,210	46.4%	22,003	100%
	<i>95% Confidence Interval</i>	45.6% - 61.4%		38.6% - 54.4%		-----	
	Other, non-Hispanic	3,963	36.3%	6,957	63.7%	10,920	100%
<i>95% Confidence Interval</i>	25.5% - 48.6%		51.4% - 74.5%		-----		
TOTAL =		116,440	53.4%	101,423	46.6%	217,863	100%
<i>95% Confidence Interval</i>		50.6% - 56.3%		43.7% - 49.4%		-----	

p = .02

Table 11: Marital Status and Ever Breastfeed?							
Maternal Demographic: Marital Status		Ever Breastfeed?				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
Marital Status	Married	29,056	22.7%	98,986	77.3%	128,042	100%
	<i>95% Confidence Interval</i>	19.7% - 26.0%		74.0% - 80.3%		-----	
	Other (than Married)	36,420	39.6%	55,562	60.4%	91,982	100%
	<i>95% Confidence Interval</i>	35.3% - 44.1%		55.9% - 64.7%		-----	
TOTAL =		65,476	29.8%	154,548	70.2%	220,024	100%
<i>95% Confidence Interval</i>		27.2% - 32.5%		67.5% - 72.8%		-----	

p < .01

Table 12: Maternal Age in Years and Ever Breastfeed?							
Maternal Demographic: Age in Years		Ever Breastfeed?				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
Age in Years	<20	9,027	39.1%	14,048	60.9%	23,075	100%
	<i>95% Confidence Interval</i>	30.4% - 48.5%		51.5% - 69.6%		-----	
	20-24	17,394	34.4%	33,214	65.6%	50,608	100%
	<i>95% Confidence Interval</i>	28.8% - 40.4%		59.6% - 71.2%		-----	
	25-34	28,610	25.0%	85,928	75.0%	114,538	100%
	<i>95% Confidence Interval</i>	21.7% - 28.6%		71.4% - 78.3%		-----	
	35+	10,445	32.6%	21,597	67.4%	32,042	100%
<i>95% Confidence Interval</i>	26.1% - 39.8%		60.2% - 73.9%		-----		
TOTAL =		65,476	29.7%	154,787	70.3%	220,263	100%
<i>95% Confidence Interval</i>		27.2% - 32.4%		67.6% - 72.8%		-----	

p < .01

Table 13: Maternal Education in Years and Ever Breastfeed?							
Maternal Demographic: Education in Years		Ever Breastfeed?				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
Education in Years	<12	14,559	41.4%	20,613	58.6%	35,172	100%
	<i>95% Confidence Interval</i>	34.1% - 49.1%		50.9% - 65.9%		-----	
	12	23,905	41.5%	33,644	58.5%	57,549	100%
	<i>95% Confidence Interval</i>	36.0% - 47.3%		52.7% - 64.0%		-----	
	>12	26,348	21.0%	99,237	79.0%	125,584	100%
	<i>95% Confidence Interval</i>	18.2% - 24.1%		75.9% - 81.8%		-----	
	TOTAL =	64,812	29.7%	153,494	70.3%	218,306	100%
	<i>95% Confidence Interval</i>	27.1% - 32.4%		67.6% - 72.9%		-----	
p < .01							

Table 14: Previous Live Births and Ever Breastfeed?							
Maternal Demographic: Previous Live Births		Ever Breastfeed?				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
Previous Live Births	0 (No previous live births)	24,450	25.3%	72,184	74.7%	96,634	100%
	<i>95% Confidence Interval</i>	21.7% - 29.3%		70.7% - 78.3%		-----	
	1 or More	40,494	33.1%	81,815	66.9%	122,309	100%
	<i>95% Confidence Interval</i>	29.6% - 36.8%		63.2% - 70.4%		-----	
	TOTAL =	64,944	29.7%	153,999	70.3%	218,942	100%
	<i>95% Confidence Interval</i>	27.1% - 32.4%		67.6% - 72.9%		-----	
p < .01							

Table 15: WIC Status and Ever Breastfeed							
WIC Status		Ever Breastfeed?				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
WIC Status	Non-WIC	30,678	23.2%	101,645	76.8%	132,323	100%
	<i>95% Confidence Interval</i>	20.2% - 26.5%		73.5% - 79.8%		-----	
	WIC	34,700	40.2%	51,533	59.8%	86,233	100%
	<i>95% Confidence Interval</i>	35.8% - 44.8%		55.2% - 64.2%		-----	
	TOTAL =	65,378	29.9%	153,178	70.1%	218,556	100%
	<i>95% Confidence Interval</i>	27.3% - 32.6%		67.4% - 72.7%		-----	
p < .01							

Well Baby Care		Ever Breastfeed?				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
Well Baby Care (any visits)	No Visits	589	10.1%	5,268	89.9%	5,857	100%
	<i>95% Confidence Interval</i>	3.0% - 28.6%		71.4% - 97.0%		-----	
	Yes, at least one visit	64,630	30.3%	148,632	69.7%	213,262	100%
	<i>95% Confidence Interval</i>	27.7% - 33.1%		66.9% - 72.3%		-----	
	TOTAL =	65,219	29.8%	153,900	70.2%	219,119	100%
<i>95% Confidence Interval</i>	27.2% - 32.5%		67.5% - 72.8%		-----		
p < .01							

PNC Health Care Worker (HCW)Talk: Breastfeeding		Ever Breastfeed?				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
HCW Talk: Breastfeeding	No HCW Talk	7,226	22.5%	24,902	77.5%	32,128	100%
	<i>95% Confidence Interval</i>	17.0% - 29.1%		70.9% - 83.0%		-----	
	HCW Talk	56,443	30.8%	126,910	69.2%	183,353	100%
	<i>95% Confidence Interval</i>	27.9% - 33.8%		66.2% - 72.1%		-----	
	TOTAL =	63,669	29.5%	151,812	70.5%	215,481	100%
<i>95% Confidence Interval</i>	27.0% - 32.3%		67.7% - 73.0%		-----		
p < .01							

Source of PNC		Breastfeeding 8 Weeks				Total	
		No		Yes			
		WSUM	Row %	WSUM	Row %	WSUM	Row %
Source	Hospital Clinic	28,354	62.5%	16,999	37.5%	45,353	100%
	<i>95% Confidence Interval</i>	56.6% - 68.1%		31.9% - 43.4%		-----	
	Health Department Clinic	3,804	55.9%	3,004	44.1%	6,808	100%
	<i>95% Confidence Interval</i>	39.5% - 71.1%		28.9% - 60.5%		-----	
	MD / HMO	62,316	49.2%	64,466	50.8%	75,616	100%
	<i>95% Confidence Interval</i>	43.1% - 51.6%		48.4% - 56.9%		-----	
	State Specific	11,822	49.5%	12,042	50.5%	23,864	100%
	<i>95% Confidence Interval</i>	40.9% - 58.3%		41.7% - 59.1%		-----	
	Other	6,083	72.3%	2,335	27.7%	8,414	100%
	<i>95% Confidence Interval</i>	57.4% - 83.4%		16.6% - 42.6%		-----	
Total	112,380	53.2%	98,845	46.8%	211,225	100%	
<i>95% Confidence Interval</i>	50.3% - 56.1%		43.9% - 49.7%		-----		
p < 0.01							

Appendix A

Breastfeeding Related Questions in the Phase 5 Questionnaire

The PA PRAMS weighted data analyzed for this report was from 2007 and 2008. The data in this report are based on the responses of 2,763 Pennsylvania mothers who delivered from June 2007 through December 2008 (19 months). These mothers received and completed the PA PRAMS Phase 5 questionnaire. This questionnaire had 81 total questions spanning a wide range of topics and issues. Five of those questions related in some way to breastfeeding. Those questions are:

21. During any of your prenatal care visits, did a doctor, nurse, or other health care worker talk with you about any of the things listed below? Please count only discussions, not reading materials or videos. For each item, circle Y (Yes) if someone talked with you about it or circle N (No) if no one talked with you about it.

- a. How smoking during pregnancy could affect my baby.....N.....Y
- b. Breastfeeding my baby.....N.....Y**
- c. How drinking alcohol during pregnancy could affect my baby.....N.....Y
- d. Using a seat belt during my pregnancy.....N.....Y
- e. Birth control methods to user after my pregnancy.....N.....Y
- f. Medicines that are safe to take during my pregnancy.....N.....Y
- g. How using illegal drugs could affect my baby.....N.....Y
- h. Doing tests to screen for birth defects.....N.....Y
- i. What to do if my labor starts early.....N.....Y
- j. Getting tested for HIV (the virus that causes AIDS).....N.....Y
- k. Physical abuse to women by their husbands or partners.....N.....Y

52. Did you ever breastfeed or pump breast milk to feed your new baby after delivery?

- No  Go to Question 56
- Yes

Appendix A

Breastfeeding Related Questions in the Phase 5 Questionnaire - Continued

53. Are you still breastfeeding or feeding pumped milk to your new baby?

No

Yes → Go to Question 55

54. How many weeks or months did you breastfeed or pump milk to feed your baby?

Weeks OR Months

Less than 1 week

55. How old was your baby the first time you fed him or her anything besides breast milk?

Include formula, baby food, juice, cow's milk, water, sugar water or anything else you fed your baby.

Weeks OR Months

My baby was less than 1 week old

I have not fed my baby anything besides breast milk

Endnotes

- ¹ U.S. Department of Health and Human Services. *The Surgeon General's Call to Action to Support Breastfeeding*. Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General; 2011. This publication is available at <http://www.surgeongeneral.gov>
- ² U.S. Department of Health and Human Services, Office on Women's Health. *Your Guide to Breastfeeding* accessible at <http://www.womenshealth.gov/publications/our-publications/breastfeeding-guide/>
- ³ Lawrence RA, Lawrence RM. Breastfeeding: a guide for the medical profession. 7th ed. *Saunders* 2010, cited on the PRAMS and Breastfeeding: The Importance of Breastfeeding Webpage located at <http://www.cdc.gov/prams/Breastfeeding.htm>
- ⁴ Gartner LM, Morton J, Lawrence RA, Naylor AJ, O'Hare D, Schanler RJ, et al. Breastfeeding and the use of human milk. *Pediatrics* 2005; 115:496-506, cited on the PRAMS and Breastfeeding: The Importance of Breastfeeding Webpage located at <http://www.cdc.gov/prams/Breastfeeding.htm>
- ⁵ Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, et al. *Breastfeeding and Maternal and Infant Health Outcomes in Developed Countries: Evidence Report/Technology Assessment* No. 153. Agency for Healthcare Research Quality; 2007. AHRQ Publication No. 07-E007, cited on the PRAMS and Breastfeeding: The Importance of Breastfeeding Webpage located at <http://www.cdc.gov/prams/Breastfeeding.htm>
- ⁶ Lambert L, Fischer Walker C, Noiman A, Victora C, Black, R. Breastfeeding and the risk for diarrhea morbidity and mortality. *BMC Public Health* 2011;11(Suppl 3):S15, cited on the PRAMS and Breastfeeding: The Importance of Breastfeeding Webpage located at <http://www.cdc.gov/prams/Breastfeeding.htm>
- ⁷ Arenz S, Ruckerl R, Koletzko B, von Kries R. Breast-feeding and childhood obesity-a systematic review. *Int J Obes Relat Metab Disord* 2004;28:1247-1256, cited on the PRAMS and Breastfeeding: The Importance of Breastfeeding Webpage located at <http://www.cdc.gov/prams/Breastfeeding.htm>
- ⁸ Owen CG, Martin RM, Whincup PH, Smith GD, Cook DG. Does breastfeeding influence risk of type 2 diabetes in later life? A quantitative analysis of published evidence. *Am J Clin Nutr* 2006;84:1043-1054, cited on the PRAMS and Breastfeeding: The Importance of Breastfeeding Webpage located at <http://www.cdc.gov/prams/Breastfeeding.htm>
- ⁹ Hauck FR, Thompson JM, Tanabe KO, Moon RY, Vennemann MM. Breastfeeding and reduced risk of Sudden Infant Death Syndrome: a meta-analysis. *Pediatrics* 2011;128:103-110, cited on the PRAMS and Breastfeeding: The Importance of Breastfeeding Webpage located at <http://www.cdc.gov/prams/Breastfeeding.htm>
- ¹⁰ Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50,302 women with breast cancer and 96,973 women without the disease. *Lancet* 2002;360:187-195, cited on the PRAMS and Breastfeeding: The Importance of Breastfeeding Webpage located at <http://www.cdc.gov/prams/Breastfeeding.htm>
- ¹¹ Sibolboro Mezzacappa E, Endicott J. Parity mediates the association between infant feeding method and maternal depressive symptoms in the postpartum. *Arch Womens Ment Health* 2007;10:259-266, cited on the PRAMS and Breastfeeding: The Importance of Breastfeeding Webpage located at <http://www.cdc.gov/prams/Breastfeeding.htm>
- ¹² Dennis CL, McQueen K. The relationship between infant-feeding outcomes and postpartum depression: a qualitative systematic review. *Pediatrics* 2009;123:e736-e751, cited on the PRAMS and Breastfeeding: The Importance of Breastfeeding Webpage located at <http://www.cdc.gov/prams/Breastfeeding.htm>

¹³ What does the 95% confidence interval tell me? The 95% confidence interval is the interval for which there is about a 95% chance that the true population statistic (percentage or mean) is in the interval.

¹⁴ PA Department of Health, Bureau of Family Health, Division of Women, Infants & Children (WIC). Webpage location:

http://www.portal.state.pa.us/portal/server.pt/community/women%2C_infants__children_%28wic%29/14204