

*Results of the Connecticut
Pregnancy Risk Assessment
Tracking System (PRATS) Survey*

Round 2



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INTRODUCTION

BACKGROUND

Approximately 43,000 live births occur in Connecticut annually. While the majority of these infants are born healthy and their mothers do not experience health complications, a relatively small but important number of infants and mothers experience negative health outcomes. The ongoing study of birth outcomes and associated risk factors has yielded a better understanding of the impact of maternal health and behaviors on the infant and mother during the pregnancy and postpartum. Vital records provide annual data to examine birth outcomes and selected maternal characteristics at the population level, and to examine trends over time. However, the ability to examine important outcomes and behaviors in-depth is limited; information about important risk and protective factors is lacking. In particular, maternal health and behaviors during the preconception period, during pregnancy, and following delivery can significantly impact maternal, fetal and infant outcomes. Exploring these in detail is essential to understanding the full scope of maternal and infant problems, evaluating current interventions, and identifying opportunities for intervention by the medical and public health communities.

To determine the prevalence of maternal risk behaviors and experiences during the perinatal period and their association with adverse pregnancy and infant health outcomes, the Connecticut Department of Public Health (DPH) conducted two point-in-time surveys modeled after PRAMS¹, called the Pregnancy Risk Assessment Tracking System (PRATS) survey. This information is critical for informing the Family Health Section (FHS) in its program planning and evaluation to ensure that its programs are meeting the needs of the MCH population in CT. The first round of the PRATS survey was conducted between February and May 2002. The second round of the PRATS survey was conducted between September 2003 and January 2004.

The purpose of this report is to present descriptive statistics intended to highlight some of the more pertinent results from Round 2 of the PRATS survey. More in-depth analyses will be conducted to further explore the associations between maternal risk factors and pregnancy and birth outcomes. These results will be presented in a later report.

METHODS

A random sample of birth records (n=4,480) was selected from the November 2002 to June 2003² birth cohort. The sample was stratified by a dichotomous risk category, where low birthweight (<2500 grams) or early gestational age (<37 weeks) was selected as the high-risk category. Non-resident births, multiple births, and births without birthweight recorded were excluded from the sampling frame.

A packet consisting of a cover letter and the survey form (available in English and Spanish) was mailed to the sample of mothers, inviting them to respond to the survey either by mail or by telephone. Women choosing to participate were given the option of completing the survey themselves and returning it by mail, or calling a toll-free number to complete the interview over the telephone. Women choosing not to participate were given the option of calling a toll-free number to be removed from future mailings. Non-respondents were sent three follow up packets encouraging them to complete the survey. The names of women not responding to these subsequent attempts were removed from the study. Upon completion of the survey, participants were sent three incentives as appreciation for their time and input.

Data were weighted prior to analysis. A contractor was hired to perform the weighting of the PRATS data. The weighting had two components: a base sampling rate [taking into account the sampling design] and a non-response adjustment. The final weight is the product of these two components. A detailed description of the weighting methodology can be found in Appendix B. All data referenced in this report are weighted data from the survey, unless otherwise specified.

¹ Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System

² Records were selected from November 1, 2002-June 23, 2003 birth records.

RESULTS

DEMOGRAPHICS

Table 1. Comparison of Maternal Age and Race/Ethnicity - PRATS Respondents and Birth Cohort¹

<u>Age Group</u>	n	Weighted Percent	Birth Cohort Percent	Percent Difference
Under 20	72	4.9	6.8	-1.9
20-24	254	16.2	17.0	-0.8
25-29	469	23.9	23.0	0.9
30-34	697	32.1	31.8	0.3
35-39	395	18.5	17.5	1.1
40+	101	4.3	3.9	0.4
<u>Race/Ethnicity</u>				
White, Non-Hispanic	1475	68.1	64.3	3.7
Black, Non-Hispanic	167	11.5	11.0	0.4
Hispanic	215	12.2	18.0	-5.8
Other	131	8.3	6.7	1.6

n= Unweighted number of observations.

¹ Birth Cohort from which sample was derived.

The response rate for this survey was 44.2% (n=1982). The age and race/ethnic composition of the survey respondents generally mirrors that of the maternal demographics seen in the birth cohort from which the sample was derived. The age and race/ethnic distribution of PRATS respondents are presented in Table 1, along with demographic information about the Round 2 birth cohort.

There were slightly fewer teenage respondents (<20 years) compared to the birth cohort. About two-thirds (68.1%) of mothers were White, Non-Hispanics, approximately 4% more than in the birth cohort. Black, Non-Hispanics and Hispanics were equally represented among respondents³. However, compared to the birth cohort, there were about 6% fewer Hispanics participating in the survey. It is unclear why fewer Hispanics responded. Among women who did not participate because of a language barrier (n=12), three were Hispanic women. It is possible that undocumented language barriers could have played a role, despite the availability of the survey in Spanish.

There were clear disparities among teen births and births to older (≥ 35 years) mothers. Blacks and Hispanics were about 3.5 times more likely to give birth as a teenager compared to Whites (Table 4). Conversely, Whites much more likely to give birth at an older age compared to Blacks and Hispanics.

Selected maternal risk factors among survey respondents are displayed in Table 2. These data are presented by age and race/ethnicity in Tables 4 and 5 (APPENDIX A).

³ White, Non-Hispanics and Black, Non-Hispanics are referred to as Whites and Blacks in the remainder of the report.

Maternal Risks, Behaviors and Attitudes

Table 2. Selected Maternal Risk Factors

Risk Factor	n	Weighted Percent
Teen Mother (<20 years old)	72	4.9
Older Mother (\geq 35 years old)	496	22.8
Late/No Prenatal Care	109	6.2
Unplanned Pregnancy		
Not trying to become pregnant	730	43.5
Were doing something to prevent pregnancy ¹	286	38.7
On Medicaid prior to pregnancy	149	10.7
Physical violence ²	94	5.8
Alcohol Use ²	217	14.6
Binge Drinking ³	14	2.8
Tobacco Use ³	56	24.4
Smoked 1 pack per day ³	22	9.0

n= Unweighted number of observations.

¹ Among those not trying to become pregnant

² Were pushed, hit, slapped, kicked, choked, or physically hurt in some way by someone during the 12 months before getting pregnant.

³ Any reported use in an average week (alcohol) or average day (tobacco) during last 3 months of pregnancy.

Insurance Status Prior To Pregnancy

Just before getting pregnant, 22% of women did not have health insurance (Medicaid considered separately). Blacks and Hispanics were less likely to have health insurance during this time period compared to Whites. Nearly half of Blacks (44.5%) and Hispanics (43.4%) did not have health insurance prior to getting pregnant, compared to only 11.8% of Whites. Younger mothers were more likely to be without health insurance prior to pregnancy than older mothers. Nearly half of women under age 25 years did not have health insurance just before pregnancy. In contrast, 20.3% of women 25-29 years and between 9-12% of women 30 years and older were without health insurance.

Medicaid Status Prior To Pregnancy

Blacks and Hispanics were also more likely than Whites to be on Medicaid just prior to pregnancy. More than one-third of Hispanics (34.3%) and one-fourth (27.9%) of Blacks were on Medicaid during this time, compared to just 4.3% of Whites. Younger mothers were also more likely to be on Medicaid. One-third of teenage women and one-fourth (26.5%) of women 20-24 years received Medicaid during this time period. Only 11% of women 25-29 years and between 4-5% of women over 30 years were on Medicaid.

Method of payment for Prenatal Care (PNC)

Women were asked about several different sources of payment for PNC they may have received during their pregnancy. Whites (88.1%) were more likely to have health insurance or HMO coverage to pay for PNC than Blacks (53.7%) and Hispanics (46.4%). Blacks (43.3%) and Hispanics (38.0%) were much more likely to have Medicaid as a form of payment for PNC than Whites (11.0%). A relatively small percentage of women used personal income as a source of payment (<10% across all race/ethnic groups).

Older women were more likely to have health insurance or HMO coverage as a form of payment for their PNC than younger women. More than three-quarters (76.7%) of women 25-29 years and between 85-92%

of women 30 years and older had health insurance or HMO coverage, while only about half of women under age 25 years had this as a form of PNC payment. Women under 25 years, however, were more likely to have used Medicaid coverage as a form of payment for their PNC. Approximately half (48.9%) of women <20 years and 43.9% of women 20-24 years used Medicaid as a form of payment, whereas 19.4% of women 25-29 years and between 6-10% of women over 30 years used Medicaid to pay for PNC.

Teenage Births

Historically, teenage mothers have experienced poorer outcomes and engaged in risk behaviors more often than older age groups. Tables 5 and 7 (APPENDIX A) present maternal risk factors and breastfeeding results by age group. Selected disparities among teenage mothers are highlighted below:

Prepregnancy

- Eighty-seven percent (87.4%) were not trying to become pregnant at the time they did.
- One-fourth (26.3%) of teens that were not trying to become pregnant reported they were doing something to prevent pregnancy.
- One-third (33.0%) were on Medicaid prior to pregnancy.
- Eighteen percent (18.2%) reported experiencing physical violence during the 12 months before getting pregnant, much higher than women ages 25 and older.

During Pregnancy

- Sixteen percent (16.3%) received late or no prenatal care.
- Were much more likely to report cigarette smoking during the last 3 months of their pregnancy.

Birth Outcomes

- Were more likely to deliver a low birthweight or a very low birthweight infant.
- Were more likely to deliver preterm.

Breastfeeding

- Were less likely to initiate breastfeeding.
- Were less likely to breastfeed at least 3 months.
- Were as likely as mothers aged 20-34 years to breastfeed at least six months, but less likely than older mothers.

These results suggest some areas where continued efforts to reduce unintended pregnancy, risk behaviors and poor birth outcomes among teenage women can be increased or enhanced. As the associations between maternal risk factors and poor outcomes are explored further, the data may suggest how current interventions can be improved.

Family Planning

Nationally, about half of all pregnancies are unplanned.⁴ Family planning efforts can assist women in preventing or delaying pregnancy through abstinence or birth control. Education about proper utilization of a selected birth control method is essential to its efficacy; improper usage will confer little or no protection. Women who were not planning to become pregnant may enter PNC later and may engage in risk behaviors longer, not realizing they are pregnant.

Almost 44% of women in the survey were not trying to become pregnant at the time they did; of these, 39% reported they had been doing something to prevent pregnancy. Almost 80% of Blacks and more than half of Hispanics (58%) reported they were not trying to become pregnant at the time they did, whereas 35% of Whites were not trying to become pregnant. Race/ethnic differences were not seen among those not trying to become pregnant who were also doing something to prevent pregnancy (each approximately 40%).

⁴ U.S. Dept. of Health and Human Services, *Healthy People 2010*

These results raise two distinct issues that need to be addressed with regard to the women who were not intending to become pregnant at the time they did. First, why was their selected birth control method ineffective (e.g., improper or inconsistent usage)? Second, if these women did not want to become pregnant, why weren't they employing some method of prevention? This underscores the importance of family planning education among women of childbearing age in reducing unintended pregnancies.

Prenatal Care

Late/No PNC

Early and adequate PNC is essential for meeting the medical needs of expectant mothers and providing them education and counseling about healthy behaviors during pregnancy and postpartum. Women who receive PNC in the first trimester (i.e., early PNC) tend to have better health outcomes than mothers receiving care late (second or third trimester) or not at all.⁵ Hispanics and Blacks were 2-3 times more likely to receive late or no PNC compared to Whites (Table 4).

Barriers to Early PNC

Most women (88.4%) reported receiving PNC as early as they wanted. Blacks (82.7%) and Hispanics (81.8%) were less likely to report receiving PNC as early as they wanted compared to Whites (90.9%). Only about two-thirds (67.7%) of teen mothers received PNC as early as they wanted compared to age groups over 25 years (between 88.7% - 93.4%). Among women receiving care later than desired, one-third (33.8%) received late or no PNC. In comparison, just 3% of women receiving PNC as early as desired received care late.

Differences in the receipt of PNC as early as desired also varied by insurance and Medicaid status prior to pregnancy, and by the payor for PNC. Among women who did not have any source of health insurance prior to pregnancy (not including Medicaid), 28.6% did not receive PNC as early as desired compared to just 7.3% of women who did have health insurance prior to pregnancy. Among women who were on Medicaid just before getting pregnant, 17.8% reported they did not receive PNC at the desired time compared to 10.5% of women who were not on Medicaid.

Among women who had *private insurance* as at least one form of payment for PNC, 27.5% did not receive care as early as desired. Interestingly, among women who did not have private insurance as a form of payment for PNC, just 7.3% were not happy with the timing of their PNC. Among women reporting Medicaid as one form of payment for PNC, 18.1% did not receive PNC as early as desired compared to 9.8% of women who did not have Medicaid as a source of payment.

Women were asked about different barriers that may have prevented them from receiving care as early as desired:

- 40.8% did not know they were pregnant.
- 28.5% of women could not get an appointment early in their pregnancy.
- 19.3% did not have enough money or insurance to pay for PNC visits.
- 12.8% reported the doctor or health plan would not start care earlier.
- 5.1% did not have their Medicaid card.
- 4.8% had too many other things going on.
- 1.8% had no way to get to the doctor or clinic.
- 0.1% had no one to care for other children.

⁵ U.S. Dept. of Health and Human Services, *Healthy People 2010*

Most women received PNC either at a private doctor's office (80.4%) or at a hospital clinic (12.4%). Less often, care was received at Community Health Center (3.3%), health department clinic (1.6%), or some other location (2.3%).

Health Education

Although addressing the medical needs of the mother is an essential function of PNC visits, there are also opportunities to provide health education about a number of critical risk factors. Among the areas a doctor, nurse or other health care worker discussed with women during their PNC visits:

- 94.9% discussed getting their blood tested for HIV.
- 92.9% discussed doing tests to screen for birth defects or diseases that run in their family.
- 90.5% talked about medicines that were safe to take during pregnancy.
- 85.9% were counseled about what to do if their labor started early.
- 84.3% discussed breastfeeding the baby.
- 80.7% reviewed birth control methods to use after pregnancy.
- 75.7% talked about how alcohol use during pregnancy could affect the baby.
- 74.8% were counseled about how smoking during pregnancy could affect the baby.
- 73.2% discussed how taking folic acid can reduce the risk of some birth defects.
- 64.2% were counseled about how illicit drugs could affect the baby.
- 49.8% discussed using a seatbelt during pregnancy.
- 33.8% talked about physical abuse to women by their husbands or partners.

These responses suggest that practitioners were more prone to adhering to a medical model of PNC, with more emphasis placed on the mother's and infant's physical health (e.g., blood tests, medications, and topics related to delivery), and to a lesser extent, maternal behaviors. Less frequently, breastfeeding, substance use, seat belt use, and physical abuse were discussed with women. Integrating these important health education topics, as well as less traditional topics such as perinatal depression, physical abuse, injury prevention, and oral health into PNC visits is critical to providing a comprehensive approach to care.

With all the support breastfeeding has received from national and worldwide health organizations, including the U.S. Department of Health and Human Services, American Academy of Pediatrics, and the World Health Organization, it is surprising that only 84.3% reported discussing breastfeeding with their PNC provider. The time prior to delivery is an excellent opportunity to promote breastfeeding, as well as educate mothers about certain challenges to expect when initiating breastfeeding the baby and how to overcome them (e.g., problems latching on, sufficient milk production, pain). The mothers' responses may not be representative of all providers in CT; therefore, the conclusions that can be drawn are limited. However, it is important to highlight particular areas that may be overlooked in providing PNC.

Satisfaction With PNC

A woman's level of satisfaction with the PNC she receives is crucial for many reasons. Women who are satisfied with their overall experience and feel their needs were addressed may be more likely to follow through with the recommended schedule of PNC visits, follow the physician's advice, and enter PNC early in her next pregnancy. Women were asked about their satisfaction with several aspects of the PNC they received during this pregnancy.

Eighteen percent (17.9%) of women were dissatisfied with the amount of time they had to wait after arriving for their visit. Waiting times in physician offices are notoriously long, causing a great deal of

frustration among patients. Many women only have a limited amount of time available to spend at the visit. Long waiting times may force some women to leave, delaying care among those who choose to reschedule or skip routine visits.

During their visits, only about 11% of women were not happy with the amount of time the doctor or nurse spent with them. Because physicians try to see as many patients as possible in a given day, only a certain amount of time is allocated to an average visit. In some instances, the amount of time may be adequate to meet the medical needs of the patient, but insufficient to address other concerns she may want to discuss. Despite the concerns about the amount of time spent with the doctor or nurse during visits, most women (92.5%) were satisfied with the advice they received about how to take care of themselves. Also, nearly all women (95.7%) were content with the understanding and respect that the staff showed toward them as a person.

Prepregnancy Overweight and Obesity

The prevalence of overweight (BMI 25.0 – 29.9) and obesity (BMI \geq 30) has been on the rise in both U.S. adults and youth. Although there are a number of poor health outcomes associated with obesity, the risks for obese pregnant women are manifested more immediately and can have serious perinatal consequences. Several physiological adaptations must occur in order for a woman to sustain pregnancy. Obese mothers may not be able to meet these demands as successfully as their non-obese counterparts. Increased risks for cesarean delivery, macrosomic or large-for-gestational age infants, gestational diabetes, hypertensive disorders and pre-eclampsia, sudden intrauterine unexplained death, late fetal death, early preterm delivery, and problems initiating or maintaining breastfeeding among obese women are all reported in the literature. It has also been found that infants born to overweight and obese mothers are placed in neonatal ICUs more frequently than infants born to non-obese women.⁶

Although the majority (60%) of women entered pregnancy at a normal weight (BMI=18.5-24.9), more than one-third were either overweight (21.2%) or obese (13.5%), and 5.0% were underweight (BMI<18.5). More than half (55.1%) of Blacks were either overweight or obese entering pregnancy, compared to about one-third (33.3%) of Whites and Hispanics (31.8%). Compared to their non-overweight/obese counterparts, overweight/obese mothers were:

- Almost twice as likely to experience pregnancy-induced hypertension, pre-eclampsia, or eclampsia.
- Twice as likely to experience gestational diabetes.
- Almost twice as likely to deliver a macrosomic infant.
- Thirty percent (30%) more likely to deliver preterm.
- Thirty percent (30%) more likely to have their infant admitted to an intensive or special care unit.
- Half as likely to initiate breastfeeding.
- Twenty eight percent (28%) less likely to breastfeed at least 3 months.
- Half as likely to breastfeed at least 6 months.

These outcomes are consistent with the risks reported in the literature. Weight-loss or weight-control interventions (e.g., nutrition and physical activity) before or during pregnancy have the potential to decrease the incidence of these poor perinatal outcomes and enhance the health of the mother and fetus during the course of pregnancy and postpartum.

⁶ Reviewed in: Morin, J. *Prepregnancy Obesity and Its Implications for Perinatal Outcomes*

Physical Violence

Approximately 6% of women reported they were pushed, hit, slapped, kicked, choked, or physically hurt in some way by someone during the 12 months before getting pregnant. Blacks (13.4%) were more likely to report having experienced some form of physical violence in the 12 months prior to getting pregnant compared to Hispanics (7.0%) and Whites (4.5%). Exposure to any physical violence prior to pregnancy may indicate increased risk to a woman's health and safety during her pregnancy and postpartum, also putting the infant at risk. In addition to the obvious risks associated with the physical harm, a woman may be more likely to engage in other risky behaviors such as substance abuse (e.g., tobacco, alcohol, illicit drugs), have poor nutrition and increased stress, and delay or forgo medical care. Efforts to reduce violence against women and to identify women experiencing domestic or intimate partner violence are critical.

Tobacco and Alcohol Use

Smoking and alcohol use during pregnancy are associated with low birthweight, preterm delivery, and many other negative health outcomes⁷. Three of the Healthy People 2010 Objectives (16-17a – 16-17c) address the issue of cigarette smoking and alcohol use during pregnancy. The targets for the year 2010 are 100% abstinence from cigarette smoking and binge drinking and at least 94% abstinence from alcohol use among pregnant women aged 15-44 years.

In CT, the prevalence of smoking during pregnancy has declined over the years, from 9.7% in 1997 to 6.4% in 2003. The prevalence of alcohol use during pregnancy has also decreased from 1.1% in 1997 to 0.6% in 2003. Though these data suggest a positive trend towards decreased usage during pregnancy, there is significant underreporting of use reported on the birth certificate⁸. Because tobacco and alcohol use are socially undesirable behaviors during pregnancy, mothers may be less likely to report usage when filling out the birth certificate form in the hospital. The higher reported prevalence of usage among women during pregnancy in the PRATS survey (Table 2) suggests not only that usage may be more common than expected, but also that women may be more comfortable reporting these behaviors on a self-completed questionnaire. The anonymity provided by the PRATS survey may have made women more likely to answer questions honestly than they would have in the hospital setting.

Below are the reported usage of alcohol and tobacco among survey respondents:

- Almost 15% of women consumed at least some alcohol during the last 3 months of their pregnancy. Whites (15.6%) and Hispanics (15.4%) were about 3 times more likely to report alcohol use in the last 3 months of pregnancy compared to Blacks (5.3%).
- Approximately 3% of women reported binge drinking on one or more occasions during the last 3 months of their pregnancy. Blacks (10.2%) were more likely to report binge drinking on one or more occasions during the last 3 months of pregnancy compared to Hispanics (6.8%) and Whites (2.1%).
- Approximately one-fourth (24.4%) reported any cigarette smoking on an average day during the last 3 months of their pregnancy. Whites (29.5%) and Hispanics (23.0%) were much more likely than Blacks (7.1%) to report any smoking during the last 3 months of their pregnancy.
- Nine percent of women smoked a pack of cigarettes a day, on average, during the last 3 months of their pregnancy.

Because of the relationships seen between substance use during pregnancy – tobacco use in particular – and poor health outcomes, this will be one area explored in-depth in future analyses as it relates to the outcomes observed in the survey data.

⁷ U.S. Dept. of Health and Human Services, *Healthy People 2010*

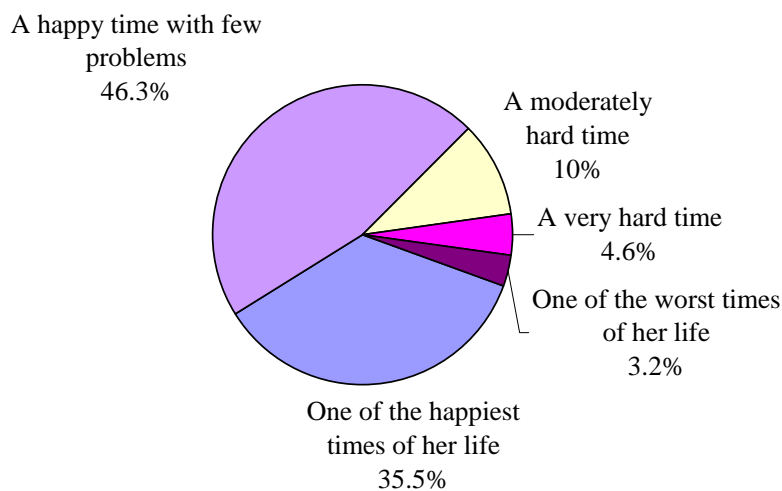
⁸ CT DPH, *1998 Connecticut Registration Report*

Stress and Social Support Systems During Pregnancy

For most women in the survey, pregnancy was a very positive experience (Figure 1). More than one-third (35.5%) reported it was one of the happiest times in their lives, and nearly half (46.3%) felt it was a happy time with few problems. However, many women (18.2%) reported this pregnancy as a difficult time in their lives. Pregnancy was a moderately hard time for some women (10%), while very hard for others (4.6%). A small percentage (3.2%) felt it was one of the worst times in their lives.

Figure 1.

Maternal Feelings During Pregnancy PRATS Round 2



Pregnancy is a time of increased demands on a woman not only physically, but also emotionally, socially and financially. Having a solid support system better enables a woman to overcome challenges she may face, including negative events unrelated to her pregnancy.

Social support available to a woman during her pregnancy may reduce her likelihood of engaging in risky behaviors, and positively affect birth outcomes. When problems do arise during pregnancy or after delivery, personal support is essential. When asked about people who might help if a problem during pregnancy had come up:

- Eighty-one percent (81%) reported their husband or partner would have helped.
- Fifty-six percent (56%) reported their mother, father, or in-law would have helped.
- Thirty-one percent (31%) reported that another family member or relative would have helped.

The support shown by husbands or partners is particularly important, as the father's role as a positive influence in the health of the infant and mother has been increasingly recognized. Familial support is important in both facing challenges and promoting healthy behaviors. Women without such support, however, may need to be linked to other sources of assistance. Existing programs should explore ways in which they can bridge the gaps in women's support systems.

Birth Outcomes

Table 3. Selected Birth Outcomes and History of Birth Outcomes

Birth Outcome	n	Weighted Percent
Low Birthweight (<2500 g)	545	7.4
Very Low Birthweight (<1500 g)	97	1.4
Macrosomic (\geq 4000 g)	124	9.3
Previous child low birthweight ¹	153	10.5
Preterm Delivery (<37 weeks)	775	9.9
Previous child preterm ¹	193	11.7

n= Unweighted number of observations.

¹ Outcome of pregnancy just before this one.

Low birthweight

Approximately 7% of infants were low birthweight, 1.4% were very low birthweight, and 9% were macrosomic. About 10% of women delivered a low birthweight infant with the pregnancy immediately preceding this one; 10% also delivered preterm in their last pregnancy (Table 3). Among women delivering a low birthweight infant with this pregnancy, 2% also delivered a low birthweight infant with their last pregnancy.

Almost 13% of births to Blacks were low birthweight infants, more than double that for Whites (Table 4). Approximately 11% of births to Hispanics were low birthweight, also about twice that of Whites. Around 4% of births to Blacks were very low birthweight infants, almost 4 times greater than for Whites. Two percent (2%) of births to Hispanics were very low birthweight infants, double that for Whites. Almost 15% of Hispanics, 11% of Blacks, and 9% of Whites delivered a low birthweight infant during the pregnancy just before this child.

Teenage mothers (9.4%) were more likely to deliver a low birthweight infant compared to mothers aged 20-34 years (5.8%) and older mothers (5.9%) (Table 5). Teenage mothers were almost twice as likely to deliver a very low birthweight infant (2.6%) than mothers aged 20-34 years (1.5%), and more than 3 times as likely than mothers 35 years and older (0.8%).

Receipt of early PNC was associated with increased birthweight. Almost 94% of normal weight infants and 96.8% of macrosomic infants were born to mothers receiving PNC in the first trimester. Ninety-one percent of low birthweight and 84.3% of very low birthweight infants' mothers received early PNC.

Preterm Delivery

Nearly 10% of women delivered their infants preterm (<37 weeks) (Table 3). Among mothers who delivered preterm, 3.2% also delivered preterm with their last child. Approximately 13% of Black and Hispanic births were preterm, almost 1.5 times greater than for Whites (Table 4). Almost 15% of Hispanics, 13% of Blacks, and 10% of Whites delivered preterm during the pregnancy just before this child. Teenage mothers were about 1.3 times more likely to delivery preterm (12.6%) compared to mothers aged 20-34 years (9.8%) and 35 years and older (9.6%) (Table 5).

Large differences in preterm delivery were not observed by timing of PNC. Among infants born preterm, 90.2% of mothers received PNC in the first trimester. Ninety-four (94.2%) of infants born to term had mothers who received early PNC.

Breastfeeding

Research has shown that breastfeeding benefits both the infant and the mother in many ways, including resistance to infectious diseases, increased immunity, provision of nutrients critical for infant growth and development, and enhancements to maternal physical and mental health⁹. Historically, CT has had limited data available to measure breastfeeding initiation and duration, and to investigate the reasons why certain subpopulations (e.g., African Americans) report lower breastfeeding rates than others. The PRATS data allowed for deeper analysis into the factors influencing a woman's decision to initiate and continue breastfeeding her infant. Breastfeeding results are shown in Tables 6 and 7 (APPENDIX A).

Attitudes about breastfeeding

A woman's attitude about breastfeeding is a good predictor of whether or not she will initiate breastfeeding, and can influence her decision about how long to breastfeed her infant. The majority of women (71.4%) reported they knew they would breastfeed during this pregnancy. Twenty percent (20.0%) were not sure, indicating they either thought they might or did not know what to do. A smaller proportion (8.6%) said they knew they would not breastfeed during this pregnancy. These attitudes varied by race and ethnicity. White women (73.2%) were more likely to report knowing they *would* breastfeed compared to Blacks (60.9%) and Hispanics (62.3%). Black women (21.7%) were more likely to report knowing they *would not* breastfeed compared to Whites (16.6%) and Hispanics (18.3%).

Initiation and duration

More than three-quarters (77.3%) of women reported ever breastfeeding their infants. There were not large differences in breastfeeding initiation rates across race/ethnic groups. Consistent with results from previous surveys, breastfeeding rates declined over time.¹⁰ Only half (49.6%) of the mothers reported breastfeeding at 3 months and one-fourth (25.6%) breastfed for at least 6 months. Whites and Hispanics reported similar rates of breastfeeding at 3 months (51.5% and 49.9%, respectively), approximately 1.3 times higher than the rates among Blacks (38.3%). At 6 months, Whites (28.0%) were more likely to report breastfeeding than Hispanics (22.3%) or Blacks (19.2%).

Reasons for not breastfeeding

Women were asked about different reasons why they might have decided not to breastfeed. Nearly half (49.1%) of women indicated that they did not like breastfeeding. Some of the more common reasons identified were having other children to care for (28.0%) and returning to work or school (23.1%). Approximately 20% of women wanted their bodies back to themselves, and 14.2% felt they had too many household duties. Relatively few women cited embarrassment (5.7%) or opposition from their husband or partner (3.2%) as reasons they chose not to breastfeed. Because these reasons were not asked as mutually exclusive categories, it is likely that no single reason is the source for a woman's decision not to breastfeed; rather, a combination of attitudes, responsibilities, and life stressors.

Black women were more likely to report not breastfeeding because they didn't like breastfeeding, had other children to care for, had too many household duties and that her husband or partner didn't want her to compared to Whites and Hispanics. Compared to Blacks and Hispanics, Whites more frequently reported not wanting to be tied down and embarrassment as reasons for not breastfeeding. Returning to work or school was cited with the same degree of frequency among Whites and Hispanics, slightly more often than Blacks. All groups reported wanting their bodies back to themselves with about the same degree of frequency.

⁹ U.S. Dept. of Health and Human Services, *HHS Blueprint for Action on Breastfeeding*

¹⁰ Mothers Survey, Ross Products Division, Abbott Laboratories and 2004 National Immunization Survey, Centers for Disease Control and Prevention

Reasons for stopping breastfeeding

While the reasons for not breastfeeding described above give some insight into why roughly one-fourth of women decided not to initiate breastfeeding, the reasons for stopping breastfeeding may account for the decline in breastfeeding duration at 3 months and 6 months. The four most frequently reported reasons were that breast milk alone did not satisfy the baby (16.1%), the mother thought she was not producing enough milk (14.5%), she returned to work or school (11.4%), or she felt it was the right time to stop breastfeeding (10.9%). The infant's difficulty nursing (9.4%) and nipples that were sore, cracked or bleeding (7.3%) were also cited as reasons for stopping. Less frequently, women agreed that wanting or needing someone else to feed the baby, insufficient infant weight gain, too many other household duties, infant or maternal illness, or having a husband or partner wanting them to stop were reasons for stopping.

Black women were more likely than Whites or Hispanics to agree that difficulty nursing, breast milk alone not satisfying the infant, sore, cracked or bleeding nipples, and wanting or needing someone else to feed the baby were reasons for stopping breastfeeding. Hispanic women were more likely than Whites and Blacks to report that feeling they were not producing enough milk, returning to work or school, maternal or infant illness, or having too many other household duties as reasons for stopping. White women were more likely than Blacks or Hispanics to agree that feeling it was the right time to stop breastfeeding was a reason for stopping breastfeeding.

Information from a recent Breastfeeding Needs Assessment conducted by the DPH reported many of the same issues related to breastfeeding initiation and duration¹¹. The availability of adequate support (medical and familial) to the mother may make her more willing or able to continue breastfeeding her infant longer. Education in the hospital about what to do if the child is having difficulty breastfeeding, and counseling about sufficient breast milk production may quell some concerns of the mother.

Experiences in the hospital

The time immediately following delivery is an important time for the mother and child to bond, and also a time when medical professionals can have an impact on the mother. Mothers may feel particularly vulnerable at this time, and so interactions with hospital staff and experiences in the hospital can leave a lasting impression, influencing certain decisions about how she cares for the infant.

About half of women (49.3%) breastfed their infants within the first hour after birth. Although 72.4% breastfed during their hospital stay, only 45.1% fed their infant breast milk *exclusively*. Immediately establishing a feeding schedule can improve success in initiating and sustaining breastfeeding. Many women reported having difficulty nursing or problems producing milk, therefore support and education while in the hospital can assist mothers with learning to overcome these problems. Only 66% of women reported that hospital staff helped them learn to breastfeed, and 78.8% were given information about breastfeeding by hospital staff. Nearly 70% of women left the hospital with a gift pack containing formula, and 66.7% were given a telephone number to call for help with breastfeeding. A combination of lack of support and education, and the receipt of mixed messages (encouraged to breastfeed, but given formula) clearly impact a woman's decision to initiate and sustain breastfeeding.

¹¹ CT DPH, *Results of the Connecticut Breastfeeding Initiative*

DISCUSSION

LIMITATIONS

The age and race/ethnic distributions of the PRATS respondents correlated well to the distribution seen in annual birth data. This indicates that the survey respondents were fairly representative of the target population of women giving birth in CT; no age or race/ethnic groups were significantly underrepresented. However, the low response rate limits the generalizability of the results to the general population.

The potential for information bias exists in any type of survey that is done. There are several types of information bias that may have affected the accuracy of the data collected.

Method of Survey Administration: Respondents were given the option of completing the survey by either completing a self-administered questionnaire returned via mail or by telephone. Concerns related to confidentiality may have influenced how likely women were to honestly answer the survey questions when speaking to an interviewer over the telephone compared to completing a written questionnaire. Also, questions may have been interpreted differently among those who were read the question by a trained interviewer versus reading the question themselves.

Recall Bias: Because the timing of the survey was several months following delivery, women may not have been able to accurately recall all information they were asked about. Women experiencing adverse birth outcomes may be more likely to recall pertinent information compared to women who had normal pregnancies and deliveries.

Reporting Bias: Sensitive questions may lead some women to omit information or report more favorable behaviors, fearing that they may be judged because of risky or socially undesirable behavior (e.g. substance use during pregnancy). The result of this bias would likely be underestimates of the true prevalence of the behavior(s).

By following the methodology established by CDC PRAMS, DPH sought to minimize bias to the extent possible. Recognizing the limitations imposed by the low response rate and potential information bias must be considered when interpreting the data from the survey or drawing conclusions.

CONCLUSION

Despite the limitations described above, data from PRATS can be used to:

- Gain insight into areas where data were previously unavailable;
- Suggest ways in which programs in the Family Health Section can be enhanced;
- Strengthen existing reporting to the Maternal and Child Health (Title V) Block Grant; and
- Identify areas where more information is needed, and where further research is warranted.

The consistencies seen in the PRATS data compared to that seen in CT vital records and reported in the literature lend credibility to the PRATS results. As discussed previously, more in-depth analyses of the PRATS Round 2 survey data will be conducted to explore the associations between selected risk factors and health outcomes. The Family Health Section will also continue with its efforts to improve and increase data collection and analysis to identify programmatic goals and objectives that will result in improved health outcomes of the maternal and child health population in CT.

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APPENDIX A: DETAILED TABLES

Table 4. Maternal Characteristics and Birth Outcomes, by Race and Hispanic Ethnicity - PRATS Round 2

	Race/Ethnicity					
	White, Non-Hispanic		Black, Non-Hispanic		Hispanic	
	% [*]	CI ⁺	%	CI	%	CI
MATERNAL CHARACTERISTICS						
Age Group						
Under 20	2.8	(1.5, 4.1)	10.1	(3.3, 16.9)	10.1	(4.6, 15.7)
20-24	10.6	(8.3, 13.0)	25.3	(16.2, 34.5)	38.1	(29.1, 47.2)
25-29	23.0	(20.2, 25.7)	29.2	(19.7, 38.7)	21.4	(14.0, 28.8)
30-34	37.2	(34.1, 40.3)	19.0	(11.3, 26.8)	16.8	(10.7, 22.9)
35-39	21.0	(18.5, 23.5)	13.0	(6.5, 19.5)	13.3	(7.5, 19.1)
40+	5.5	(4.0, 6.9)	3.4	(0.0, 7.1)	0.2	(0.0, 0.7)
Prepregnancy BMI						
Underweight (<18.5)	4.0	(2.8, 5.2)	5.2	(0.4, 10.1)	6.8	(2.3, 11.4)
Normal weight (18.5 - 24.9)	62.7	(59.5, 65.9)	39.6	(29.2, 50.1)	61.4	(52.3, 70.6)
Overweight (25.0 - 29.9)	20.5	(17.8, 23.1)	33.0	(23.2, 42.9)	21.4	(13.8, 28.9)
Obese (≥30.0)	12.8	(10.6, 15.1)	22.1	(13.6, 30.6)	10.4	(5.0, 15.8)
Late/No Prenatal Care	4.3	(2.8, 5.9)	10.5	(4.5, 16.5)	11.9	(6.0, 17.8)
On Medicaid prior to pregnancy	4.3	(2.6, 6.0)	27.9	(18.1, 37.8)	34.3	(25.2, 43.3)
Unplanned Pregnancy						
Not trying to become pregnant	35.3	(32.1, 38.6)	77.9	(69.7, 86.1)	57.9	(49.0, 66.7)
Not trying to become pregnant and were doing something to prevent pregnancy	37.7	(31.9, 43.5)	39.2	(27.0, 51.5)	39.4	(27.0, 51.9)
Physical violence 12 months prior to pregnancy ¹	4.5	(2.9, 6.1)	13.4	(5.6, 21.1)	7.0	(2.2, 11.9)
Alcohol Use Last 3 months of pregnancy ²	15.6	(13.2, 18.1)	5.3	(0.0, 11.3)	15.4	(6.8, 24.0)
Binge Drinking Last 3 months of pregnancy ³	2.1	(0.6, 3.6)	10.2	(0.0, 24.4)	6.8	(0.0, 18.1)
Tobacco Use Last 3 months of pregnancy ⁴	29.5	(19.6, 39.4)	7.1	(0.0, 16.3)	23.0	(4.1, 42.0)
BIRTH OUTCOMES						
Low Birthweight (<2500 g)	4.8	(4.3, 5.3)	8.8	(5.8, 11.7)	9.2	(6.6, 11.9)
Very Low Birthweight (<1500 g)	1.0	(0.7, 1.2)	4.0	(2.2, 5.8)	2.0	(0.9, 3.1)
Previous child low birthweight ⁵	8.7	(6.2, 11.1)	11.0	(3.4, 18.5)	14.8	(8.0, 21.6)
Preterm Delivery (<37 weeks)	9.2	(8.6, 9.8)	13.0	(9.4, 16.6)	13.3	(10.0, 16.6)
Previous child preterm ⁵	9.8	(7.3, 12.3)	13.1	(5.6, 20.6)	14.6	(8.0, 21.2)

^{*} Weighted Percent

⁺ 95% Confidence Interval

¹ Were pushed, hit, slapped, kicked, choked, or physically hurt in some way by someone during the 12 months BEFORE getting pregnant.

² Reported number of alcoholic drinks in an average week during the last 3 months of pregnancy.

³ Reported number of times drinking 5 or more alcoholic beverages in one sitting during the last 3 months of pregnancy.

⁴ Reported number of cigarettes smoked on an average day during the last 3 months of pregnancy.

⁵ Outcome of pregnancy just before this one.

Table 5. Maternal Characteristics and Birth Outcomes, by Age Group - PRATS Round 2

	Age Group											
	Under 20		20-24		25-29		30-34		35-39		40+	
	%*	CI ⁺	%	CI	%	CI	%	CI	%	CI	%	CI
MATERNAL CHARACTERISTICS												
Prepregnancy BMI												
Underweight (<18.5)	7.6	(1.6, 13.6)	7.2	(3.3, 11.1)	4.9	(2.1, 7.7)	3.8	(1.7, 6.0)	5.1	(2.2, 8.0)	2.0	(0.0, 5.2)
Normal weight (18.5 - 24.9)	61.1	(45.2, 77.0)	53.1	(44.6, 61.6)	63.1	(57.2, 68.9)	62.1	(57.4, 66.8)	60.9	(54.8, 67.0)	57.5	(44.0, 71.0)
Overweight (25.0 - 29.9)	19.3	(5.7, 32.9)	26.9	(19.1, 34.7)	16.8	(12.4, 21.2)	23.5	(19.4, 27.6)	19.1	(14.3, 23.8)	17.8	(7.6, 28.0)
Obese (\geq 30.0)	12.0	(0.9, 23.1)	12.8	(7.5, 18.2)	15.3	(10.9, 19.6)	10.6	(7.7, 13.5)	15.0	(10.3, 19.6)	22.7	(10.1, 35.3)
Late/No Prenatal Care	16.3	(5.2, 27.5)	15.7	(9.5, 21.8)	4.6	(2.0, 7.2)	2.2	(0.8, 3.6)	4.4	(1.3, 7.4)	6.2	(0.0, 13.3)
On Medicaid prior to pregnancy	33.0	(17.9, 48.1)	26.5	(18.6, 34.4)	10.5	(5.9, 15.0)	3.9	(2.0, 5.9)	5.0	(1.9, 8.2)	4.0	(0.0, 10.5)
Unplanned Pregnancy												
Not trying to become pregnant	87.4	(78.4, 96.3)	68.3	(60.8, 75.8)	40.8	(34.7, 46.9)	29.3	(24.8, 33.8)	35.2	(29.2, 41.1)	55.8	(43.1, 68.6)
Not trying to become pregnant and were doing something to prevent pregnancy	26.3	(10.6, 42.0)	40.6	(30.3, 51.0)	37.6	(27.5, 47.8)	41.8	(32.4, 51.2)	42.8	(32.0, 53.5)	32.8	(13.9, 51.7)
Physical violence 12 months prior to pregnancy ¹	18.2	(5.8, 30.6)	15.4	(9.1, 21.7)	2.3	(0.3, 4.2)	3.0	(1.2, 4.9)	3.0	(0.6, 5.3)	8.2	(0.0, 18.1)
Alcohol Use Last 3 months of pregnancy ²	-	-	5.0	(0.03, 10.0)	12.4	(8.1, 16.8)	16.1	(12.4, 19.8)	22.1	(16.6, 27.7)	22.5	(10.2, 34.9)
Binge Drinking Last 3 months of pregnancy ³	-	-	10.1	(0.0, 21.1)	3.2	(0.0, 7.1)	1.2	(0.0, 2.8)	2.8	(0.0, 6.5)	1.4	(0.0, 4.1)
Tobacco Use Last 3 months of pregnancy ⁴	55.4	(8.5, 100.0)	17.9	(2.0, 33.8)	33.3	(14.2, 52.4)	19.9	(6.6, 33.3)	21.8	(8.2, 35.4)	36.8	(0.0, 76.5)
BIRTH OUTCOMES												
Low Birthweight (<2500 g)	9.4	(4.8, 13.9)	7.6	(5.5, 9.7)	5.9	(4.6, 7.1)	4.7	(3.9, 5.6)	5.5	(4.2, 6.8)	7.7	(4.4, 11.0)
Very Low Birthweight (<1500 g)	2.6	(0.4, 4.9)	2.3	(1.2, 3.3)	0.9	(0.5, 1.4)	1.6	(1.1, 2.1)	1.0	(0.5, 1.5)	-	-
Previous child low birthweight ⁵	13.0	(0.1, 25.9)	7.8	(1.9, 13.7)	12.4	(6.2, 18.6)	8.5	(5.4, 11.6)	11.6	(6.7, 16.4)	18.6	(3.7, 33.5)
Preterm Delivery (<37 weeks)	12.6	(7.0, 18.2)	11.7	(9.0, 14.3)	8.6	(7.1, 10.1)	9.8	(8.6, 11.0)	9.1	(7.5, 10.7)	11.6	(7.2, 16.0)
Previous child preterm ⁵	9.0	(0.2, 18.0)	7.0	(1.6, 12.4)	14.8	(8.4, 21.1)	10.5	(7.1, 14.0)	14.3	(9.1, 19.5)	10.1	(2.0, 18.2)

- A dash (-) represents the quantity zero.

* Weighted Percent

⁺ 95% Confidence Interval

¹ Were pushed, hit, slapped, kicked, choked, or physically hurt in some way by someone during the 12 months BEFORE getting pregnant.

² Reported number of alcoholic drinks in an average week during the last 3 months of pregnancy.

³ Reported number of times drinking 5 or more alcoholic beverages in one sitting during the last 3 months of pregnancy.

⁴ Reported number of cigarettes smoked on an average day during the last 3 months of pregnancy.

⁵ Outcome of pregnancy just before this one.

Table 6. Breastfeeding Experiences and Attitudes, by Race and Hispanic Ethnicity - PRATS Round 2

	Total ¹		Race/Ethnicity					
			White, Non-Hispanic		Black, Non-Hispanic		Hispanic	
	%*	CI ⁺	%	CI	%	CI	%	CI
Ever Breastfed	77.3	(74.7, 79.9)	77.2	(74.3, 80.2)	76.4	(67.2, 85.6)	75.4	(67.1, 83.8)
Reasons for not breastfeeding								
Other children to care for	28.0	(22.0, 33.9)	26.4	(20.0, 32.8)	36.2	(13.5, 58.8)	22.5	(6.3, 38.8)
Too many household duties	14.2	(9.4, 19.1)	10.9	(6.4, 15.4)	27.7	(6.5, 48.9)	10.8	(0.0, 23.4)
Didn't like breastfeeding	49.1	(42.4, 55.8)	50.3	(42.8, 57.9)	71.2	(53.0, 89.4)	39.7	(20.1, 59.3)
Didn't want to be tied down	11.6	(7.6, 15.5)	16.5	(11.0, 22.0)	0.6	(0.0, 1.8)	-	-
Embarrassed to breastfeed	5.7	(2.8, 8.7)	6.9	(3.0, 10.7)	-	-	1.1	(0.0, 2.8)
Went back to work or school	23.1	(17.4, 28.8)	23.1	(16.4, 29.8)	18.8	(2.4, 35.2)	23.5	(6.2, 40.9)
Husband/partner didn't want you to	3.2	(0.7, 5.8)	3.1	(0.5, 5.7)	7.7	(0.0, 22.1)	-	-
Wanted your body back to yourself	18.9	(13.6, 24.1)	18.3	(12.7, 23.9)	17.3	(0.0, 35.8)	19.4	(2.2, 36.5)
Other reasons	32.6	(26.4, 38.7)	36.4	(29.1, 43.8)	29.6	(9.5, 49.7)	24.6	(8.3, 41.0)
Still breastfeeding	33.3	(30.5, 36.2)	35.2	(32.0, 38.4)	26.2	(16.0, 36.5)	21.1	(13.9, 28.3)
Duration								
Breastfeeding at 3 months	49.6	(45.5, 53.8)	51.5	(46.8, 56.2)	38.3	(24.0, 52.6)	49.9	(38.2, 61.6)
Breastfeeding at 6 months	25.6	(21.5, 29.7)	28.0	(23.3, 32.8)	19.2	(5.8, 32.7)	22.3	(11.2, 33.4)
Reasons for stopping breastfeeding								
Baby had difficulty nursing	9.4	(7.7, 11.0)	9.7	(7.8, 11.6)	11.3	(4.7, 17.9)	6.8	(3.1, 10.5)
Breast milk alone did not satisfy the baby	16.1	(13.9, 18.3)	14.3	(12.1, 16.6)	24.0	(15.0, 33.0)	19.6	(12.0, 27.2)
Thought the baby was not gaining enough weight	3.3	(2.3, 4.3)	3.3	(2.2, 4.5)	3.2	(0.0, 6.6)	3.5	(0.002, 7.1)
Baby became sick and could not breastfeed	0.9	(0.4, 1.4)	1.0	(0.3, 1.6)	0.4	(0.0, 0.9)	1.5	(0.1, 2.8)
Nipples were sore, cracked or bleeding	7.3	(5.7, 8.9)	5.5	(3.9, 7.1)	12.9	(5.8, 20.1)	12.7	(6.5, 19.1)
Thought you were not producing enough milk	14.5	(12.4, 16.6)	12.6	(10.5, 14.8)	16.0	(8.6, 23.4)	21.5	(13.8, 29.3)
Had too many other household duties	3.9	(2.8, 5.1)	3.6	(2.4, 4.8)	3.7	(0.4, 7.0)	4.7	(0.8, 8.7)
Felt it was the right time to stop breastfeeding	10.9	(9.1, 12.7)	12.4	(10.3, 14.5)	10.2	(3.7, 16.8)	5.3	(1.5, 9.2)
You became sick and could not breastfeed	3.4	(2.4, 4.5)	2.1	(1.2, 2.9)	4.3	(0.3, 8.3)	10.7	(5.1, 16.4)
Went back to work or school	11.4	(9.5, 13.3)	10.9	(8.9, 13.0)	10.9	(5.2, 16.6)	12.9	(6.6, 19.3)
Husband/partner wanted you to stop	0.4	(0.02, 0.8)	0.4	(0.01, 0.7)	-	-	0.1	(0.0, 0.2)
Wanted/needed someone else to feed the baby	5.0	(3.7, 6.3)	4.8	(3.4, 6.2)	7.5	(1.7, 13.4)	3.4	(0.1, 6.7)
Other	14.1	(12.1, 16.0)	15.6	(13.3, 17.9)	8.9	(3.3, 14.5)	12.6	(6.5, 18.7)

- A dash (-) represents the quantity zero.

* Weighted Percent

+ 95% Confidence Interval

¹ Includes "Other" races

(CONTINUED NEXT PAGE)

Table 6. Breastfeeding Experiences and Attitudes, by Race and Hispanic Ethnicity - PRATS Round 2

	Total ¹		Race/Ethnicity					
			White, Non-Hispanic		Black, Non-Hispanic		Hispanic	
	% [*]	CI ⁺	%	CI	%	CI	%	CI
Hospital Experience								
Hospital staff gave you info about breastfeeding	78.8	(76.4, 81.3)	78.4	(75.6, 81.2)	81.3	(73.2, 89.4)	79.8	(72.0, 87.5)
Baby stayed in the same room with you at the hospital	67.2	(64.6, 69.9)	68.4	(65.5, 71.4)	61.1	(51.0, 71.2)	67.2	(59.0, 75.5)
Breastfed your baby in the hospital	72.4	(69.7, 75.1)	73.1	(70.1, 76.1)	67.8	(57.9, 77.6)	73.6	(65.6, 81.7)
Breastfed your baby in the first hour after it was born	49.3	(46.4, 52.2)	50.5	(47.2, 53.7)	50.2	(39.7, 60.8)	44.5	(35.4, 53.6)
Hospital staff helped you learn how to breastfeed	66.0	(63.2, 68.8)	64.8	(61.6, 68.0)	68.1	(58.4, 77.7)	70.2	(61.8, 78.6)
Your baby was fed only breast milk at the hospital	45.1	(42.2, 48.0)	48.5	(45.3, 51.8)	35.8	(25.5, 46.1)	39.8	(30.8, 48.8)
Hospital staff told you to breastfeed whenever your baby wanted	63.9	(61.1, 66.7)	64.6	(61.4, 67.7)	61.4	(51.2, 71.5)	59.3	(50.4, 68.3)
Hospital gave you a gift pack with formula	69.4	(66.7, 72.1)	68.8	(65.8, 71.9)	68.8	(59.0, 78.6)	69.4	(60.8, 78.0)
The hospital gave you a telephone number to call for help with breastfeeding	66.7	(63.8, 69.5)	69.1	(65.9, 72.2)	60.1	(49.7, 70.5)	56.7	(47.5, 65.9)
Your baby used a pacifier in the hospital	42.9	(40.1, 45.8)	42.2	(39.0, 45.4)	53.3	(42.7, 63.8)	45.3	(36.2, 54.4)
Thoughts about breastfeeding new baby								
Knew you would	71.4	(68.5, 74.4)	73.2	(70.0, 76.5)	60.9	(49.6, 72.3)	62.3	(52.9, 71.8)
Thought you might	16.9	(14.5, 19.2)	16.6	(14.0, 19.3)	21.7	(12.2, 31.3)	18.3	(11.1, 25.5)
Knew you would not	8.6	(6.6, 10.6)	7.2	(5.2, 9.3)	16.5	(7.4, 25.6)	11.0	(4.8, 17.3)
Didn't know what to do	3.1	(1.9, 4.3)	2.9	(1.6, 4.1)	0.8	(0.0, 1.7)	8.4	(2.3, 14.4)

- A dash (-) represents the quantity zero.

* Weighted Percent

+ 95% Confidence Interval

¹ Includes "Other" races

Table 7. Breastfeeding Experiences and Attitudes, by Age Group - PRATS Round 2

	Age Group							
	Total ¹		Teen Mothers (<20 years)		Average Age (20-34 years)		Older Mothers (≥35 years)	
	% [*]	CI ⁺	%	CI	%	CI	%	CI
Ever Breastfed	77.3	(74.7, 79.9)	59.9	(43.9, 75.8)	77.5	(74.5, 80.6)	79.8	(75.1, 84.6)
Reasons for not breastfeeding								
Other children to care for	28.0	(22.0, 33.9)	8.7	(0.0, 24.8)	26.2	(19.2, 33.3)	41.6	(28.4, 54.8)
Too many household duties	14.2	(9.4, 19.1)	8.7	(0.0, 24.8)	13.6	(7.9, 19.3)	18.7	(7.7, 29.8)
Didn't like breastfeeding	49.1	(42.4, 55.8)	53.8	(28.7, 78.9)	49.3	(41.3, 57.3)	46.6	(33.3, 59.9)
Didn't want to be tied down	11.6	(7.6, 15.5)	8.9	(0.0, 23.8)	10.2	(5.7, 14.8)	17.1	(7.8, 26.5)
Embarrassed to breastfeed	5.7	(2.8, 8.7)	12.6	(0.0, 28.3)	6.2	(2.6, 9.7)	1.6	(0.0, 4.2)
Went back to work or school	23.1	(17.4, 28.8)	39.8	(14.9, 64.8)	23.6	(16.6, 30.6)	14.8	(6.4, 23.3)
Husband/partner didn't want you to	3.2	(0.7, 5.8)	14.5	(0.0, 32.2)	2.4	(0.0, 5.1)	1.7	(0.0, 4.7)
Wanted your body back to yourself	18.9	(13.6, 24.1)	15.4	(0.0, 33.1)	18.8	(12.4, 25.2)	20.4	(10.0, 30.7)
Other reasons	32.6	(26.4, 38.7)	33.2	(9.8, 56.6)	33.7	(26.3, 41.1)	28.5	(16.2, 40.8)
Still breastfeeding	33.3	(30.5, 36.2)	23.0	(5.7, 40.2)	31.3	(28.0, 34.6)	41.1	(35.4, 46.9)
Duration								
Breastfeeding at 3 months	49.6	(45.5, 53.8)	39.9	(16.4, 63.5)	48.9	(44.0, 53.7)	54.0	(45.8, 62.3)
Breastfeeding at 6 months	25.6	(21.5, 29.7)	22.7	(0.0, 47.5)	22.9	(18.3, 27.4)	34.8	(25.9, 43.8)
Reasons for stopping breastfeeding								
Baby had difficulty nursing	9.4	(7.7, 11.0)	3.7	(0.8, 6.5)	9.3	(7.3, 11.3)	10.8	(7.2, 14.4)
Breast milk alone did not satisfy the baby	16.1	(13.9, 18.3)	8.4	(0.1, 16.6)	17.2	(14.5, 19.9)	14.3	(10.5, 18.2)
Thought the baby was not gaining enough weight	3.3	(2.3, 4.3)	1.4	(0.0, 3.0)	3.8	(2.5, 5.1)	2.2	(0.8, 3.7)
Baby became sick and could not breastfeed	0.9	(0.4, 1.4)	0.9	(0.0, 2.3)	1.0	(0.4, 1.6)	0.6	(0.0, 1.5)
Nipples were sore, cracked or bleeding	7.3	(5.7, 8.9)	10.5	(0.6, 20.4)	7.6	(5.6, 9.6)	5.7	(3.0, 8.3)
Thought you were not producing enough milk	14.5	(12.4, 16.6)	8.8	(1.6, 16.1)	15.7	(13.1, 18.3)	11.9	(8.3, 15.6)
Had too many other household duties	3.9	(2.8, 5.1)	7.1	(0.0, 15.4)	3.6	(2.3, 4.9)	4.2	(2.1, 6.3)
Felt it was the right time to stop breastfeeding	10.9	(9.1, 12.7)	1.0	(0.0, 2.3)	11.8	(9.6, 14.0)	10.1	(6.7, 13.5)
You became sick and could not breastfeed	3.4	(2.4, 4.5)	4.8	(0.0, 10.9)	3.6	(2.3, 4.9)	2.6	(1.0, 4.2)
Went back to work or school	11.4	(9.5, 13.3)	10.3	(1.3, 19.3)	11.5	(9.3, 13.8)	11.2	(7.7, 14.7)
Husband/partner wanted you to stop	0.4	(0.02, 0.8)	-	-	0.6	(0.02, 1.1)	0.04	(0.0, 0.1)
Wanted/needed someone else to feed the baby	5.0	(3.7, 6.3)	4.6	(0.0, 10.7)	5.0	(3.5, 6.6)	4.8	(2.5, 7.2)
Other	14.1	(12.1, 16.0)	7.1	(0.0, 14.2)	14.9	(12.5, 17.2)	13.1	(9.5, 16.7)

- A dash (-) represents the quantity zero.

* Weighted Percent

⁺ 95% Confidence Interval

¹ Includes "Other" races

(CONTINUED NEXT PAGE)

Table 7. Breastfeeding Experiences and Attitudes, by Age Group - PRATS Round 2

	Age Group							
	Total ¹		Teen Mothers (<20 years)		Average Age (20-34 years)		Older Mothers (≥35 years)	
	% [*]	CI ⁺	%	CI	%	CI	%	CI
Hospital Experience								
Hospital staff gave you info about breastfeeding	78.8	(76.4, 81.3)	68.3	(53.3, 83.3)	79.5	(76.6, 82.4)	78.9	(74.2, 83.7)
Baby stayed in the same room with you at the hospital	67.2	(64.6, 69.9)	56.7	(41.0, 72.4)	69.1	(66.0, 72.3)	63.5	(58.1, 68.9)
Breastfed your baby in the hospital	72.4	(69.7, 75.1)	52.3	(36.4, 68.2)	72.5	(69.3, 75.6)	76.4	(71.7, 81.2)
Breastfed your baby in the first hour after it was born	49.3	(46.4, 52.2)	42.5	(26.7, 58.4)	49.8	(46.4, 53.3)	49.0	(43.5, 54.6)
Hospital staff helped you learn how to breastfeed	66.0	(63.2, 68.8)	54.3	(38.5, 70.1)	66.7	(63.4, 70.0)	66.2	(60.9, 71.6)
Your baby was fed only breast milk at the hospital	45.1	(42.2, 48.0)	36.6	(21.1, 52.1)	45.5	(42.1, 48.9)	45.6	(40.1, 51.2)
Hospital staff told you to breastfeed whenever your baby wanted	63.9	(61.1, 66.7)	47.8	(31.9, 63.7)	65.2	(61.9, 68.5)	63.3	(57.9, 68.7)
Hospital gave you a gift pack with formula	69.4	(66.7, 72.1)	48.7	(32.8, 64.5)	70.5	(67.4, 73.7)	70.4	(65.3, 75.5)
The hospital gave you a telephone number to call for help with breastfeeding	66.7	(63.8, 69.5)	44.5	(28.8, 60.1)	67.0	(63.6, 70.3)	70.4	(65.1, 75.7)
Your baby used a pacifier in the hospital	42.9	(40.1, 45.8)	47.2	(31.3, 63.1)	43.9	(40.5, 47.3)	39.1	(33.7, 44.5)
Thoughts about breastfeeding new baby								
Knew you would	71.4	(68.5, 74.4)	62.2	(43.4, 80.9)	69.8	(66.3, 73.4)	78.0	(72.8, 83.2)
Thought you might	16.9	(14.5, 19.2)	13.3	(1.2, 25.5)	17.3	(14.5, 20.2)	15.9	(11.2, 20.6)
Knew you would not	8.6	(6.6, 10.6)	21.8	(4.7, 38.9)	9.0	(6.7, 11.4)	5.0	(2.2, 7.8)
Didn't know what to do	3.1	(1.9, 4.3)	2.8	(0.0, 5.6)	3.8	(2.2, 5.4)	1.1	(0.3, 2.0)

- A dash (-) represents the quantity zero.

* Weighted Percent

+ 95% Confidence Interval

¹ Includes "Other" races

APPENDIX B: WEIGHTING METHODOLOGY

Overview

The CT PRATS (Connecticut Pregnancy Risk Assessment Tracking System) is modeled on the CDC supported PRAMS (Pregnancy Risk Assessment Monitoring System). We will model the weighting on the CDC methodology as well.

The study population is selected via a sampling of birth records, and is intended to represent women who have recently given birth. The sampling was conducted by the DPH (Connecticut Department of Health, our client), with data collection conducted by a contractor. The data collection protocol included an initial mail contact with a survey, with telephone follow-up. The questionnaire could be completed in either mode.

The sample was stratified from a frame that consisted of a three-month span of birth records. Multiple births and births without birth-weight recorded were excluded from the frame. Two strata were defined, 'low' and 'normal' birth-weights.

The weighting consists of two components, a base sampling weight and a non-response adjustment. The final weight is the product of these two components.

Base Sampling Weight

The base sampling weight is the inverse of the sampling fraction for each stratum. The sampling fraction used was obtained from DPH. The variable 'stratum' on the dataset is used to identify the sampling stratum, with a value of '1' signifying a low birth-weight and a value of '0' signifying a normal birth-weight.

Non-response adjustment

The non-response adjustment makes use of the fact that we do have some variables present from the sampling frame that have values for both responding and non-responding records.

The adjustment is a simple ratio adjustment. The adjustment is computed as the sum of the weights for all sampled cases to the sum of the weights for responding cases within adjustment class.

Regression modeling was used to identify variables that be used as predictors of response. The mother's county of residence, marital status, education, and race were found to be significant predictors.

Classes were defined so that each cell contained at least 25 respondents. County of residence was grouped into three regions. The eastern region consisted of Tolland, Windham, and New London counties; the central region consisted of Hartford, New Haven, and Middlesex counties, and the western region consisted of Litchfield and Fairfield counties. Education was first classified into three groups: high school diploma or less, 1 – 3 years of college, and 4 or more years of college. For all mothers in the western region and unwed mothers in the central and eastern regions, the two higher education levels were grouped together. Race categories were defined as white and non-white. In the eastern region there were too few non-white mothers to use race as a classification variable.