

Chapter 2: Reproductive Health

Introduction

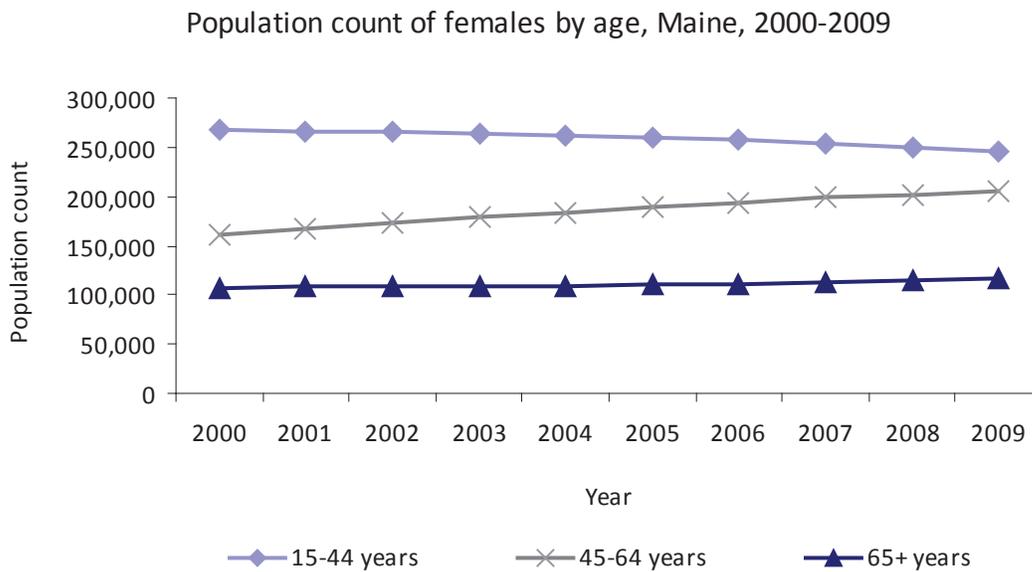
A woman's reproductive health status is associated with the long-term social, economic, physical and mental well-being of herself and her children. Improving maternal and newborn health reduces unintended pregnancies and abortion rates, saves women's lives, decreases infant mortality rates, improves child health outcomes and women's status in society, as well as reduces and protects against sexually transmitted infections (STI's).¹

This chapter focuses on women's reproductive health before, during and after pregnancy.

Demographics of Women of Reproductive Age

In 2009, the U.S. Census Bureau estimated that there were 245,825 women of reproductive age (15-44 years-old) living in Maine.² This age group comprises 36.4% of the population of women in Maine. The number of women in this age group is declining over time. Between 2000 and 2009, the population of women of reproductive age living in Maine decreased 8.1% (Figure 2.1). In the U.S., there was a 0.5% decline in number of women of reproductive age during this same time period.²

Figure 2.1.



Source: US Census Bureau Estimates²

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Race and Ethnicity

Although Maine's population is predominately White, other races make up a larger proportion of Maine's younger reproductive age female population compared to Maine's older female population. In 2009, 95.7% of Maine's women of reproductive age were White. Black and Asian women made up 1.2% and 1.3% of the population respectively, followed by those of two or more races (1.1%) and American Indians (0.8%); 1.7% of women of reproductive age were Hispanic. In comparison, 98.7% of Maine's population aged 65 years and older were White, while 0.2% were Black, and 0.4% were Asian (Table 2.1).²

Table 2.1. Percent of females aged 15+ years by age, race and ethnicity, Maine, 2009

Age Group	White	Black	American Indian and Alaskan Native	Asian	Native Hawaiian and Other PI	Two or more races	Non-Hispanic	Hispanic
15-44	95.7%	1.2%	0.8%	1.3%	0.04%	1.1%	98.3%	1.7%
45-64	97.7%	0.4%	0.5%	0.8%	0.03%	0.6%	99.3%	0.7%
65+	98.7%	0.2%	0.3%	0.4%	0.02%	0.4%	99.5%	0.5%
Total 15+	97.0%	0.7%	0.6%	0.9%	0.03%	0.8%	98.9%	1.1%

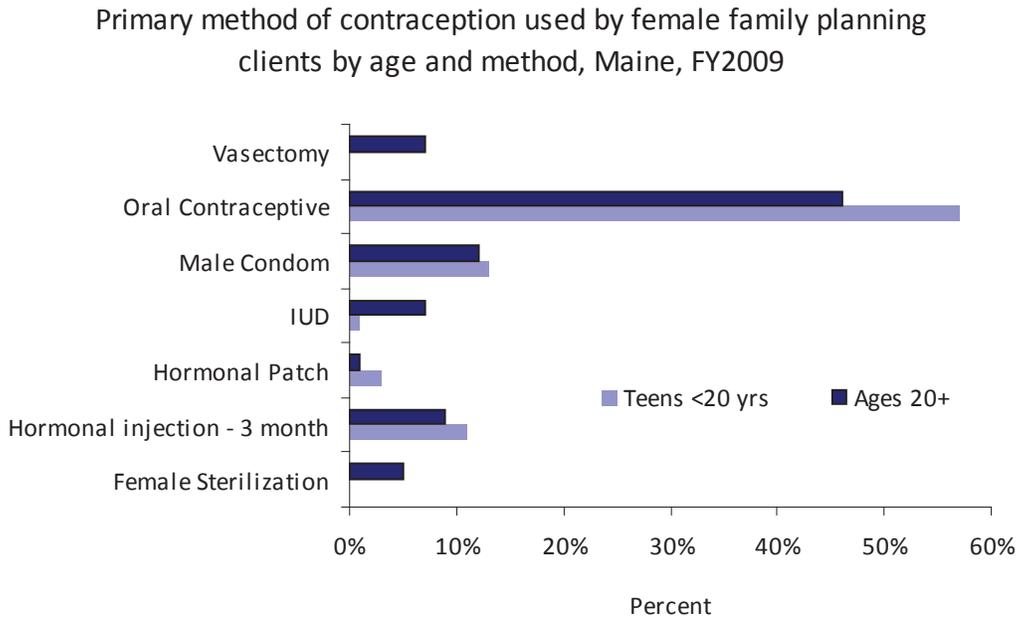
Source: US Census Bureau Estimates²

Contraception Use

The most recent self-reported data on women's use of contraception are from Maine's 2004 Behavioral Risk Factor Surveillance System (BRFSS) survey.³ According to this source, 74% of Maine women between 18 and 44 years of age were trying to prevent becoming pregnant. The primary birth control methods reported by women were surgical procedures (45.4%), birth control drugs (34.1%), and condoms (13.8%). Among women not currently pregnant and not using birth control, 34.8% indicated they wanted to become pregnant or did not care if they became pregnant.³ According to Maine's 2008 Pregnancy Risk Assessment Monitoring System (PRAMS), a survey of new mothers in Maine, of those women who did not want to get pregnant at the time of conception, 54.8% were not using any contraception.⁴

Based on data from Maine's Family Planning Association, about 50% of women who received services at a family planning clinic during FY10 relied on oral contraception as their primary method of birth control (Figure 2.2);⁵ 12% used condoms and 9% relied on hormone injections. These three methods were the most common ones used by teens as well as women over age 20. Women over age 20 were also more likely to rely on methods such as a vaginal ring (7%) and IUD (7%). Women over 45 years of age were more likely than other age groups to report relying on surgical procedures (25%).⁵

Figure 2.2.



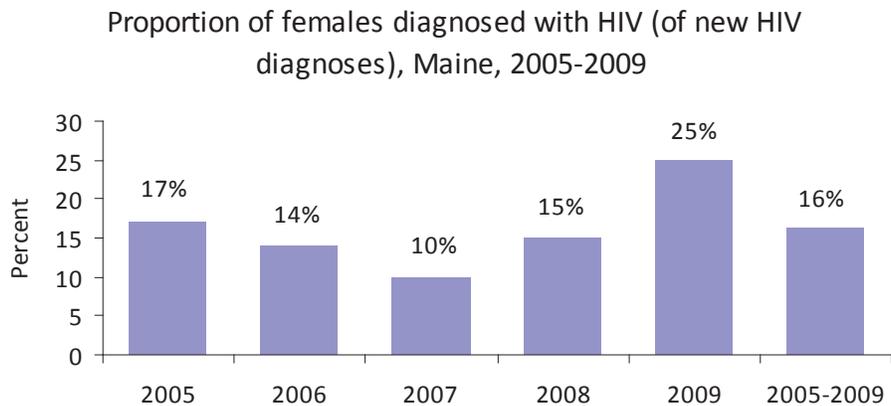
Source: Family Planning Association of Maine⁵

Sexually Transmitted Infections (STI)

HIV/AIDS

In 2009, there were 57 new cases of HIV diagnosed in Maine; 14 of these cases (24.6%) were among females. Since 2000, there has been an average of 50 new cases of HIV diagnosed each year. The proportion of females cases of HIV diagnosed each year has not changed significantly over time (Figure 2.3). Between 2005 and 2009, approximately 16% of diagnosed HIV cases were among women.⁶

Figure 2.3.



Source: Maine CDC HIV/STD/Viral Hepatitis Program⁶

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As a result of successful treatment options and care, the number of people living with HIV/AIDS has increased, while the numbers of new cases and deaths has remained stable. As of December 2009, there were approximately 1,488 people living with HIV/AIDS in Maine; 16.3% (n=242) were women. Among women, most of those living with HIV/AIDS were between the ages of 25-39 years; the age distribution for men was similar, but there were more men than women living with HIV/AIDS (Table 2.2).⁶

Table 2.2. Number and rate of persons living with HIV/AIDS by age, Maine, 2009

Age Group	Females			Males		
	Count	Population	Rate per 100,000	Count	Population	Rate per 100,000
<15	5	107352	4.7	9	112080	8.0
15-19	9	42947	21.0	16	45534	35.1
20-24	29	39403	73.6	94	42213	222.7
25-29	40	38138	104.9	163	38999	418.0
30-39	78	78197	99.7	468	75206	622.3
40-54	68	158507	42.9	424	150589	281.6
>54	13	210177	6.2	72	178959	40.2
Total	242	674721	35.9	1246	643580	193.6

Source: Maine CDC HIV/STD/Viral Hepatitis Program⁶

Heterosexual contact was the most common mode of transmission for women who were newly diagnosed with HIV between 2005-2009 (82.1%; Table 2.3). Transmission by injection drug use made up 17.9% of cases over the five year period.⁶

Table 2.3. Methods of HIV transmission among females, Maine, 2005-2009

Method of HIV transmission	Count	% of total
Heterosexual, no HIV risk factor reported	26	46.4%
Heterosexual contact with at-risk partner	20	35.7%
Injection drug use	10	17.9%
Total	56	100.0%

Source: Maine CDC HIV/STD/Viral Hepatitis Program⁶

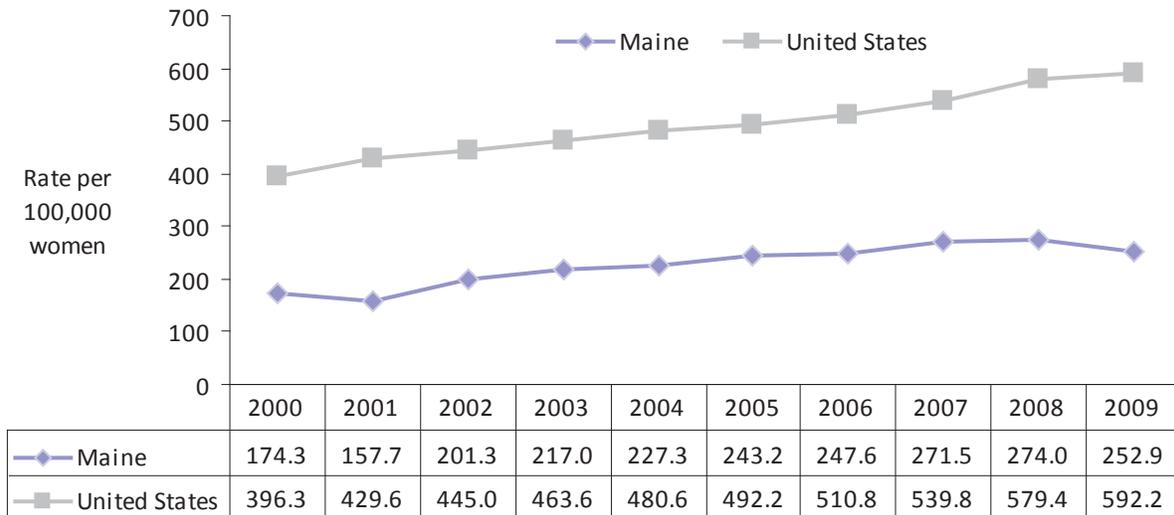
Chlamydia

Of the reported sexually transmitted infections (STI), chlamydia is the most frequently reported in Maine and the U.S., and the number of reported cases has increased in recent years. Between 1996 and 2009, the number of chlamydia cases in Maine increased from 965 to 2,443.^{6,7} Rates of chlamydia have also increased in the U.S. over the past ten years (Figure 2.4). Since chlamydia cases are only detected if an individual chooses to be tested for the disease, it is unclear whether these increases represent increased testing for the condition or an actual increase in the prevalence of the disease. In 2009, the number of reported cases in Maine declined for the first time since 2001 (Figure 2.4).

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Figure 2.4.

Chlamydia rates among females, Maine and the U.S., 2000-2009



Source: Maine CDC HIV/STD/Viral Hepatitis Program⁶

More than 70% of chlamydia diagnoses are among females. However, females are more likely than men to be symptomatic and to be tested for the disease, so the prevalence among men may be higher than the data suggest.⁷

Youth are disproportionately diagnosed with chlamydia. Three out of four cases diagnosed in 2009 were diagnosed among those under age 25. Among females, 34% of cases were diagnosed among those aged 15-19 years and 42% were among those aged 20-24 years (Table 2.4).⁶

Table 2.4. Counts and rate (per 100,000) of chlamydia by age and sex, Maine, 2009

Age group	Females		Males	
	Count	Rate/100,000	Count	Rate/100,000
<15	12	11.2	1	0.9
15-19	582	13.6	152	333.8
20-24	716	1817.1	309	732.0
25-29	257	673.9	135	346.2
30-39	112	143.2	89	118.3
40-54	30	18.9	33	21.9
>54	3	1.4	4	2.2
Age Unknown	1		7	
Total	1713	253.9	730	113.4

Source: Maine CDC HIV/STD/Viral Hepatitis Program⁶

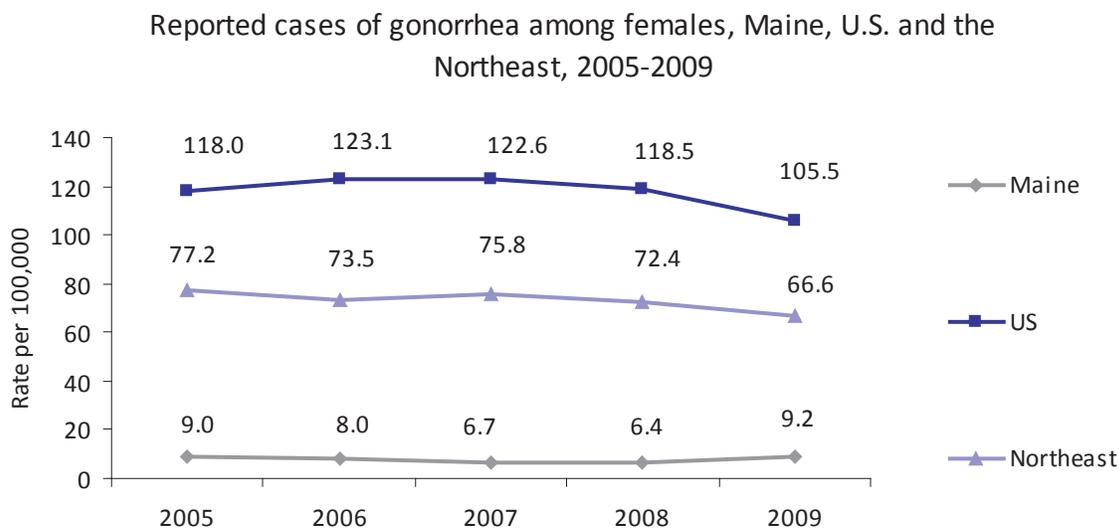
Gonorrhea

In 2009, there were 143 new cases of gonorrhea diagnosed in Maine; 43% of the cases were among females. Between 2005 and 2009 there were, on average, 53 cases diagnosed among females annually.⁶

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Rates of gonorrhea among females in Maine have remained relatively stable over the past five years and are lower than rates in the U.S. and the Northeast (Figure 2.5).⁶

Figure 2.5.



Source: Maine CDC HIV/STD/Viral Hepatitis Program⁶

Pregnancy Rates

Data on live births come from birth certificate data collected as part of Maine's vital statistics system. However, not all pregnancies result in a live birth. A pregnancy may result in a live birth, a fetal loss, or an induced abortion. These outcomes are influenced by health status, access to services, and other individual and community level factors.⁸

The components of Maine's pregnancy count are live births, reported fetal deaths of 20 weeks gestation or more, and reported induced abortions occurring in the state. According to Maine vital statistics data, there were 15,849 known pregnancies among Maine residents in 2009; the pregnancy rate among women aged 15-44 was 64.5 per 1,000 (Table 2.5).⁹ Between 2006 and 2009 there were an average of 21,885 pregnancies each year; 84.0% of pregnancies ended in live births, 15.3% ended in induced abortions, and 0.4% ended in fetal deaths (gestation >20 weeks).⁹ Because Maine's pregnancy count excludes fetal losses occurring prior to 20 weeks gestation, the reported count is an undercount of the true number of pregnancies.

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Maine's pregnancy, birth and abortion rates declined between the mid 1980's to the late 1990's. Since 2002, live birth rates and abortion rates have increased slightly. Fetal death rates have not changed significantly over time (Table 2.5).⁹

Table 2.5. Pregnancy outcome rates (per 1,000 female population) among females aged 15-44 years, Maine, 1985-2009

Year	Pregnancy Rate	Live Birth Rate	Induced Abortion Rate	Fetal Death Rate
1985	75.1	61.2	13.6	0.4
1986	72.6	59.8	12.4	0.3
1987	72.5	59.4	12.9	0.3
1988	73.8	60.3	13.2	0.3
1989	75.0	61.1	13.5	0.3
1990	74.5	60.3	13.9	0.3
1991	71.3	58.8	12.2	0.3
1992	67.1	56.6	10.2	0.3
1993	64.7	53.6	10.8	0.2
1994	62.4	51.8	10.4	0.2
1995	60.4	50.3	9.8	0.3
1996	59.7	50.4	9.1	0.2
1997	59.5	50.3	8.9	0.2
1998	59.4	50.7	8.5	0.2
1999	59.3	50.5	8.5	0.2
2000	60.0	50.7	9.1	0.2
2001	60.8	51.6	9.1	0.2
2002	59.5	50.9	8.2	0.3
2003	61.7	52.3	9.2	0.2
2004	62.6	53.0	9.4	0.3
2005	63.8	54.2	9.3	0.3
2006	65.2	55.1	9.9	0.3
2007	66.1	55.7	10.2	0.2
2008	64.8	54.4	10.1	0.2
2009	64.5	54.9	9.5	0.2

Source: Maine Vital Records Data⁹

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Age

Between 2006 and 2009, the proportion of Maine pregnancies resulting in a live birth was lowest among 10-19 year olds (45.3% among 10-14 year olds and 71.4% among 15-19 year olds) and highest among 30-34 year old women (90.8%). Induced abortions were most common among the youngest age groups, least common among 30-34 year olds, and slightly more common among older women. Reported fetal deaths were rare and comprised 0.4% of reported pregnancies (Table 2.6).⁹

Table 2.6. Outcomes for reported pregnancies by maternal age, Maine, 2006-2009

Maternal age	All pregnancies	Live births		Fetal deaths		Induced abortion	
	Average # of pregnancies/year	Annual Average #	%	Annual Average #	%	Annual Average #	%
10 – 14	21	10	45.3	0	0.0	12	54.7
15 – 19	2,076	1,483	71.4	9	0.4	584	28.1
20 – 24	5,912	4,702	79.5	23	0.4	1,187	20.1
25 – 29	6,226	5,441	87.4	20	0.3	765	12.3
30 – 34	4,639	4,212	90.8	15	0.3	412	8.9
35 – 39	2,428	2,142	88.2	9	0.4	277	11.4
40 – 44	523	424	81.2	4	0.8	94	18.0
45 – 54	34	29	86.1	0	0.0	5	13.9
Total ^a	21,885	18,445	84.3	82	0.4	3,358	15.3

^a Includes an average of approximately 10 women per year with unknown age.

Note: Percentages with a small number in the numerator will have substantial random variation over time (a large standard error), caution should be taken when making comparisons with percentages calculated with fewer than 20 events.

Source: Maine Vital Records Data⁹

Public Health District

Between 2006 and 2009, pregnancy rates were lowest among women living in Aroostook, Penquis, and York public health districts and highest among those living in Cumberland and Western districts (Table 2.7).⁹

Table 2.7. Pregnancy rate and outcomes by public health district, Maine, 2006-2009

Public Health District	Number of pregnancies	Number of Births	Number of Abortions	# of Fetal Deaths	Pregnancy rate/ 1,000 females age 15-44 yrs
York	9421	8060	1337	24	61.7
Cumberland	14939	11751	3144	44	69.5
Western Maine	10435	8996	1387	52	68.2
Mid Coast Maine	7111	6063	1030	18	66.9
Central Maine	8377	7137	1218	22	63.4
Penquis	8154	6987	1124	43	60.5
Downeast	3906	3354	524	28	64.6
Aroostook	3067	2862	193	12	60.0
Total*	65654	55334	10074	246	65.3

*includes women with missing data on district of residence

Source: Maine Vital Records Data⁹

Women and Pregnancy

Maternal Mortality

In 2007, the U.S. maternal mortality ratio (number of maternal deaths per 100,000 live births) was 12.7 maternal deaths per 100,000 live births.¹⁰ The U.S. maternal mortality ratio has risen over the past 30 years—in 1982, the U.S. ratio was 7.5 deaths per 100,000 births. In Maine, there have been two maternal deaths in the past 10 years (1999–2008), a ratio of 1.3 maternal deaths^a per 100,000 live births.⁹ Maine has met the HP2010 goal of reducing the maternal mortality rate to no more than 3.3 per 100,000 live births.¹¹

Most U.S. maternal deaths are attributed to direct obstetric causes including eclampsia and pre-eclampsia, hemorrhage and placenta previa, obstetrical tetanus, obstetric embolism, and other direct causes. Possible explanations for the national increase in maternal deaths include a rise in the number of c-sections, particularly among women who have undergone several previous c-sections, and the rise in obesity. Race/ethnicity and quality of care may also factor into the maternal mortality rate.⁸ There have also been changes in coding and recording of maternal deaths on death certificates starting in 2003, which may have contributed to the apparent rise in the U.S. maternal mortality rate.

Prenatal Care

Prenatal care is the comprehensive care that women receive and provide for themselves throughout their pregnancy. Early and ongoing adequate prenatal care is important to a healthy pregnancy and baby.¹¹ Inadequate prenatal care, including late initiation of care, infrequent prenatal visits, or no care at all, is associated with poor infant and maternal outcomes.¹¹

Of Maine women who gave birth in 2009, more than 1,600 (12%) did not initiate prenatal care in the first trimester of their pregnancy and more than 2,000 (15%) did not receive adequate prenatal care.⁹

Between 1999 and 2009, the average proportion of Maine women giving birth who received early prenatal care (defined as prenatal care initiated in the first trimester) was 87.7%. Since 2003, this figure has remained fairly stable, with estimates ranging from 87.4%–88.1% (Figure 2.6)⁹. Maine is close, but has not yet met the HM2010 and HP2010 goals of early prenatal care for 90% of live births.^{11, 12}

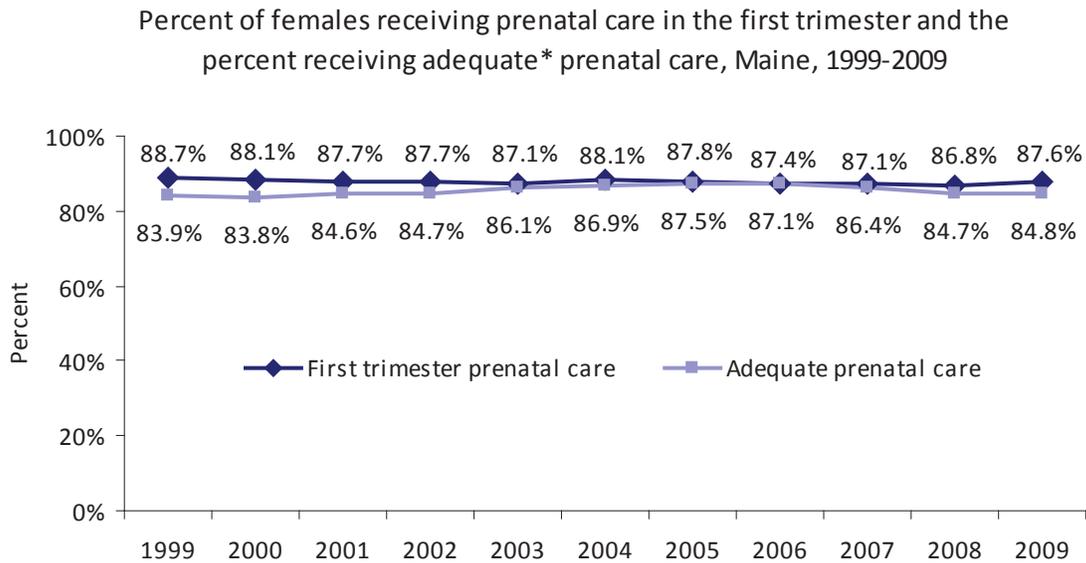
Between 1999 and 2009, the average proportion of Maine women giving birth who received adequate or greater than adequate prenatal care (defined as 80% or higher on the Kotelchuck

^a The number of maternal deaths does not include all deaths of pregnant women, but only deaths reported on the death certificate that were assigned to causes related to or aggravated by pregnancy or pregnancy management (International Classification of Diseases [ICD]–10 codes A34, O00–O95, and O98–O99). Excluded from this count are deaths that occur more than 42 days after the termination of pregnancy and deaths of pregnant women due to unintentional injuries, homicides, and suicides (Jiaquan, 2010).

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Index^b, a standard measure of prenatal care adequacy) was 85.4%. Fewer women receive adequate prenatal care than the proportion of women who initiate prenatal care in the first trimester.⁹ Similar to prenatal care, the proportion of women receiving at least adequate prenatal care has not changed significantly over the past ten years (Figure 2.6).

Figure 2.6.



Data source: Maine Vital Records Data⁹

Between 2005-2009, women were less likely to receive early prenatal care if they were younger, less educated, or a race other than White (Table 2.8). The proportion of adolescent mothers who received prenatal care in the first trimester was 78.3%. In comparison, the proportion of women in older age groups who received early prenatal care was 84% and greater.⁹

Compared to White women, Black, American Indian, and Asian/PI women were less likely to receive prenatal care in the 1st trimester (Table 2.8).⁹

The proportion of women without a high school diploma who received prenatal care in the first trimester was 76.4%, compared to 85.5% of women with a high school diploma and 91.4% of women with post-secondary education (Table 2.8).⁹

^b, * Adequate prenatal care was measured by the Kotelchuck Index, a measure of prenatal care adequacy that captures initiation of prenatal care and the number of visits received.

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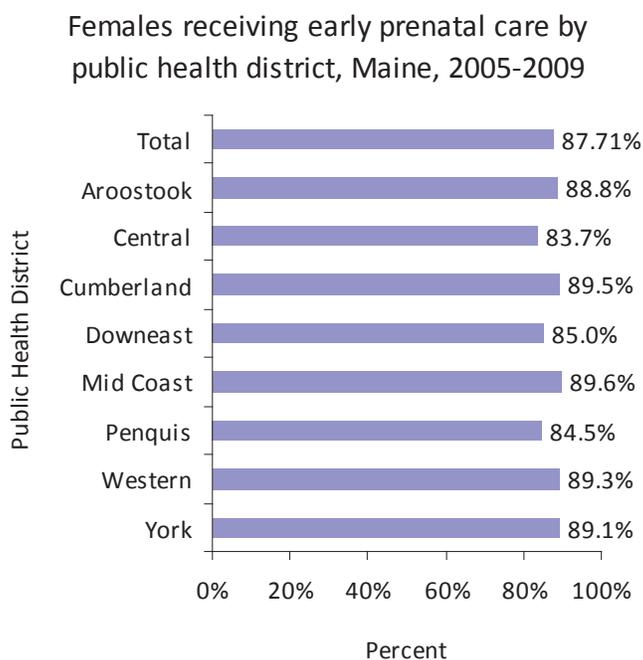
Table 2.8. Early prenatal care by age, race, ethnicity, and education, Maine, 2005-2009

Demographic Group	% Prenatal care in 1 st trimester	95% CI
Age		
< 20	78.3	(77.2, 79.4)
20 – 24	84.9	(84.4, 85.4)
25 – 34	89.9	(89.6, 90.2)
35 +	89.6	(89.1, 90.3)
Race		
White	88.1	(87.9, 88.3)
Black	77.3	(75.3, 79.3)
American Indian	81.3	(78.1, 84.5)
Asian	84.0	(81.9, 86.1)
Other	84.8	(76.4, 91.0)
Ethnicity		
Hispanic	81.9	(79.6, 84.3)
Non-Hispanic	87.8	(87.5, 88.0)
Education		
< High school	76.4	(75.4, 77.4)
High school graduate	85.5	(85.0, 85.9)
> High school	91.4	(91.1, 91.7)

Source: Maine Vital Records Data⁹

Based on data from 2005-2009, there was geographic variation in prenatal care initiation among women across Maine's public health districts (Figure 2.7). Women in the Downeast, Central, and Penquis districts were less likely to receive early prenatal care than women in other districts.⁹

Figure 2.7.



Source: Maine Vital Records Data⁹

Pregnancy-related Health Behaviors

Pre-pregnancy Body Mass Index

Pre-pregnancy weight determines the amount of weight women should gain during pregnancy. Women who are obese prior to pregnancy are at greater risk for delivering an infant with an excessive birth weight and are more likely to develop gestational diabetes.¹³

According to Maine 2009 PRAMS data, more than one in four (26.8%) new mothers were classified as obese before their most recent pregnancy, 13.5% were classified as overweight, and 9.6% of women were classified as underweight.^c Among the 29 PRAMS reporting areas/states in 2008, Maine had the third highest rates of pre-pregnancy obesity.¹⁴

The prevalence of pre-pregnancy obesity was highest among women aged 20-35 years. Education and marital status were not associated with pre-pregnancy weight, but women with household incomes >\$50,000 were less likely than women with household incomes <\$50,000 to be overweight or obese prior to pregnancy (Table 2.9).¹⁴

Table 2.9. Pre-pregnancy weight status among new mothers by demographics, Maine, 2009

Demographic Group	Underweight		Normal		Overweight		Obese	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Total	9.6	(7.72 - 11.82)	50.1	(46.60 - 53.59)	13.5	(11.26 - 19.12)	26.8	(23.83-30.06)
Age								
<20	11.5	(5.41 - 22.69)	53.4	(40.39 - 65.92)	16.1	(8.55 - 28.2)	19.1	(10.74 - 31.58)
20-24	12.5	(8.41 - 18.27)	51.5	(44.15 - 58.69)	7.9	(4.72 - 12.86)	28.1	(22.01 - 35.21)
25-34	8.2	(6.00 - 10.99)	47.7	(43.12 - 52.35)	16.2	(13.01 - 19.99)	27.9	(23.96 - 32.28)
35+	9.0	(4.88 - 16.01)	56.4	(46.68 - 65.64)	10.5	(5.88 - 18.11)	24.1	(0.00 - 33.42)
Education								
< High School	19.7	(11.35-31.85)	39.9	(28.12 - 52.88)	8.3	(3.36 - 18.97)	32.2	(21.30 - 45.5)
High School	9.1	(6.15 - 13.19)	46.1	(40.10 - 52.2)	17.2	(13.05 - 22.38)	27.6	(22.49 - 33.41)
> High School	8.4	(6.27 - 11.18)	54.4	(49.87 - 58.76)	11.8	(9.15 - 14.96)	25.5	(21.80 - 29.59)
Marital Status								
Married	7.8	(5.74 - 10.51)	54.6	(47.05 - 56.05)	13.5	(10.69 - 16.96)	27.1	(23.29 - 31.33)
Not Married	12.0	(8.86 - 16.07)	48.1	(42.60 - 53.61)	13.5	(10.08 - 17.81)	26.4	(21.81 - 31.63)
Income								
<\$15,000	12.0	(8.12 - 17.27)	44.7	(37.87 - 51.80)	13.3	(9.10 - 19.03)	30.0	(23.92 - 36.89)
\$15,000-24,999	14.8	(8.97 - 23.41)	39.0	(29.97 - 48.78)	15.9	(9.94 - 24.55)	30.3	(22.09 - 40.02)
\$25,000-49,999	6.9	(4.03 - 11.65)	45.8	(38.57 - 53.20)	18.5	(13.37 - 25.01)	28.8	(22.55 - 35.95)
\$50,000+	7.3	(4.81 - 10.82)	59.7	(53.75 - 65.38)	9.6	(6.63 - 13.70)	23.4	(18.76 - 28.89)

Source: Maine PRAMS¹⁴

^c Data from PRAMS allow the calculation of pre-pregnancy body mass index (BMI) based on self-reported height and weight. A BMI of less than 19.8 is classified as underweight, overweight if between 26.0 and 29.0, and obese if greater than 29.0.

Substance Use During Pregnancy

Tobacco

Tobacco use during preconception can cause reduced fertility and conception delay; tobacco use during pregnancy increases the risk for pregnancy complications, and exposure to secondhand smoke after delivery increases an infant's risk for respiratory tract, ear infections, and sudden infant death syndrome (SIDS).¹⁵

According to 2009 PRAMS data, 37.2% of new mothers in Maine reported smoking in the 3 months prior to getting pregnant, 21.2% reported smoking during the last 3 months of pregnancy, and 26.1% reported continuing, resuming, or beginning smoking after giving birth. Maine women under age 24 were more likely than older women to report having smoked during the last 3 months of their pregnancy (Table 2.10). Smoking during pregnancy was also related to lower educational attainment and income. Married women were less likely than unmarried women to smoke during pregnancy. Women who reported smoking during pregnancy were more likely than non-smokers to have a low birth weight (<2500g) baby (Table 2.10).¹⁴

Table 2.10. Proportion of females who smoked during the last three months of pregnancy by demographic characteristics, Maine, 2009.

Demographic Groups	Unweighted N	% who smoked	95% CI
Total	1078	21.17	(18.4 - 24.2)
Age			
<20	85	29.69	(19.4 - 42.5)
20-24	240	31.97	(25.5 - 39.2)
25-34	598	18.39	(15.0 - 22.3)
35+	155	7.49	(4.0 - 13.7)
Education			
< High School	87	51.17	(38.6 - 63.6)
High School	372	35.58	(30.1 - 41.5)
> High School	618	6.94	(5.1 - 9.5)
Marital Status			
Married	625	10.26	(7.8- 13.4)
Not Married	453	36.02	(30.9 - 41.4)
Income			
<\$15,000	280	44.20	(37.4 - 51.2)
\$15,000-24,999	135	33.56	(25.0 - 43.4)
\$25,000-49,999	232	12.59	(8.6 - 18.2)
\$50,000+	360	1.71	(0.7 - 4.2)
Infant's birth weight			
<2500 grams	388	38.56	(35.3 - 42.0)
2500 grams+	688	20.17	(17.3 - 23.4)

Source: Maine PRAMS¹⁴

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Alcohol

In 2008, 63.8% of Maine new mothers reported they had any alcohol in the three months before becoming pregnant; 6.6% reported alcohol use in the last three months of pregnancy.⁴

Oral Health and Pregnancy

Oral health care during pregnancy is often neglected by patients, and dentists and physicians may be cautious about treating dental problems during pregnancy. However, research suggests that periodontitis, a severe form of gum disease, is associated with infant low-birth weight and preterm birth.¹⁶ Pregnant women are at increased risk for some oral health problems, such as oral lesions, dental caries, oral tumors, loose teeth, and gingivitis.¹⁶ Treatment of dental caries during pregnancy or during the postpartum period can reduce the transmission of bacteria to an infant, decreasing the risk for childhood dental decay.¹⁶

The 2008 PRAMS survey found that only 39.4% of Maine new mothers had had their teeth cleaned during their most recent pregnancy and 26.8% had had them cleaned after that pregnancy (note: these two groups are not mutually exclusive). Less than half (43.9%) of the women said that a dental or other health care worker had talked with them during their pregnancy about how to care for their teeth and gums.¹⁷

Intimate Partner Violence During Pregnancy

Violence during pregnancy has consequences for both the mother and fetus including fetal death, infant low birth weight, STIs, maternal substance abuse, and maternal depression.¹⁸ Between 2004 and 2007, about 5% of new mothers in Maine reported experiencing intimate partner abuse (or domestic violence) around the time of pregnancy. New mothers who experienced domestic violence (DV) were more likely to be younger (less than 20 years old), have less than a high school education, and have household incomes less than \$10,000 per year. Seventy percent of new mothers in Maine who experienced intimate partner violence around the time of pregnancy were not trying to get pregnant at the time they conceived. Almost 1 in 3 (29.4%) new mothers in Maine who experienced DV around the time of pregnancy were diagnosed with post-partum depression, compared to 12.5% of women who were not DV victims.¹⁹

Pregnancy-related Medical Conditions

Gestational diabetes and pregnancy-associated hypertension were the two most common maternal medical risk factors recorded on birth certificates in 2009 (Table 2.11). Maine's rate of pre-pregnancy and gestational diabetes was slightly higher than the most recent national rate (5.3 vs. 4.5 per 1,000 live births).²⁰ According to 2007 PRAMS data, prevalence of gestational diabetes among new mothers in Maine did not vary by insurance status, race, income or education.¹⁹

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About 5% of mothers in Maine develop hypertension during their pregnancy (Table 2.11). The percentage of births with maternal pregnancy-associated hypertension was slightly higher in Maine in 2009 than in the U.S. in 2008 (5.1% vs. 3.9%).²⁰

Table 2.11. Maternal medical risks, live births, Maine resident data, 2009

Maternal medical risks	# of births w/maternal medical condition	% of births
Anemia	277	2.1
Acute or chronic lung disease	287	2.1
Diabetes, gestational	638	4.7
Diabetes, pre-existing	87	0.6
Hydramnios/oligohydramnios	296	2.2
Hypertension, pregnancy	688	5.1

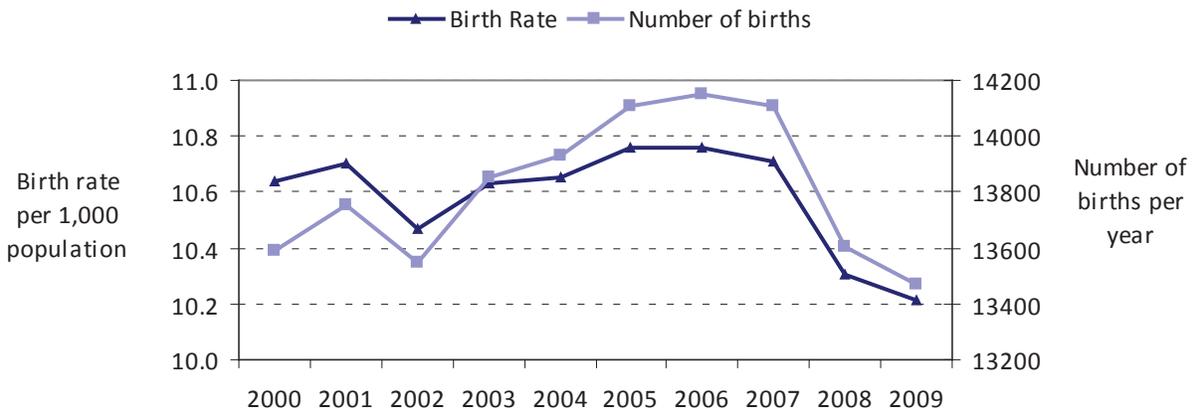
Source: Maine Vital Records Data⁹

Live Births

There were 13,466 live births to Maine residents in 2009. Maine's birth rate and the number of births have decreased in recent years and preliminary data from 2010 suggest that the rate is continuing to decline (Figure 2.8).⁹

Figure 2.8.

Birth rates and number of live births by year, Maine, 2000-2009

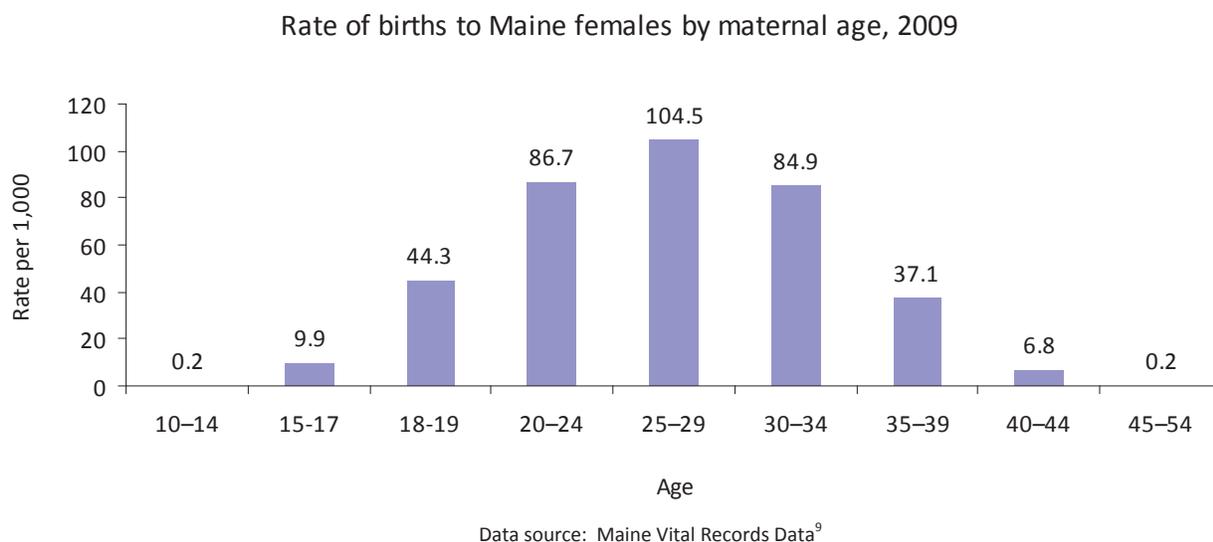


Source: Maine Vital Records Data⁹

Maternal Demographics

In 2009, maternal age at the time of first live birth in Maine ranged from age 13 to 48 years. Most births were among women aged 20-34 years (Figure 2.9).⁹ Maine's mean maternal age in 2009 was 25.6 years, which was similar to the national mean (25.1 years) in 2008.²⁰ Maine's average maternal age at first birth has not changed in the last decade (25.3 years in 1999).⁹

Figure 2.9.



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In 2009, the largest proportion of Maine births was among women in their twenties (55% of births were among women age 20-29; Table 2.12). Less than 1% of births were to Maine women outside the ages of 15-44 (0.2% of births were to women aged 45 years or more and 0.2% of births were to women younger than 15 years). This distribution is similar to that of the nation as a whole.^{9, 20}

Table 2.12. Maternal demographics, Maine (2009) and U.S. (2008)

Demographic Groups	Maine (2009) %	U.S. (2008) %
Age		
<20	8.2	10.4
20 - 29	55.0	53.0
30 – 39	34.4	34.0
40+	2.4	2.6
Education		
<High school	10.8	26.4
High school	33.8	50.3
>High school	55.0	23.3
Marital status - Married	62.9	61.5
Parity		
Without previous live birth	44.6	39.8
With 1 previous live birth	33.6	31.8
With 2+ previous live births	21.8	27.9
Plurality		
Singleton	96.8	96.6
Twins	3.1	3.2
Race		
Hispanic	1.6	24.4
Black	2.4	15.7

Data Source: Maine Vital Records Data,⁹ National Center for Health Statistics²⁰

More than half of all births in Maine in 2009 were to women with education beyond high school (Table 2.12). This is significantly higher than in the U.S.—only 23.3% of 2008 births in the U.S. were to women with education beyond high school education. In Maine, 1 in 10 births (10.8%) were to women with less than a high school education, compared to 1 in 4 (26.4%) U.S. births. The percent of births to married women in Maine was comparable to the U.S. (Table 2.12).^{9, 20}

Slightly less than half (44.6%) of births in Maine in 2009 were first time births; about one third (33.6%) were to women with one previous live birth and 21.8% were to women with two or more previous live births. These, as well as Maine’s rate of twin births, were comparable to U.S. women (Table 2.12).^{9, 20}

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Less than 2% of Maine births were among Hispanic women and 2.4% of births were among Black women (Table 2.12). The proportion of births among Black women in Maine has recently increased, from an average of 113 births per year in 1994-2003 to an average of 367 births per year in 2007-2009 (Table 2.13).⁹ This increase is partially attributable to immigration patterns to Maine over the last decade.²¹ Of the Black women giving birth in recent years, nearly 50% were of Somali origin and 8% were of Sudanese origin.⁹

Table 2.13. Maternal race and live births, Maine, 1994-2003, 2007-2009

Maternal race	1994 – 2003		2007 – 2009	
	Average annual births	%	Average annual births	%
White	13,349	96.9%	12946	94.3%
Black	113	0.8%	367	2.7%
Asian/Pacific Islander	177	1.3%	231	1.7%
American Indian/Native American	103	0.7%	124	0.9%
Other	4	<0.1%	22	0.2%
Unknown	31	0.2%	34	0.3%
Total average annual births	13,777		13725	

Source: Maine Vital Records Data⁹

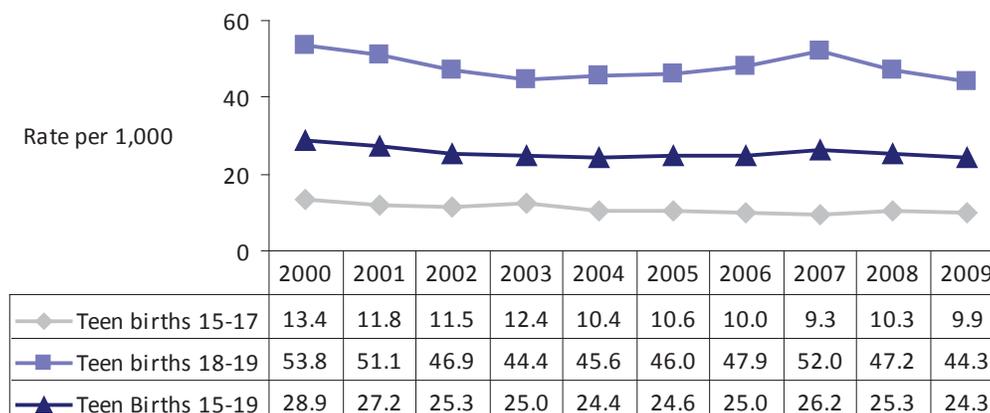
Adolescent Births

The 2009 birth rate among Maine teens aged 15-19 was 24.3 per 1,000 female population, a rate equivalent to approximately 1 birth for every 40 adolescent females. In 2009, there were 1,042 births to teen mothers between the ages of 15 and 19; accounting for 7.7% of Maine births.⁹

The birth rate among Maine adolescents declined consistently throughout the 1990s and the early part of this decade. In Maine, as well as the U.S, the birth rate increased slightly in 2006 and 2007, which was driven by the adolescent birth rate among those aged 18 and 19 years (Figure 2.10). However, since that time, it has resumed its decline (Figure 2.10).⁹

Figure 2.10.

Adolescent birth rates (per 1,000) by age group, Maine, 2000-2009



Source: Maine Vital Statistics Data⁹

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Maine's teen birth rate has been consistently lower than the U.S. rate. Based on the most recent data available, the 2008 birth rate for adolescents aged 15-19 in the U.S. was 41.5 per 1,000;²⁰ the Maine rate in 2008 was 25.3 per 1,000. Among non-Hispanic Whites, the U.S. adolescent birth rate for 15-19 year olds was 26.7 per 1,000. In 2008, only five states reported lower adolescent birth rates than Maine's.²⁰

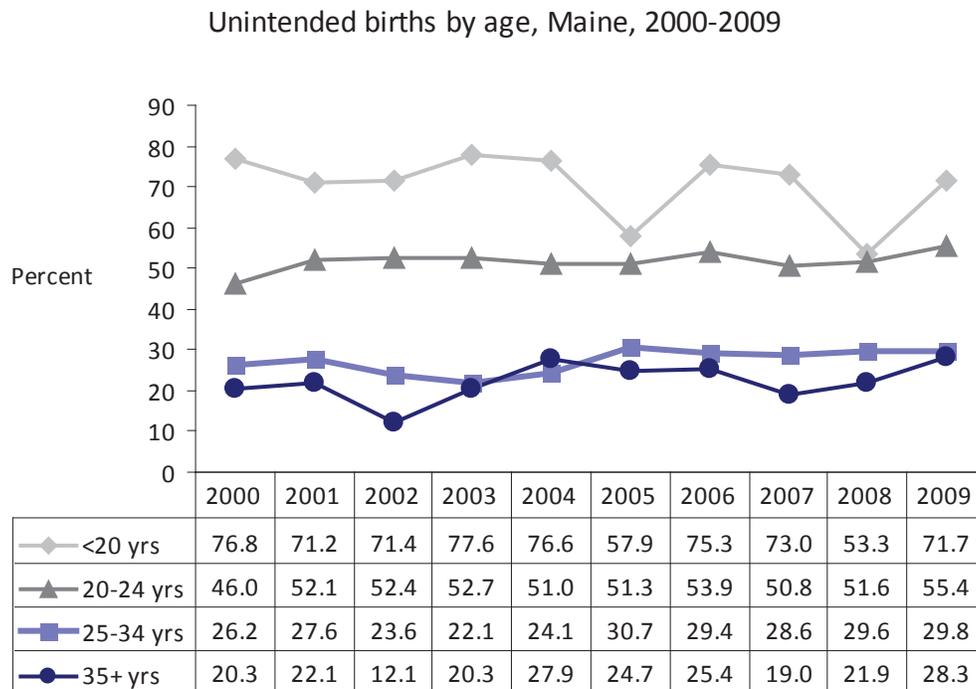
Unintended Births

In this report unintended births are defined as the percent of new mothers who reported on PRAMS that they had not wanted to become pregnant at the time they conceived (i.e., they wanted to become pregnant later or not at all). Based on data from 2009 PRAMS, 39% of new mothers in Maine reported that the birth of their most recent child was unintended.¹⁴ This is likely an underestimate of unintended pregnancy because many unwanted pregnancies do not result in a live birth.

The percent of new mothers reporting an unintended birth has increased in recent years in Maine from 33.5% in 2002 to 39.0% in 2009, but this change is not statistically significant.¹⁴

In 2009, the highest percent of unintended births occurred among youth under the age of 20 years (71.7%); 55.4% of new mothers 20-24 years old, 29.8% of new mothers aged 25-34 years and 28.3% of mothers age 35 and older reported that their birth was unintended (Figure 2.11).¹⁴

Figure 2.11.

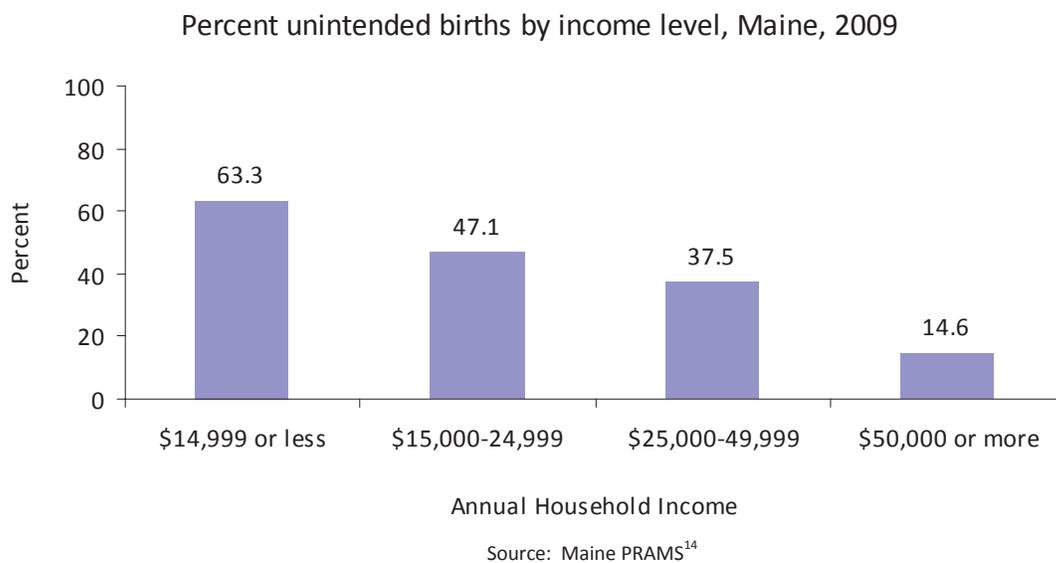


Source: Maine PRAMS⁴

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Based on 2009 PRAMS data, having an unintended birth was related to indicators of socioeconomic status, including income, educational attainment, and health insurance. Approximately 63% of women with household incomes of \$14,999 or less reported an unintended birth compared to 47% of women earning \$15,000-\$24,999, 37% of women with household incomes of \$25,000-\$49,999, and 14.6% of those with household incomes of \$50,000 or more (Figure 2.12).¹⁴ We see the same pattern with and educational attainment. In 2009, 62.3% of women with less than a high school education reported an unintended birth compared to 28.3% of women with more than a high school education. Unmarried women were almost three times more likely to report that their most recent birth was unintended compared to married women (62.9% vs. 21.7%).¹⁴

Figure 2.12.



Based on analyses conducted using data from Maine's 2004-2007 PRAMS surveys, women who reported that their birth was unintended were less likely to have health insurance before their pregnancy than women who reported that their birth was intended (46.3% vs. 71.8%). Among women with health insurance, a greater proportion of women with MaineCare had an unintended birth compared to privately insured women (39.2% vs. 20.7%).²²

Unintended births are related to many factors that could negatively impact the health of women and infants. Between 2004 and 2007, women in Maine who had unintended births were less likely than other women to receive prenatal care in the first trimester (79% vs. 90%) and were less likely to receive at least adequate prenatal care as measured by the Kotelchuck Index (84% vs. 90%). Women who had an unintended birth were more likely to smoke during the last 3 months of their pregnancy (27% vs. 13%) and were 2 times more likely than other women to report experiencing three or more stressful life events prior to the birth of their child (48% vs. 23%). Women who reported an unintended birth were also more likely than other women to report experiencing domestic violence from a current or ex-partner during the 12 months prior to their pregnancy (6.8% vs. 2.6%) and to report abuse during their pregnancy (3.6% vs. 1.2%).

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Women who had an unintended birth were also more likely to report a diagnosis of depression after the birth of their child compared to women whose child was intended (19% vs. 11%). Unintended births were not more likely to be premature or to be born at a low birth weight. However, women who had not intended to get pregnant were less likely to report ever having breastfed their baby compared to women with intended births (71% vs. 84%).²²

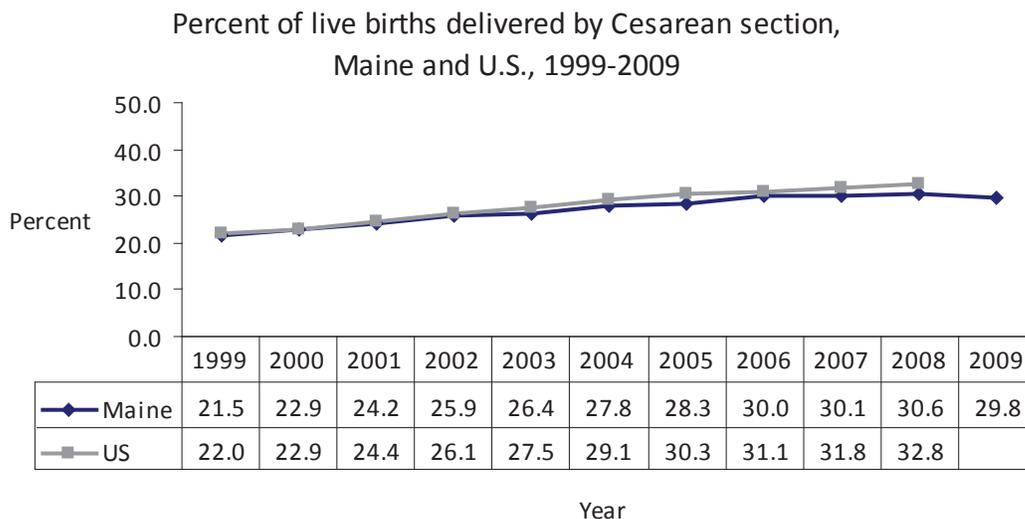
Childbirth and the Postpartum Period

Cesarean Sections

Cesarean sections (C-sections) are becoming more common nationwide and in Maine. However, due to the risks involved in C-section deliveries, such as surgical complications and maternal re-hospitalization, the benefits of cesarean delivery are under debate.²³

Nearly seven in ten Maine births were delivered vaginally and approximately 30% by C-section⁹ Maine's 2009 C-section rate was similar to the U.S. 2008 C-section rate of 32.3.²⁰ However, rates of Cesarean delivery have increased by more than 40% over the past decade in Maine and the U.S. (Figure 2.13).

Figure 2.13.



Sources: Maine Vital Records Data⁹; Martin, 2010²⁰

Breastfeeding

Breastfeeding not only protects infants from illness and reduces an infant's risk of developing health problems such as ear infections, asthma, obesity and diabetes, it may also benefit mothers.²⁴ Breastfeeding has been linked to decreased risk of developing type 2 diabetes, breast cancer, ovarian cancer, and postpartum depression.²⁴

Organizations such as the American Academy of Pediatrics, the American Academy of Family Physicians and the American College of Obstetricians and Gynecologists recommend that infants are breastfed for at least 12 months and exclusively breastfeed for the first six months of life.²⁵

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About three out of every four (75.2%) children born in Maine in 2007 were ever breastfed. About half (48.2%) of children born in Maine in 2007 were breastfed for at least 6 months and 18.2% were exclusively breastfed for 6 months. These percentages are higher than the national average, but not statistically higher. Maine ranks 19th in the U.S. on the percent of infants who are breastfed for at least six months.²⁶

Initiation of breastfeeding is positively associated with maternal age, educational attainment, income and marital status (Table 2.14). Mothers insured under MaineCare are less likely to have breastfed (71%) compared to women who received some form of insurance other than MaineCare (87%). Infant birth weight was not related to whether a new mother initiated breastfeeding (Table 2.14). There were no statistically significant differences among Maine counties. Breastfeeding prevalence ranged from a low of 71% in Aroostook County to a high of 84% in Cumberland (data not shown).¹⁹

Table 2.14. Initiation of breastfeeding by demographic characteristic among new mothers, Maine, 2008

Demographic Groups	%	95% CI
Total	78.3	(75.3, 81.1)
Age		
<20	54.3	(42.2, 65.8)
20-24	76.0	(69.5, 81.4)
25-34	82.9	(79.0, 86.2)
35+	81.9	(74.0, 87.7)
Education		
< High School	47.8	(36.1, 59.7)
High School	73.0	(67.4, 78.0)
> High School	87.9	(84.8, 90.4)
Marital Status		
Married	85.7	(82.3, 88.5)
Other	68.2	(62.9, 73.1)
Income		
<\$15,000	60.3	(52.9, 67.3)
\$15,000-24,999	78.1	(69.9, 84.5)
\$25,000-49,999	89.6	(84.3, 93.3)
\$50,000+	85.9	(81.5, 89.4)
Enrolled in MaineCare/Medicaid		
No	86.5	(82.8, 89.5)
Yes	71.3	(66.7, 75.4)
Infant's birth weight		
<2500 grams	76.9	(73.5, 80.0)
2500+	78.4	(75.2, 81.3)

Source: Maine PRAMS⁴

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Among the reasons cited by Maine mothers for not initiating breastfeeding, almost half (46.2%) of new mothers indicated that they “did not like breastfeeding.” More than one-quarter (27.9%) reported that they did not breastfeed their baby because they had other children to take care of and almost one in five (17.4%) new mothers indicated that going back to work or school was a reason for not breastfeeding (Table 2.15).¹⁹

Table 2.15. Self-reported reasons for not breastfeeding, PRAMS, 2004-2008

Reasons for not breastfeeding among females who did not initiate breastfeeding	%	95% CI
I didn't like breastfeeding	46.2	42.9 - 49.5
I had other children to take care of	27.9	25.0 - 31.0
I went back to work or school	17.4	15.1 - 20.0
I was sick or on medication	13.4	11.3 - 15.8
I wanted my body back to myself	13.0	10.9 - 15.5
I had too many household duties	12.8	10.8 - 15.3
I didn't want to be tied down	9.8	8.0 - 11.9
I was embarrassed to breastfeed	8.0	6.4 - 10.0
My baby was sick and could not breastfeed	2.8	2.0 - 3.9

Source: Maine PRAMS¹⁹

Postpartum Depression

Pregnancy can be both a time of risk for mental illness (postpartum depression), but also a time of opportunity. Because women ideally have more frequent contact with health care providers during pregnancy and their reproductive years, they may be more likely to be diagnosed with and receive treatment for previously unrecognized mental health disorders. Untreated mood disorders during pregnancy have been shown to increase risks for pre-term labor, low-birth-weight babies, postpartum depression, and breastfeeding discontinuation, and to impair new mothers’ ability to bond with their children. Based on a recent review of the literature, 10-15% of women suffer from mood or anxiety symptoms during pregnancy.²⁷

Of 17 states studied in 2004-2005 as part of the PRAMS data set, Maine women reported lowest prevalence of postpartum depressive symptoms at 11.7%.²⁸ Based on 2004-2008 Maine PRAMS data, 1 in every 10 (11.3%) new mothers in Maine reported symptoms of depression after the birth of their most recent child. 8.6% of new mothers reported feeling down, depressed, or hopeless “often” or “always” after the birth of their new baby; 7.4% reported that they often or always had little interest or pleasure in doing things after the birth of their baby.¹⁹

Postpartum depression was more common among younger mothers, mothers with lower levels of educational attainment and income, unmarried mothers and those enrolled in MaineCare (Table 2.16). Mothers who reported that their pregnancy was unintended were almost twice as likely as mothers with intended pregnancy to report symptoms of depression after the birth of their child. Postpartum depressive symptoms were also more common among women who reported never breastfeeding, smoking after the birth of their child, and those who experienced intimate partner violence during pregnancy (Table 2.16).¹⁹

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Table 2.16. Prevalence of postpartum depression symptoms among new mothers by demographic and health risk factors, Maine, 2004-2008

Demographic Groups	% w/postpartum depression symptoms	95% CI
Total	11.5	(10.6, 12.5)
Age		
<20	20.6	(16.2, 25.8)
20-29	13.0	(11.7, 14.5)
30+	7.4	(6.2, 8.7)
Education		
< High School	23.9	(19.7, 28.7)
High School	14.6	(12.8, 16.5)
> High School	7.2	(6.3, 8.3)
Marital Status		
Married	8.1	(7.1, 9.1)
Other	17.2	(15.3, 19.2)
Income		
<\$10,000	23.4	(20.1, 27.0)
\$10,000-14,999	15.0	(11.7, 19.2)
\$15,000-19,999	13.9	(10.1, 18.8)
\$20,000-24,999	14.5	(11.2, 18.7)
\$25,000-34,999	12.6	(9.9-15.9)
\$35,000-49,999	8.2	(6.2, 10.7)
\$50,000+	5.2	(4.2, 6.4)
Enrolled in MaineCare/Medicaid		
No	6.1	(5.2, 7.2)
Yes	17.2	(15.5, 18.9)
Intended pregnancy		
No	15.5	(13.8, 17.5)
Yes	9.1	(8.0, 10.2)
Smoking after pregnancy		
No	8.8	(7.9, 9.8)
Yes	20.0	(17.6, 22.7)
Ever breastfed		
No	15.8	(13.5, 18.4)
Yes	9.9	(8.9, 11.0)
Partner abuse during pregnancy		
No	11.2	(10.3, 12.2)
Yes	32.7	(22.1, 45.5)

Source: Maine PRAMS¹⁹

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