

# Maternal and Child Health

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## Context for Health

The well-being of a community's mothers, infants and children is not only a sign of their current health status but also a predictor of the health of the community's future generations.<sup>1</sup> Thus, maternal and child health (MCH) represents an important sector of the public health system in Pennsylvania.

Indicators such as preterm birth, low birth weight (LBW) and infant mortality often serve as benchmarks for the health of a population, as well as for the health care access and quality.<sup>2</sup> Efforts to promote early initiation of prenatal care and advances in the field of biomedicine have led the U.S. infant mortality rate to decline from 12.6 deaths per 1,000 live births in 1980 to 5.9 per 1,000 live births in 2016<sup>3</sup> and Pennsylvania's infant mortality rate to drop from 13.2 deaths per 1,000 live births in 1980 to 6.1 deaths per 1,000 live births in 2016.<sup>4</sup> Pa. ranks 24<sup>th</sup> (five-way tie) with 6.1 per 1,000 compared to the U.S. at 5.9 per 1,000 in 2016.<sup>5</sup> Still, the U.S. infant mortality rate exceeds those of most other developed countries.<sup>6</sup>

In fact, in recent years, U.S. infant mortality rates have been highest among the 30 developed countries that comprise the Organization for Economic Cooperation and Development (OECD).<sup>7</sup> Disproportionately high rates of preterm births and low birth weight infants, relative to the other OECD nations, may affect infant mortality trends.<sup>8</sup>

Infant mortality in Pennsylvania reported by race shows the rate for black infant deaths is more than three times that of white infants. The infant death rates by race and ethnicity in 2016 were: white 4.6, black 14.6, Asian/Pacific Islander 2.3, multi-race 8.8 and Hispanic 7.4 per 1,000.<sup>9</sup>

Nationally, preterm births and LBW prevalence have been on the rise over the last 30 years, leading to a growing consensus that improving coverage, content and use of prenatal care is a necessary step in reducing the risk of adverse pregnancy outcomes. However, at the same time, many experts agree that focusing solely on the prenatal period is inadequate and attention must be paid to improving "preconception health," the health of women of reproductive age before they become pregnant.<sup>7,10,11</sup>

The U.S. Preconception Health and Health Care Initiative (PCHHC) has focused on preconception health, and health care has identified diabetes, hypertension, obesity and sexually transmitted infections as among the medical conditions that can cause adverse pregnancy outcomes among women of reproductive age.<sup>12</sup> In addition, a variety of individual, community and system factors intersect and shape a woman's decisions and behaviors before, during and after pregnancy that can also increase the risk of adverse pregnancy outcomes. Outreach and education can help reduce these risks, as can preconception care that includes interventions aimed to identify and modify biomedical, behavioral and social risks to a woman's health and future pregnancies.<sup>13</sup>

Topics in this section include:

- Risk factors (i.e., unintended pregnancy, adolescent pregnancy and childbearing, postpartum depression);
- Protective factors (i.e., contraception, breastfeeding, newborn and childhood screening);
- Adverse birth outcomes (i.e., preterm birth, low birth weight, infant mortality, maternal morbidity, maternal mortality);
- Children with special health care needs; and
- Emotional health of children.

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## Endnotes

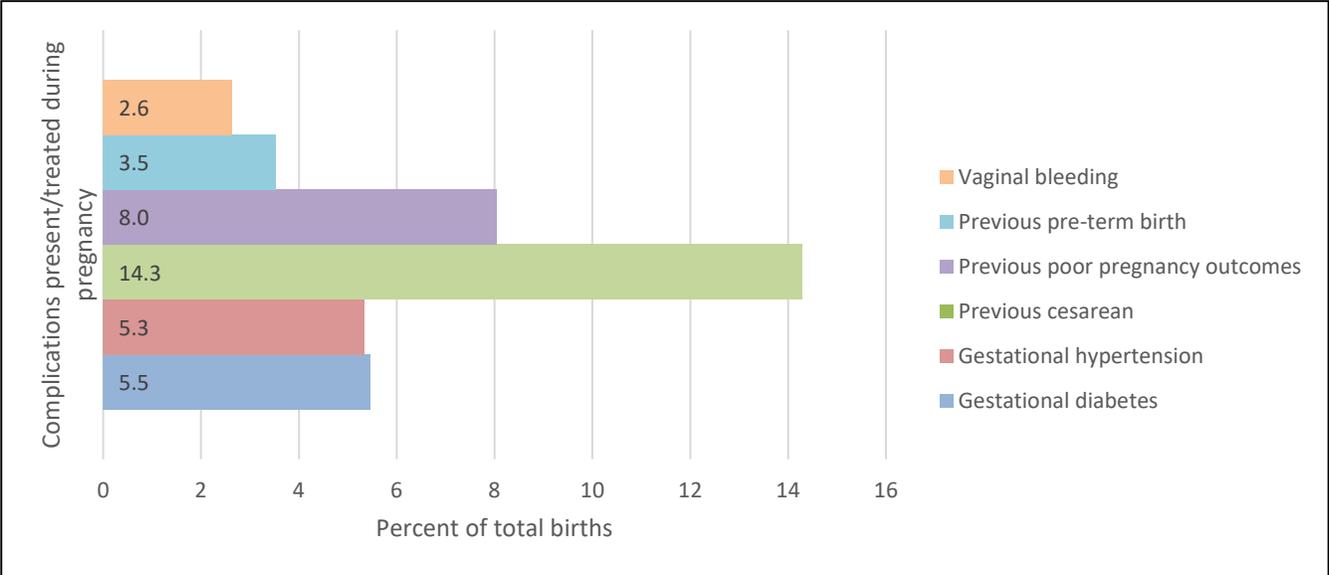
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# Maternal Morbidity and Mortality

## Morbidity

Maternal morbidity can include unexpected outcomes of labor and delivery that result in significant consequences affecting a woman’s health. The following table shows leading complications in birth that can result in increased medical costs and longer hospitalization stays. In severe cases, these complications can result in maternal deaths.

**Figure 7.1 Birth Morbidity by Pregnancy Risks, Pennsylvania, 2013-2017<sup>1</sup>**

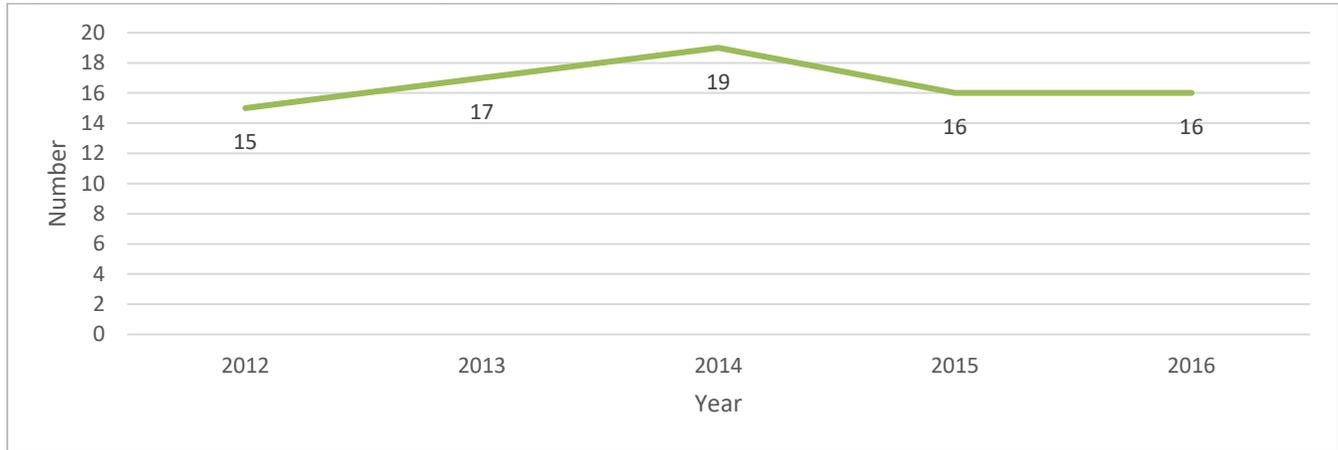


## Mortality

Act 24 of 2018 authorized the creation of a multi-disciplinary Maternal Mortality Review Committee (MMRC) led by the Department of Health. The MMRC staff collects records and information about any death of a woman during pregnancy or within one year after the pregnancy has ended. The MMRC reviews these deaths to determine if the death was related to the pregnancy and if it could have been prevented. Recommendations on how to prevent these maternal deaths are developed by the MMRC and then disseminated.<sup>2</sup>

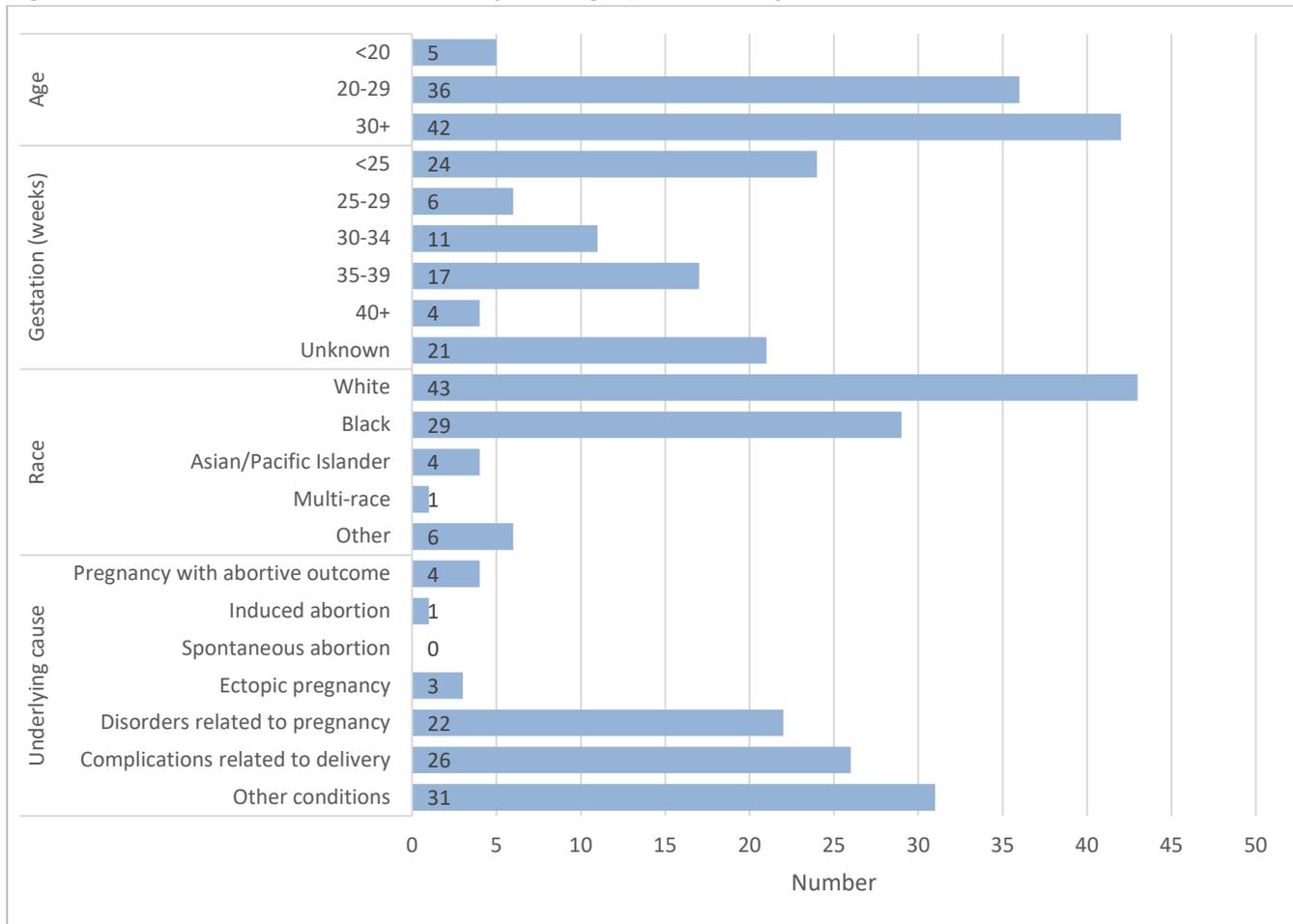
In the figures below are the number of maternal deaths from 2012 through 2016 and by demographics. For these statistics maternal deaths are women who died while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.<sup>3</sup>

**Figure 7.2 Total Maternal Deaths by Year, Pennsylvania, 2012 to 2016<sup>4</sup>**



Note: Maternal deaths are defined as death of a woman while pregnant or within 42 days of termination of pregnancy.

**Figure 7.3 Number of Maternal Deaths by Demographics, Pennsylvania, 2012-2016<sup>5</sup>**



Note: Maternal deaths are defined as death of a woman while pregnant or within 42 days of termination of pregnancy.

## Resources

Pennsylvania Department of Health, Maternal and Child Health Services

Pennsylvania Pregnancy Risk Assessment Monitoring System (Pa. PRAMS). Available at <http://www.health.state.pa.us/paprams>

Centers for Disease Control and Prevention (CDC) PRAMS web site—<http://www.cdc.gov/PRAMS>

Centers for Disease Control and Prevention (CDC) Depression Among Women — <https://www.cdc.gov/reproductivehealth/depression/index.htm>

Centers for Disease Control and Prevention (CDC) Section Navigation PRAMS Data Portal — <https://www.cdc.gov/prams/prams-data/work-directly-PRAMS-data.html>

National Women’s Health Information Center, U.S. Department of Health and Human Services, Office of Women’s Health. Postpartum depression — <https://www.womenshealth.gov/mental-health/mental-health-conditions/postpartum-depression>

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## Endnotes

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<sup>3</sup> World Health Organization. (n.d.). Health statistics and information systems. Retrieved from <https://www.who.int/healthinfo/statistics/indmaternalmortality/en/>

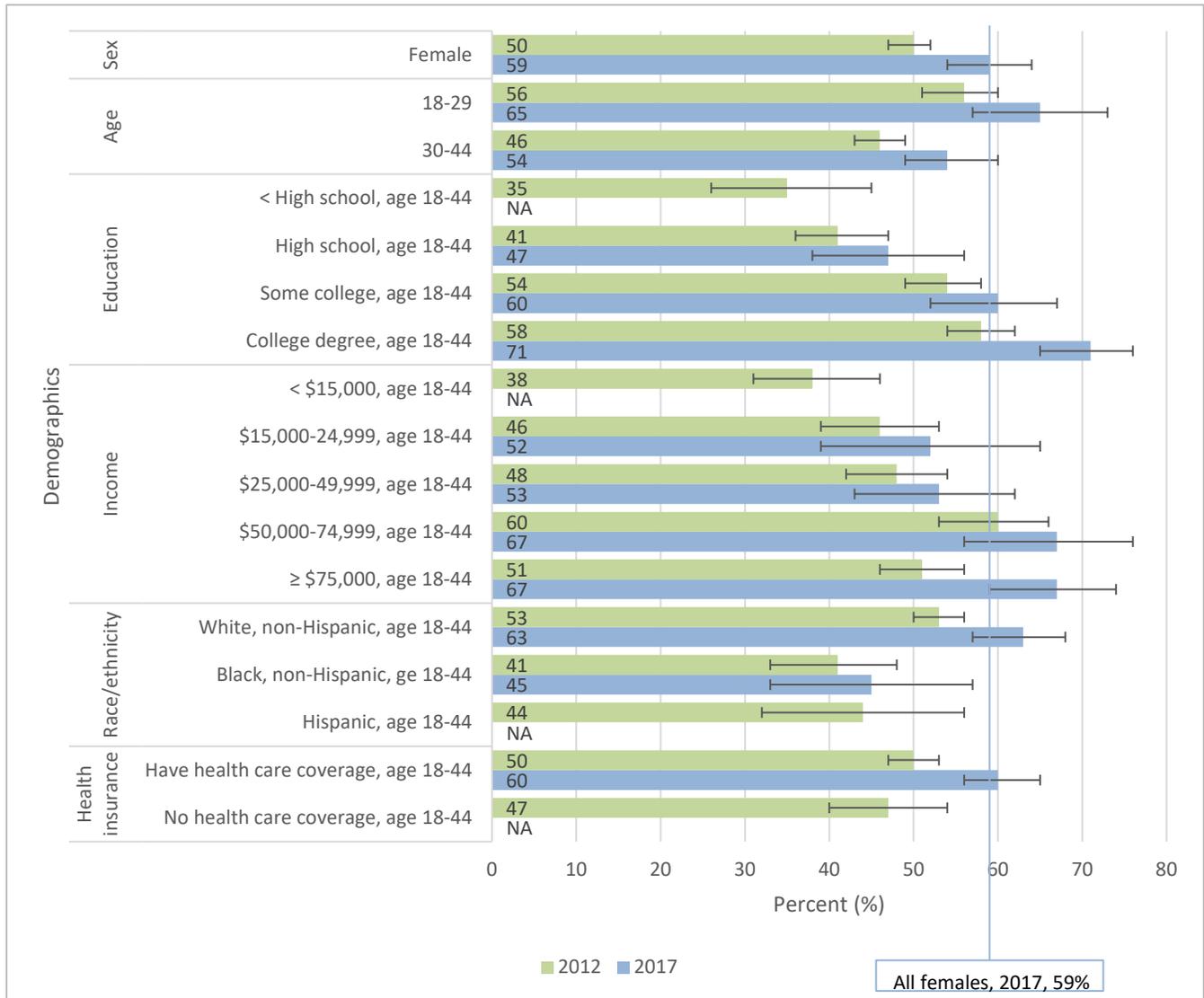
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<sup>5</sup> Pennsylvania Department of Health. (2012, 2013, 2014, 2015 & 2016). Report of Maternal Deaths: Pennsylvania occurrences. Division of Health Informatics. Retrieved from [https://www.health.pa.gov/topics/HealthStatistics/VitalStatistics/Documents/Maternal\\_Death\\_Report\\_2016.pdf](https://www.health.pa.gov/topics/HealthStatistics/VitalStatistics/Documents/Maternal_Death_Report_2016.pdf)

# Contraceptive Use

Data shown in Figure 7.4 show changes in patterns of contraceptive use by Pennsylvania residents from 2012 to 2017.

**Figure 7.4 Adult Women Age 18-44 Reporting She or Her Husband/Partner Did Something the Last Time They Had Sex to Keep Her From Getting Pregnant, Pennsylvania, 2012 and 2017<sup>1</sup>**



## Age

National and Region III (which includes Pennsylvania) data for Title X funded family planning indicates a slight drop in the number of clients from 2016 to 2017. The number of clients nationally of Title X funded sites was 4,007,552 in 2016 and 4,004,246 in 2017, a drop of 0.1 percent; and, in Region III, the number was 477,585 in 2016 and 464,216 in 2017, a drop of 2.8 percent. By age group in 2017, women ages 18-29 comprised 52.9 percent of Region III Title X clients and those ages 30-44, 31.1 percent.<sup>2</sup>

The trends of sexual intercourse among the state’s youth has been decreasing in recent years.<sup>3</sup> Table 7.1 shows this for students in grades nine to 12 from 2009 to 2015 to 2017. The falling rates were most notable in the black and Hispanic student populations.

**Table 7.1 Ever had Sexual Intercourse, Grades 9-12, by Race and Year, U.S. and Pennsylvania, Percent (%)<sup>3</sup>**

Year	All races/ethnicities, U.S.	All races/ethnicities, Pa.	White, Pa.	Black, Pa.	Hispanic/Latino, Pa.
2017	39.5 (36.8–42.4)	37.6 (34.6–40.8)	35.2 (32.1–38.4)	51.5 (43.6–59.4)	42.2 (37.0–47.6)
2015	41.2 (37.5–45.0)	36.3 (32.0–40.8)	32.2 (27.5–37.2)	57.1 (50.7–63.3)	43.7 (35.7–52.0)
2009	46.0 (42.9–49.2)	48.3 (42.1–54.6)	43.3 (37.7–49.1)	69.6 (63.3–75.3)	58.2 (48.5–67.2)

**Table 7.2 Title X Family Planning Users by Sex, Income Level and Insurance Status, Pennsylvania, 2017<sup>4</sup>**

Number of family planning users by sex	Female	Male	Total		
	175,295 (87%)	25,267 (13%)	200,562		
Number of family planning users by user income level	Under 101%	101% to 250%	Over 250%	UK/NR	Total
	112,013 (56%)	56,212 (28%)	25,889 (13%)	6,448 (3%)	200,562
Number of family planning users by insurance status	Public	Private	Uninsured	UK/NR	Total
	91,233 (45%)	58,500 (29%)	45,876 (23%)	4,953 (2%)	200,562

Table 7.2 indicates that, in 2017, 45 percent of Title X family planning clients had public insurance, 29 percent were privately insured, and 23 percent were uninsured.

## Increasing Use of Long-Acting Reversible Contraceptives (LARCs)

Among adolescents, short-acting contraceptive methods such as condoms, oral contraceptives, the contraceptive patch, the vaginal ring and hormonal injections have lower continuation rates and higher pregnancy rates than methods classified as long-acting reversible contraceptives (LARCs), including intrauterine devices (IUDs) and implants.<sup>5</sup>

In recent years, LARCs have gained greater acceptance for use with adolescents and young adults because they have the potential to reduce unplanned pregnancy rates due to their effectiveness, ease of use, relative safety, reversibility and high rates of compliance.<sup>6</sup>

In its revised 2018 statement on the subject, the American College of Obstetricians and Gynecologists (ACOG) recommended that adolescents who are sexually active and at high risk of unintended pregnancy should be encouraged to consider LARCs alongside all other reversible methods of contraception, stating that “patient choice should be the principal factor driving the use of one method of contraception over another, and respect for the adolescent’s right to choose or decline any method of reversible contraception is critical.” Although LARCs have high efficacy and satisfaction rates, relatively few adolescents use them for contraception.<sup>7</sup>

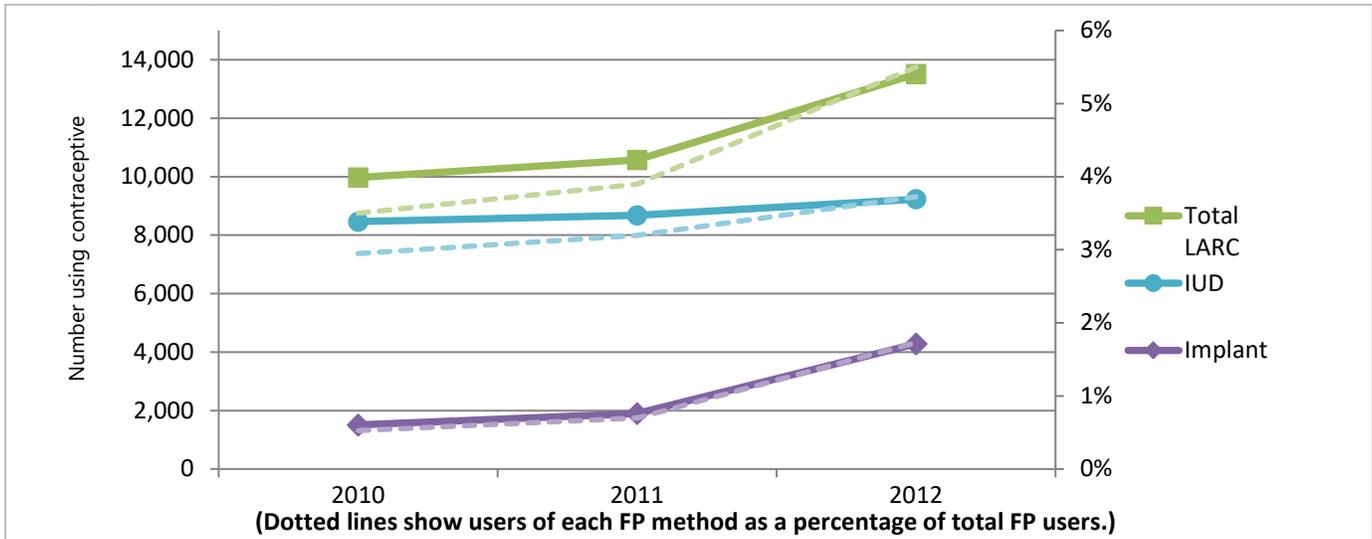
In Pennsylvania, use of LARCs has increased among female clients at publicly funded family planning clinics, as shown in Table 7.3. The overall use of LARCs increased by 35.5 percent, from 9,973 in 2010 to 13,513 in 2012, even as the overall number of female family planning clients declined by 13.7 percent.<sup>8</sup>

**Table 7.3 Use of LARCs by Female Family Planning Clients, Pennsylvania, 2010 to 2012<sup>8</sup>**

	LARC Users			Total Family Planning Users	LARC Users as Percent (%) of Total Family Planning Users	Percent (%) Change in Total LARC Users from Previous Year
	IUD Users	Implant Users	IUD + Implant Users			
2010	8,464	1,509	9,973	287,126	3.5%	--
2011	8,674	1,896	10,570	271,433	3.9%	6%
2012	9,229	4,284	13,513	247,784	5.5%	28%
Percent (%) change 2010 to 2012	9%	184%	35%	-14%	57%	

Between 2010 and 2012, use of LARCs increased; hormonal implant use increased by 184 percent, and IUDs increased by a modest 9 percent. Although the IUD increase is small, this increase is still significant, given the overall decline in the number of family planning clients. Figure 7.5 provides some detail on these trends.

**Figure 7.5 Female Family Planning Clients, the Count and Percent of Clients Using Contraceptives, by Type of Contraceptive, Pennsylvania, 2010 to 2012<sup>9</sup>**



Among teens and young adults, the use of LARCs increased 38 percent between 2010 and 2012, from 4,075 to 5,625. Even as the number of teens and young adults receiving care decreased during this time by 23.4 percent, the number choosing LARCs over short-term contraceptive options increased.

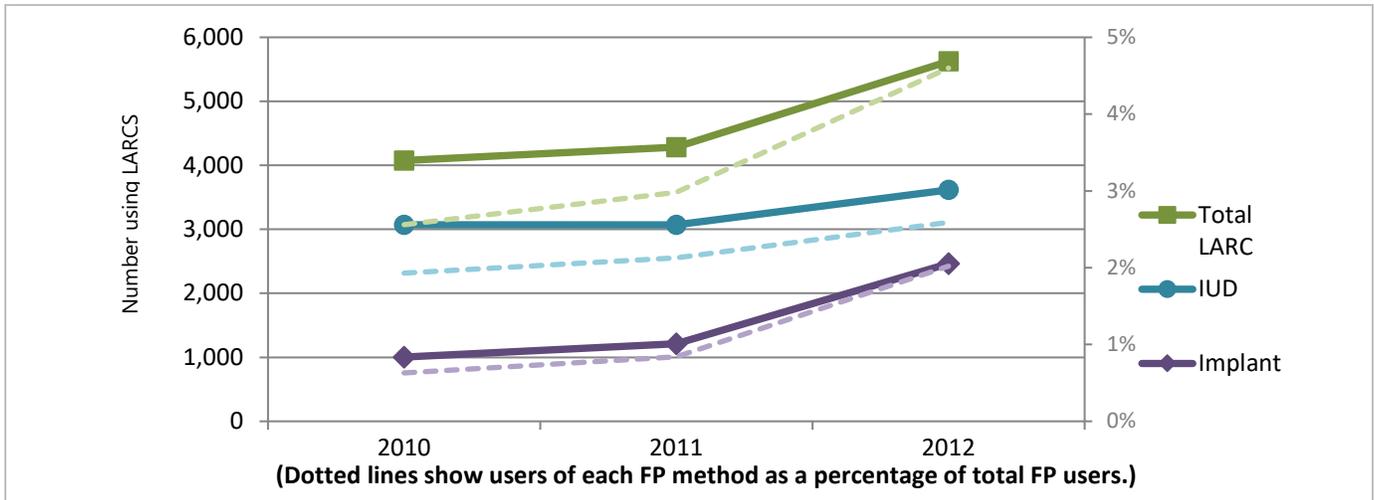
**Table 7.4 Use of LARCs by Female Family Planning Clients under Age 25, Pennsylvania, 2010 to 2012<sup>10</sup>**

	IUD Users		Implant Users		IUD + Implant Users		Total Female Family Planning Users Under 25	Percent (%) Change in Total LARC Users from Previous Year
	Number	Percent (%) Total FP Users	Number	Percent (%) Total FP Users	Number	Percent (%) Total FP Users		
2010	3,071	1.93%	1,004	0.63%	4,075	2.56%	159,406	--
2011	3,070	2.13%	1,214	0.84%	4,284	2.98%	143,815	5%
2012	3,616	2.59%	2,464	2.02%	5,625	4.60%	122,165	31%
Percent (%) change 2010 to 2012	18%	34%	145%	221%	38%	80%	-23.4%	

As in the total population of female family planning patients, greater increases are noted in the proportion of young women using implants than IUDs. However, increases in IUD use among young women under 25 are

substantially higher than among all females receiving care at family planning clinics, at 18 percent and 9 percent, respectively. Figure 7.6 illustrates this trend.

**Figure 7.6 Trends in Use of LARCS by Female Family Planning Clients under Age 25, Pennsylvania, 2010 to 2012**<sup>11</sup>



This finding is consistent with national data. According to data from the National Survey of Family Growth, IUD use among women ages 20 to 24 has increased from 1.8 percent of all family planning clients in 2002 to 5.9 percent of all in 2008.<sup>12</sup>

Use of hormonal injections also increased between 2010 and 2012 among females using family planning services in Pennsylvania. This method is considered a moderately effective form of contraception, with a failure rate of about 6 percent, compared to 9 percent for oral contraceptives and 18 percent for male condoms.<sup>13</sup>

The number of women choosing hormonal injections as their contraceptive method increased by 11 percent between 2010 and 2012. As a proportion of female family planning clients, those using hormonal injections increased 28 percent, from 10.5 percent in 2010 to 13.4 in 2012.

**Table 7.5 Use of Hormonal Injections and LARCS by Female Family Planning Clients, Pennsylvania, 2010 to 2012**

	Hormonal Injection Users		LARC + Injection Users		Total Female Family Planning Users	Percent (%) Change in LARC + Injection Users from Previous Year
	Number	Percent (%) Total FP Users	Number	Percent (%) Total FP Users		
2010	30,058	10.47%	40,031	13.90%	287,126	--
2011	30,710	11.31%	41,280	15.20%	271,433	3%
2012	33,276	13.43%	46,789	18.90%	247,784	13%
Percent (%) change 2010 to 2012	11%	28%	17%	36%	-14%	

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## Endnotes

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- <sup>3</sup> Centers for Disease Control and Prevention. (2009, 2015, 2017). YRBSS Fact Sheets and Comparison of State/District and National Results. Retrieved from <https://www.cdc.gov/healthyyouth/data/yrbs/results.htm>
- <sup>4</sup> United States Department of Health and Human Services. (Aug 2018). Family Planning Annual Report: 2017 National Summary. Office of Population Affairs. Retrieved from <https://www.hhs.gov/opa/sites/default/files/title-x-fpar-2017-national-summary.pdf>
- <sup>5</sup> American College of Obstetricians and Gynecologists. (May 2018). Adolescents and Long-Acting Reversible Contraception: Implants and Intrauterine Devices: Committee Opinion No. 735. *Obstetrics and Gynecology*, 131. Committee on Adolescent Health Care. Retrieved from: <https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Adolescent-Health-Care/Adolescents-and-Long-Acting-Reversible-Contraception>
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## Unintended Pregnancy

The term “unintended pregnancy” typically includes both unwanted pregnancies (i.e., those that occur to a woman who does not want a child, or more children, at this or any future point in her life) and mistimed pregnancies (i.e., those that occur to a woman who does want a child, or more children, but may at some point in the future).<sup>8</sup> This definition has some limitations. Notably, it relies on the assumption that pregnancy is a conscious decision, when it sometimes may not be.<sup>1</sup> In addition, a lack of desire for pregnancy is not necessarily indicative of a woman’s reaction to an unintended pregnancy or her feelings at the time of her baby’s birth.<sup>2</sup> Still, if a pregnancy is unplanned and unintended, the woman may not be in optimal health for childbearing.

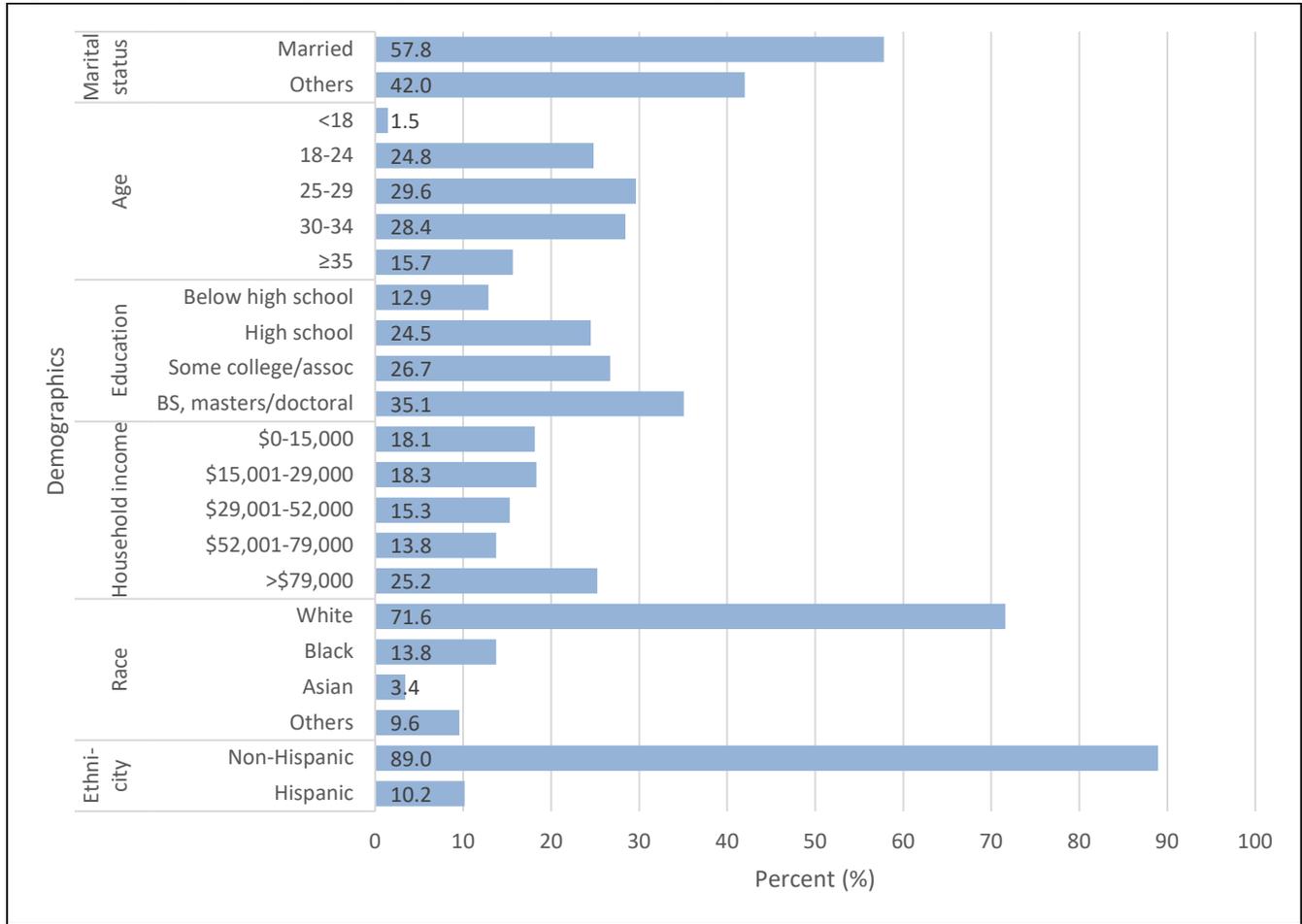
About half of all U.S. pregnancies are unintended.<sup>3</sup> According to estimates based on the National Survey of Family Growth (NSFG) from 1982 and 2006-2010, the proportion of births that are unintended has remained relatively stable over time.<sup>4</sup>

Unintended pregnancy has been associated with late initiation of prenatal care; inadequate use of prenatal care; high-risk behaviors (e.g., alcohol use, tobacco use) during pregnancy;<sup>2,5,6</sup> increased risks for preterm birth, low birth weight<sup>7</sup> and postpartum depression;<sup>8</sup> decreased breastfeeding initiation and continuation;<sup>3</sup> and increased medical costs.<sup>9,10</sup> The U.S. Department of Health and Human Services has identified a Healthy People 2020 goal for the nation of increasing the proportion of intended pregnancies to 56 percent.<sup>11</sup> Implicitly, this goal means reducing the proportion of unintended pregnancies to 44 percent. Most recent data from Healthy People 2020 indicates the proportion of intended pregnancies was 54.7 percent for the U.S. in 2011.<sup>12</sup>

### **Pregnancy risk assessment in Pennsylvania**

Pennsylvania’s Pregnancy Risk Assessment Monitoring System (Pa. PRAMS) is a joint research project between the Pennsylvania Department of Health and the CDC. Its purpose is to find out why some babies are born healthy and others are not. To do this, a random sample of new mothers are asked about their behaviors and experiences before, during and after pregnancy. PRAMS is an ongoing, state-specific, population-based surveillance system designed to identify groups of women and infants at high risk for health problems, to monitor changes in health status, and to measure progress towards goals in improving the health of mothers and infants. Forty-seven states, New York City, Puerto Rico, the District of Columbia and the Great Plains Tribal Chairmen’s Health Board (GPTCHB) currently participate in PRAMS, representing about 83 percent of all U.S. live births.<sup>13</sup> The data in Figure 7.7 come from Phase 7 (2012-2015) of the Pa. PRAMS survey. There was a total of 4,089 respondents for this time period.

**Figure 7.7 Pregnancies by Demographics of Mother, Pennsylvania, 2012-2015<sup>14</sup>**



To gauge pregnancy intention for the purposes of this report, data analyzed from Pa. PRAMS were based on the question: “When you got pregnant with your new baby, were you trying to get pregnant?” Respondents could answer “yes” or “no,” and those answering “no” were considered having an unintended pregnancy.

From 2012 to 2015, 48.8 percent (1.1 percent responses were missing) of participants indicated their pregnancy was unintended. Despite slight variations in annual rates, the proportion of pregnancies that were unintended remained relatively stable from 2012 to 2015. The respective rates of unintended pregnancy in each of these years were 47.0 percent, 50.3 percent, 47.2 percent and 50.8 percent.<sup>15</sup>

**Risk and protective factors**

All women of childbearing age (15 to 44 years old) are at risk for an unintended pregnancy. However, the most recent estimates suggest that the rates of unintended pregnancy for women who are 18 to 24 years old, economically disadvantaged or cohabitating are two to three times higher than the national rate.<sup>1</sup>

Most unintended pregnancies can be attributed to inconsistent use, or nonuse, of contraceptives. Programs designed to increase knowledge about the array of effective modern contraceptive options, and those to support consistent and correct use of contraceptive methods among sexually-active individuals interested in delaying or avoiding pregnancy can help to decrease the rate of unintended pregnancies.<sup>16</sup>

The high rate of unintended pregnancy highlights the importance of healthy behaviors for all women of childbearing age, to ensure that they are in optimal health should they become pregnant regardless of their pregnancy intention. Recommended behaviors<sup>17,18</sup> include:

- Folic acid supplementation, of 400 micrograms daily;
- Healthy diet and weight maintenance;
- Regular physical activity;
- Preventive health services, on a routine basis; and
- Care for chronic health conditions (e.g., asthma, diabetes, hypertension, thyroid disease).

## Intervention Strategies

The Department of Health has undertaken several initiatives to reduce the teen pregnancy rate in the commonwealth. The Bureau of Family Health (BFH) is in receipt of the Federal Personal Responsibility Education Program (PREP) funds. The BFH uses the PREP funds to implement evidence-based teen pregnancy prevention curricula to educate high risk youth on how to prevent pregnancy, sexually transmitted diseases (STDs) and HIV. The BFH is also in receipt of the Sexual Risk Avoidance Education funds. These funds will be used to implement the Teen Outreach Program for youth in grades 6-12.<sup>19</sup>

Funds from the Maternal and Child Health Services Block Grant (MCHSBG) are utilized for the four family planning councils in the commonwealth to provide reproductive health services to teens 17 years of age and younger. MCHSBG funds are also used to support health resource centers (HRCs), primarily located in school settings, but a small number are also located in clinical community-based programs in areas where schools are not an option due to varying reasons. Currently, there are a total of 38 HRCs open in eleven counties throughout Pennsylvania. These counties are Philadelphia, Delaware, Berks, Lackawanna, Dauphin, Lycoming, Fayette, Beaver, Venango, Lehigh and Allegheny counties. HRC services include: sexual and reproductive health education; confidential individual counseling; screening for sexually transmitted infections (STIs); pregnancy testing; referrals and linkages to family planning services; and distribution of safer sex materials, such as male and female condoms and dental dams.

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## Endnotes

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## Preterm Birth and Low Birth Weight

Second only to pneumonia as a leading cause of death globally for children under 5, preterm birth has been recognized as a worldwide health epidemic.<sup>1</sup> An estimated fifteen million preterm births occur worldwide each year with over half a million of those occurring in the U.S.<sup>2,3</sup>

Low birth weight (LBW) means a birth weight of less than 2,500 grams and is typically used to refer to those between 1,500 and 2,499 grams. Very low birth weight (VLBW) is defined as a birth weight of less than 1,500 grams. Birth weight is closely tied with gestational age at delivery and is, therefore, an important predictor of infant health outcomes. Infant mortality rates in 2013 were 25 times higher for low birthweight infants than for infants 2,500 grams or more, and for infants born with very low birthweight, the mortality rate is over 100 times higher.<sup>4</sup>

While the causes of preterm birth are not clearly understood, several risk factors are well established. The strongest risk factor is a history of preterm birth;<sup>5</sup> other factors include pregnancy with more than one fetus, malformation of the uterus and short interval between pregnancies (i.e., less than 18 months).<sup>6</sup> Inflammatory processes, such as periodontal disease and genitourinary tract infection, have also been associated with preterm birth, as have hypertension, diabetes, lupus and kidney disease, especially if poorly controlled.<sup>7</sup> Obesity may contribute to preterm birth by increasing the likelihood of medical complications such as hypertension, diabetes, and preeclampsia.<sup>8</sup> Behaviors such as smoking, substance use, and late or no prenatal care may contribute to the risk.<sup>9,10</sup> Additionally, there are differences in preterm birth rates by maternal age, race and ethnicity, and socioeconomic status.<sup>11</sup>

Health care costs for preterm infants are high. The earlier an infant is born, the more likely it is to need intensive care and a long hospital stay and the more likely to have lifelong health problems. About 10 percent of infants are born prematurely in the United States. The rate of preterm birth among black women is about 50 percent higher than that of white women, and infant death rates related to preterm birth are about twice as high for black infants than for white infants.<sup>12</sup>

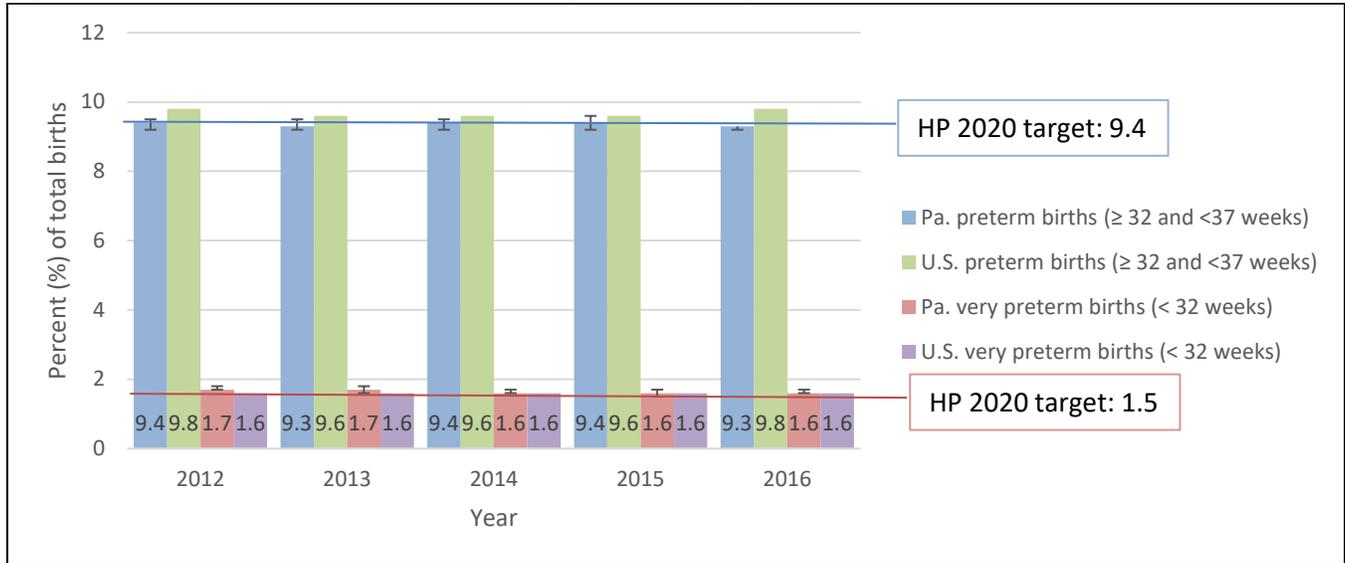
### Preterm births

The U.S. Department of Health and Human Services assesses preterm birth according to four subcategories:

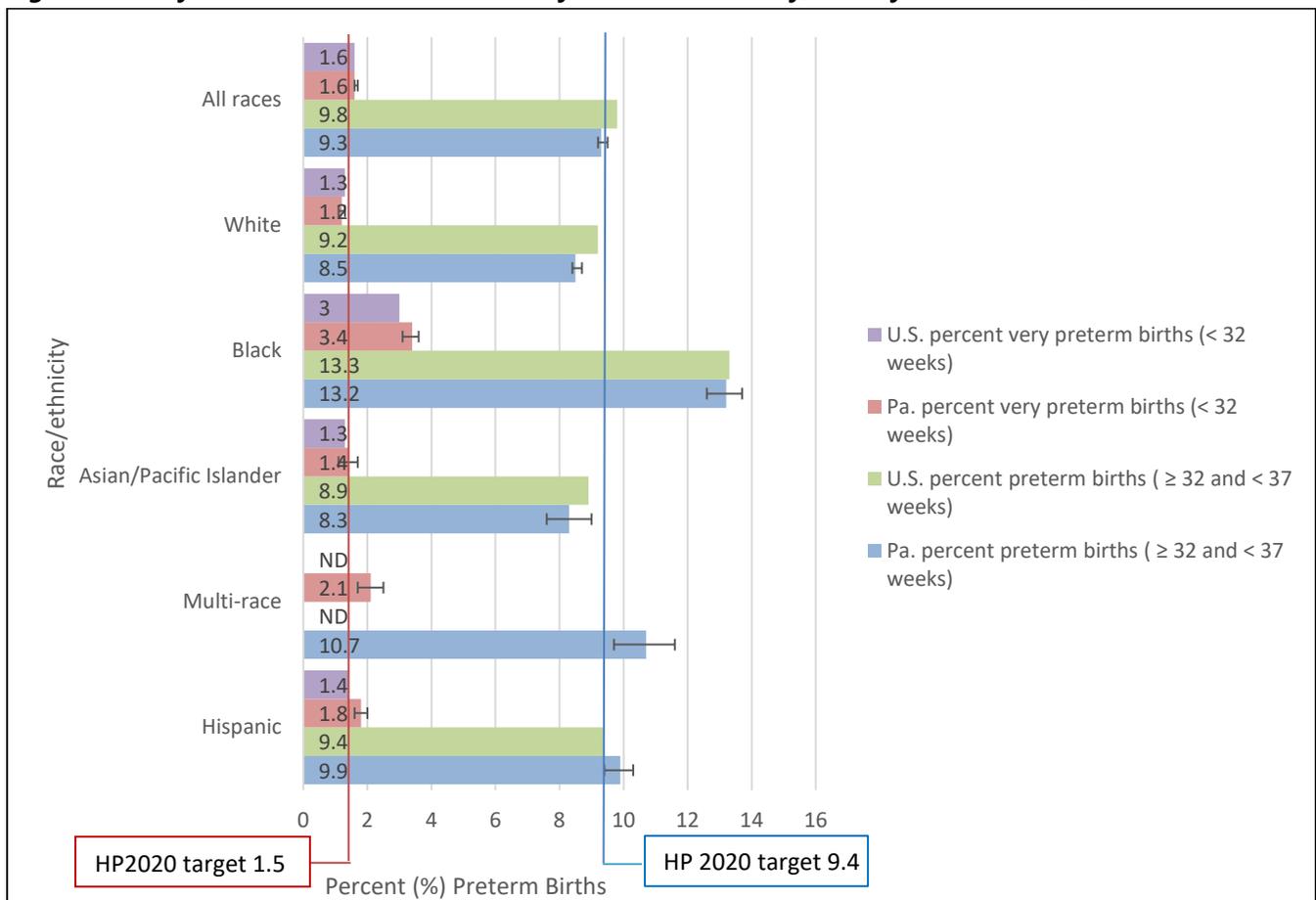
- less than 37 weeks' gestation (overall preterm birth rate);
- 34 to 36 weeks' gestation (late preterm birth);
- 32 to 33 weeks' gestation; and
- less than 32 weeks' gestation (very preterm birth).

The Healthy People 2020 goal for overall preterm birth rate is 9.4 or less of live births. Pennsylvania's rate met this goal from 2012 to 2016 as shown in Figure 7.8. The rate of very preterm births hovers just above the Healthy People 2020 goal of 1.5 percent.

**Figure 7.8 Very Preterm and Preterm Births by Years, Pennsylvania and U.S., 2012-2016<sup>13,14,15</sup>**



**Figure 7.9 Very Preterm and Preterm Births by Race and Ethnicity, Pennsylvania and U.S., 2016<sup>16,17,18</sup>**

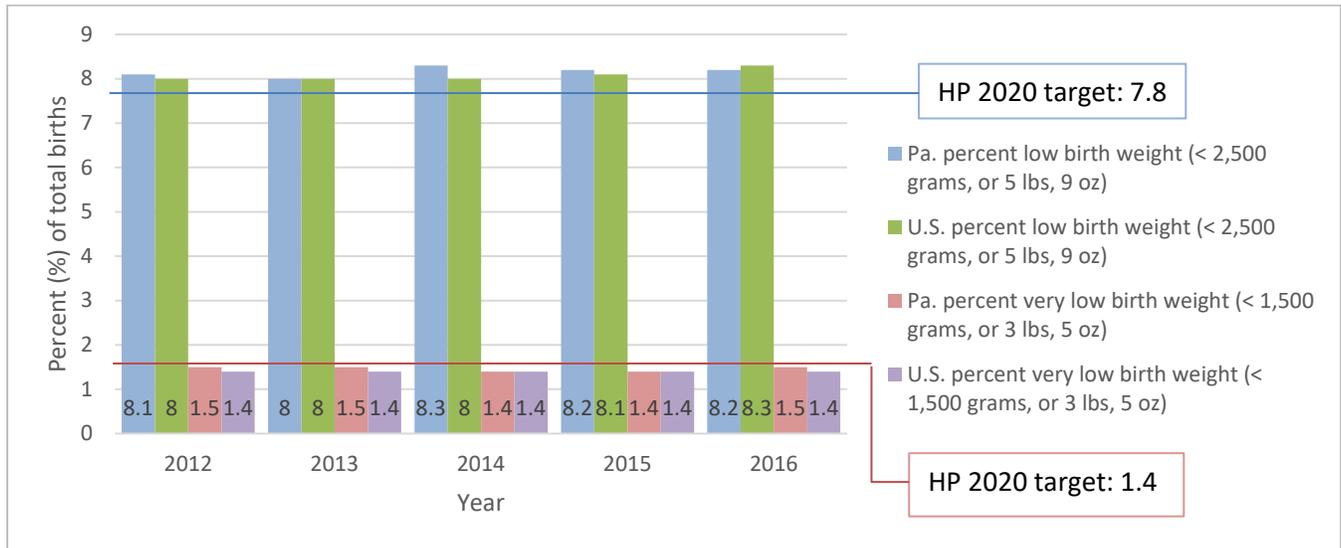


Figures 7.7 and 7.8 show preterm rates for the Pennsylvania and U.S. population, for purposes of comparison. Pennsylvania is slightly below national rates for all races and white mothers and is within or close to the margins of error for very preterm births and all races and ethnicities compared to national data.

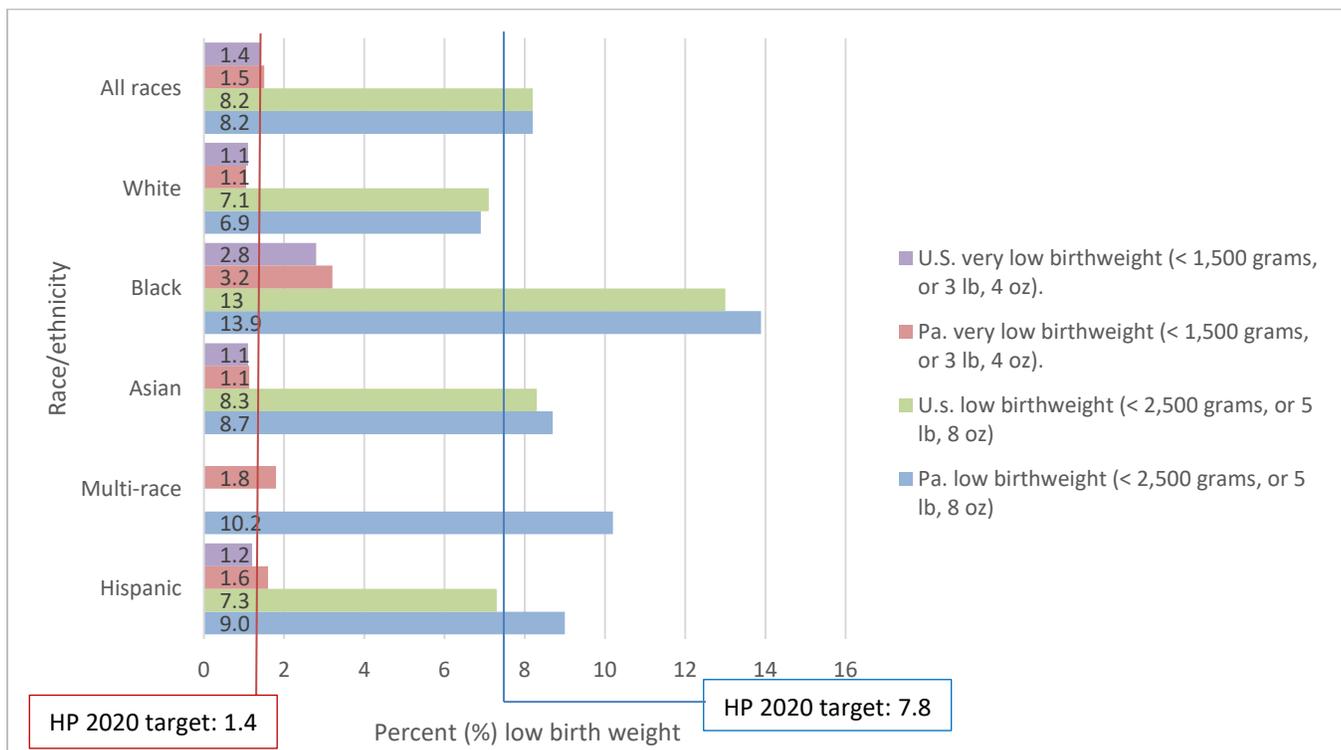
### Low birth weight and very low birth weight

Pennsylvania has not yet met the Healthy People 2020 goals for LBW and VLBW, or 7.8 percent of live births and 1.4 percent of live births, respectively. From 2012 to 2016, the LBW rate stayed stable, changing from 8.1 percent to 8.2 percent. Nationally, Pennsylvania ranked 26 out of 50 states for LBWs in 2018.<sup>19</sup>

**Figure 7.10 Very Low Birth Weight and Low Birth Weight Births by Years, Pennsylvania and U.S., 2012-2016<sup>20,21,22</sup>**



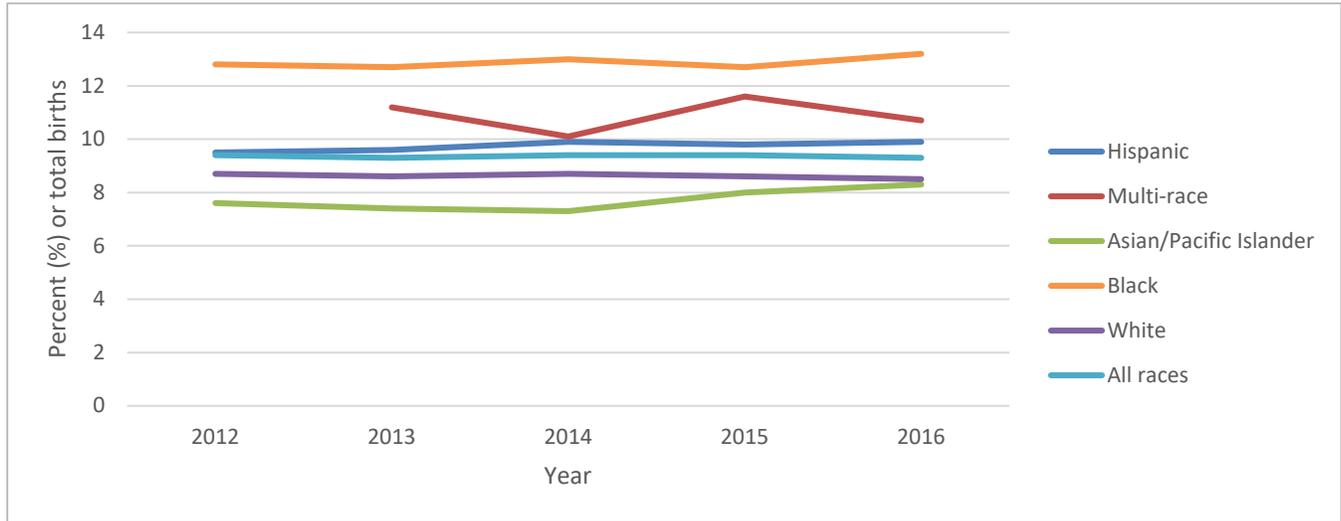
**Figure 7.11 Very Low Birthweight and Low Birthweight Births by Race and Ethnicity, Pennsylvania and U.S., 2016<sup>23,24,25</sup>**



## Disparities in Preterm Birth

**Race/ethnicity:** Hispanic, black and multi-race mothers have preterm birth rates above the Healthy People 2020 goal of 9.4 percent. This goal was changed in 2017 from the prior goal of 11.4 percent, because of changes in methods used to track this measure.

**Figure 7.12 Preterm Births (Less Than 37 Weeks Gestation) by Year, Race and Ethnicity, Pennsylvania, 2012 to 2016<sup>26</sup>**



**Table 7.6 Preterm Birth Rates by Gestational Age, and Race and Ethnicity, Pennsylvania, 2012 and 2016**

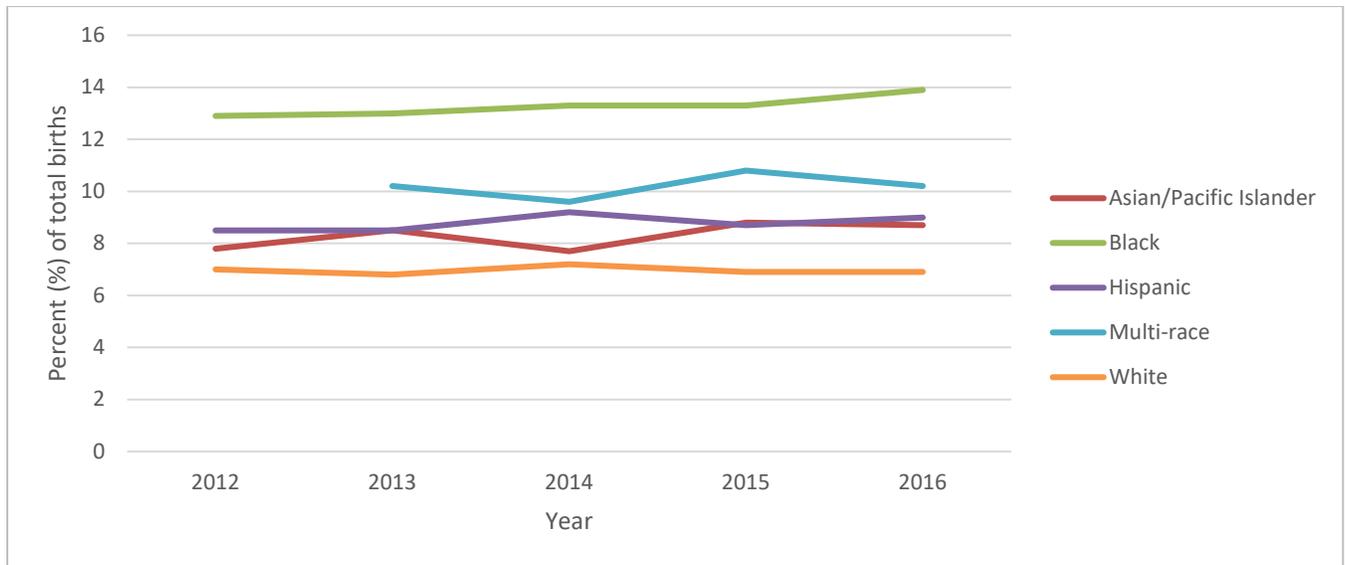
HP 2020 Goals <sup>30</sup> :	Percent (%) of Live Births					
	< 32 Weeks <sup>27</sup>		32 to 33 Weeks <sup>28</sup>		34 to 36 Weeks <sup>29</sup>	
	2012	2016	2012	2016	2012	2016
	1.5 percent (%)		1.1 percent (%)		6.8 percent (%)	
White mother	1.4	1.2	1.1	1.0	6.2	6.3
Black mother	3.1	3.4	1.7	1.6	8.0	8.2
Hispanic* mother	2.1	1.8	1.0	1.1	6.5	7.0
Asian/Pacific Islander Mother	1.0	1.4	1.2	1.0	5.4	5.9

Note: Red indicates that the target was not met.

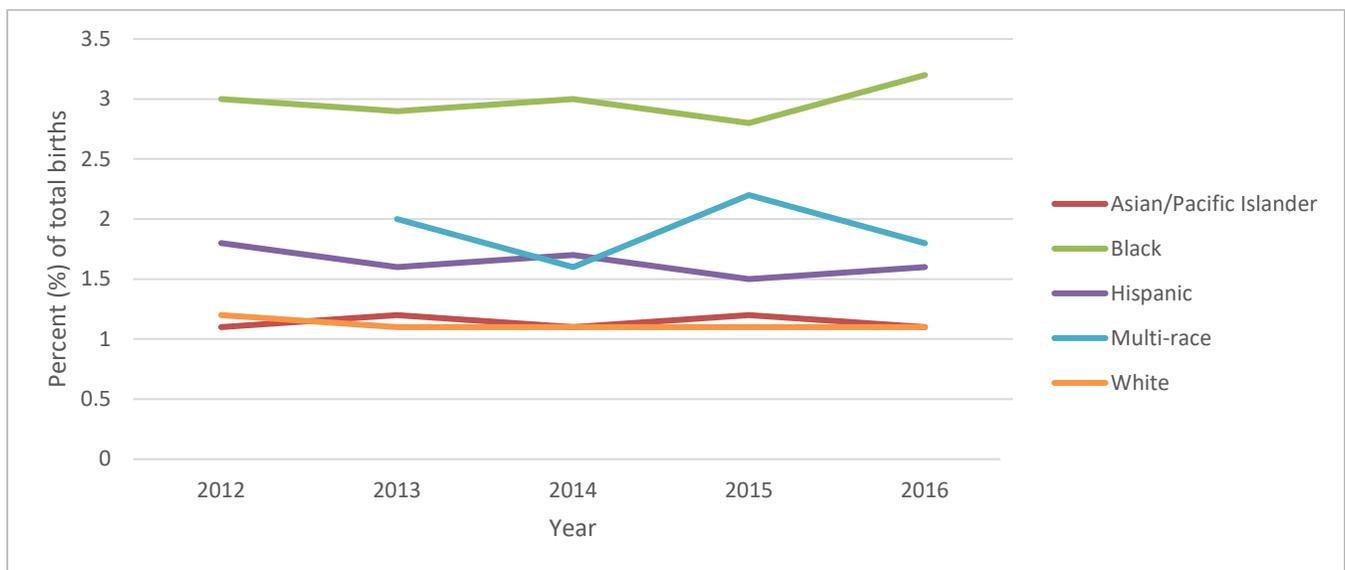
\*Hispanics can be of any race.

Similarly, black mothers had the highest rates of LBW and VLBW infants for 2012 and 2016, reflecting the high preterm rate. The following figures summarize this data.

**Figure 7.13 Low Birth Weight (<2,500 grams, or 5 lbs, 9 oz) by Year, Race and Ethnicity, Pennsylvania, 2012 to 2016<sup>31</sup>**

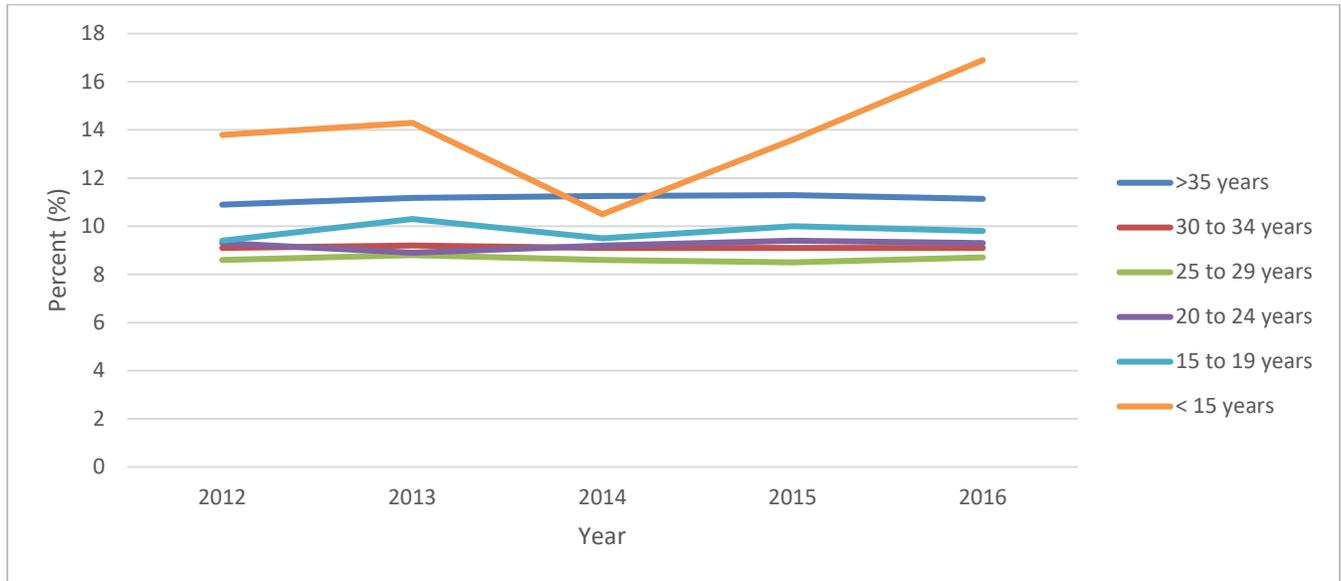


**Figure 7.14 Very Low Birth Weight (<1,500 grams, or 3 lbs, 9 oz) by Year, Race and Ethnicity, Pennsylvania, 2012 to 2016<sup>32</sup>**

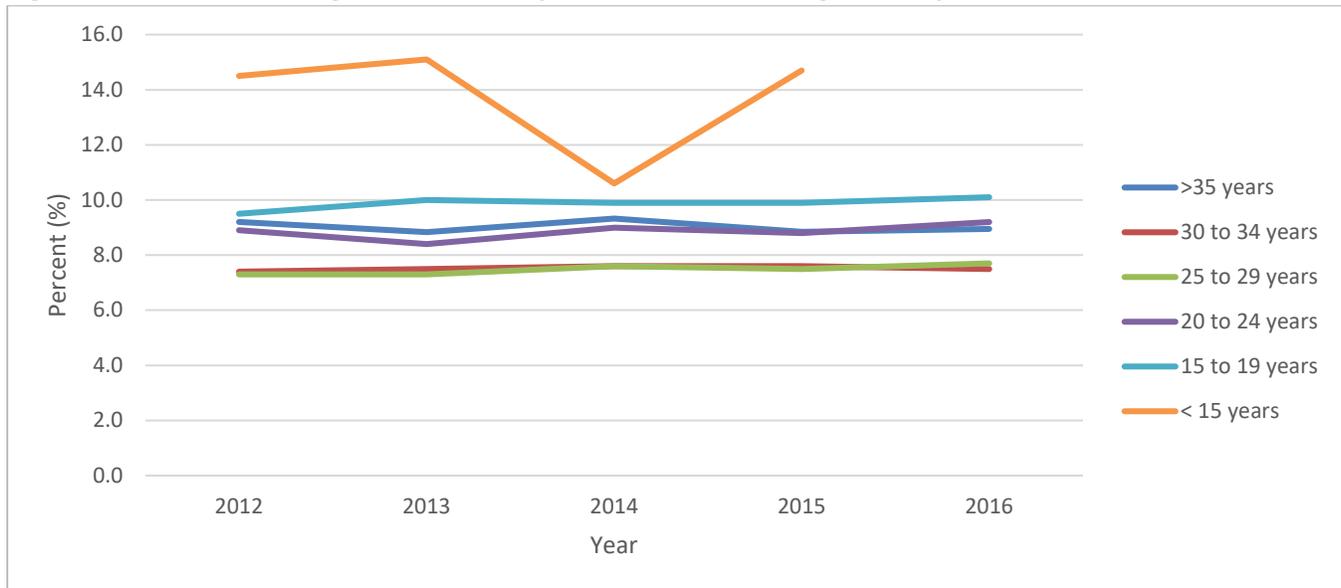


**Young maternal age:** Mothers younger than 15 years old had higher rates of preterm birth and LBW infants. The following two figures summarize maternal age data.

**Figure 7.15 Preterm Birth Rates by Year and Maternal Age, Pennsylvania, 2012 to 2016<sup>33</sup>**



**Figure 7.16 Low Birth Weight Birth Rates by Year and Maternal Age, Pennsylvania, 2012 to 2016<sup>34</sup>**



Note: No data for women <15 years of age in 2016

**Factors that contribute to low birth weight/preterm birth**

**Smoking:** Adverse health consequences of tobacco use are well documented. The negative impact on fetal/infant health includes pregnancy loss, preterm delivery, premature rupture of membranes (PROM), placental abruption, placenta previa, low birth weight, ectopic pregnancy and sudden infant death syndrome (SIDS). Smoking cessation is most effective before conception or in the first trimester. All adults, including pregnant women, should be provided with tobacco cessation interventions.<sup>35</sup>

The Healthy People 2020 goal for pregnancy and smoking is a rate of 98.6 percent of mothers do not smoke during pregnancy. Pennsylvania's 2016 rate of 88.5 percent was far below the Healthy People 2020 goal but showed incremental annual improvement from the 2012 rate of 85.2 percent. In 2016, mothers who were Asian/Pacific Islanders were most likely to abstain from smoking (99.1 percent), followed by Hispanic mothers (93.7 percent), black mothers (90.9 percent) and white mothers (86.8 percent).<sup>36</sup>

In 2017, in Pennsylvania, 11.1 percent of mothers reported that they did smoke during pregnancy. However, smoking among mothers from 15 to 19 years old was 14.4 percent. For all ages, there were eight counties with a rate of smoking during pregnancy greater than 25 percent. They were Cameron, Elk, Fayette, Greene, McKean, Schuylkill, Sullivan and Venango.<sup>37</sup>

**Obesity:** Increased risk of preterm birth associated with obesity is primarily due to the increased risk of obesity-associated medical disorders, such as diabetes, hypertension and preeclampsia.<sup>38</sup> Weight management, key to resolution of these problems and prevention of preterm birth, must be addressed before pregnancy.

In 2012, 51.1 percent of women nationally with a recent live birth reported having a healthy weight (BMI: 18.5 - 24.9) prior to pregnancy; the 2020 target is 57.8 percent.<sup>39</sup> State level data for this measure is not available, although, in 2017, in Pennsylvania, 61 percent of women reported being overweight and 31 percent reported being obese.<sup>40</sup>

**Early prenatal care:** The major goals of prenatal care are to identify women at risk for complications, establish accurate due dates, provide ongoing evaluation of maternal and fetal health, and provide the necessary education and interventions. Timely and adequate prenatal care has been associated with a reduction in preterm birth.<sup>41</sup>

Prenatal care provides the opportunity for the following assessments and interventions, which may reduce the risk for preterm birth and LBW infants:

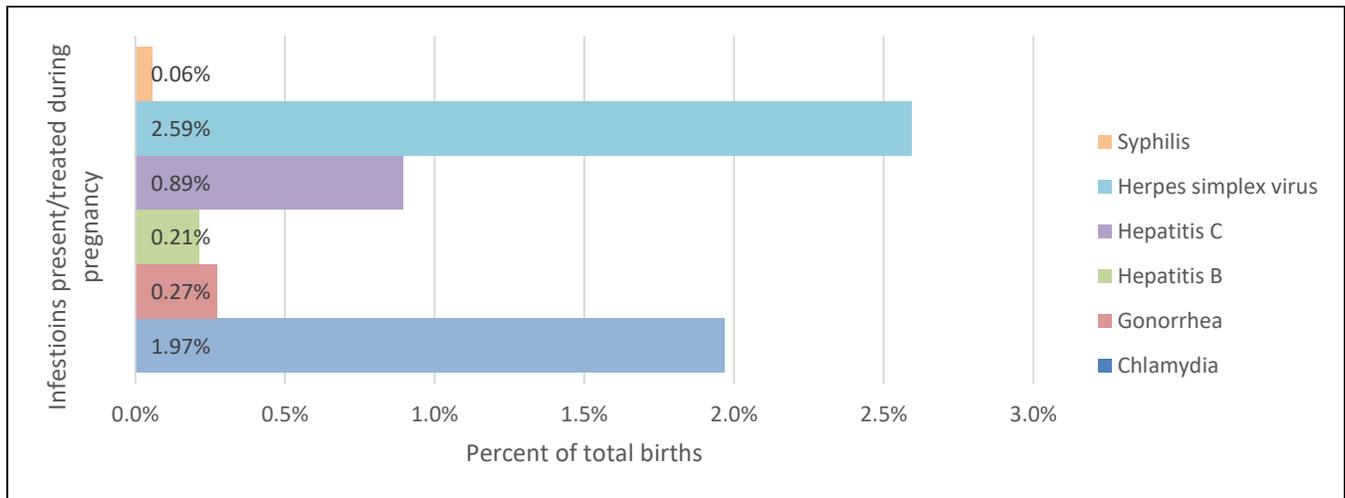
- Smoking cessation;
- Screening for a history of spontaneous preterm birth;
- Screening for and treat genitourinary tract infections; and
- Recognizing and optimizing maternal medical disorders, preferably prior to conception.<sup>42</sup>

The Healthy People 2020 goal for mothers beginning early and adequate prenatal care is greater than or equal to 77.6 percent. Pennsylvania had not yet met this goal by 2016. Black mothers and Hispanic mothers had the lowest rates of prenatal care, at 65.1 and 68.2 percent, respectively, in 2016. White mothers had the highest rate of prenatal care, at 78.5 percent. The rate of first trimester prenatal care varies with age; mothers younger than 15 years old have the lowest rate, at 49.2 percent. Mothers in age category 30-34 have the highest rates, at 78.9 percent and 77.2 percent for mothers 35 and older. Overall, in 2016, 75.2 percent of mothers in Pennsylvania received prenatal care during the first trimester.<sup>43</sup>

### **Sexually transmitted diseases in pregnancy**

Undiagnosed and inadequately treated sexually transmitted diseases (STDs) in pregnancy are associated with an increased risk of adverse maternal and infant health outcomes. For the mother, these include early onset of labor, premature rupture of the membranes (PROM) and uterine infection following delivery.<sup>44,45,46</sup> For the infant, the risks include stillbirth, low birth weight, conjunctivitis (eye infection), pneumonia, neonatal sepsis (infection in the blood stream), acute hepatitis, meningitis and chronic liver disease.<sup>47,48,49,50</sup> Fortunately, most of these risks can be avoided with early detection and appropriate treatment of the problem.

**Figure 7.17 Birth Morbidity by STDs During Pregnancy, Pennsylvania, 2013-2017<sup>51</sup>**

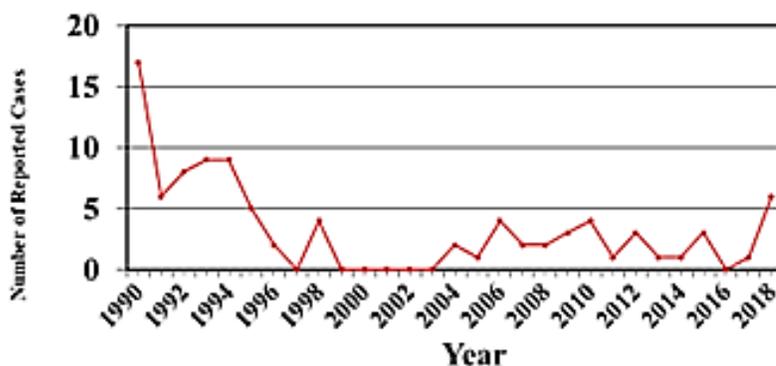


The most recent version of the U.S. Standard Birth Certificate captures information about the presence and/or treatment of the following infections during the prenatal period: chlamydia, gonorrhea, hepatitis B, hepatitis C and syphilis.<sup>52</sup> A comparison of prenatal STD trends for adolescent females aged 15 to 19 and females age 20 and older who gave birth in Pennsylvania between 2006 and 2010 illustrates the higher risk faced by adolescents with regards to this risk factor for maternal and child health.<sup>53</sup>

Consistent and correct use of condoms substantially reduces the risk of STD transmission.<sup>54</sup> In addition, routine prenatal screening for STDs provides a unique opportunity to identify females with undiagnosed disease, initiate timely treatment and prevent mother-to-child transmission.

Reported cases of congenital syphilis (syphilis passed from a mother to her baby during pregnancy or delivery) has increased significantly in 2018 with a total of six congenital syphilis cases reported in the state (Pa. exclusive of Philadelphia). These six cases reported in 2018 represent the highest number of cases in more than 24 years (see Figure 7.18). This increase prompted the Department of Health to issue a health advisory in 2018.<sup>55</sup>

**Figure 7.18 Reported Cases of Congenital Syphilis, Pennsylvania (Exclusive of Philadelphia), 1990-2018<sup>56</sup>**



\*Exclusive of Philadelphia

The trend noted in Pennsylvania is following national trends where, according to the Centers for Disease Control and Prevention (CDC), congenital syphilis has doubled since 2013. Specifically, nationally reported cases increased from 362 in 2013 to 918 in 2017 – the highest number of recorded cases in 20 years. According to CDC, congenital

syphilis cases were reported in 37 states – primarily western and southern states. Furthermore, national data indicate that this surge in congenital syphilis parallels similar increases in syphilis among women of reproductive age and outpaces national increases in STDs overall.<sup>57</sup>

The recent increases in state and national congenital syphilis cases underscore the need for all pregnant women to receive early prenatal care that includes syphilis testing at their first visit. Women at high risk for syphilis or who live in high-prevalence areas should be tested not only at the first prenatal visit, but again early in the third trimester and at delivery. If sexually active, individuals can lower their risk of getting syphilis by using condoms the right way every time they have sex.<sup>58</sup>

When a mother passes syphilis to a baby, syphilis can result in miscarriage, newborn death, and severe lifelong physical and mental health problems.<sup>59</sup>

To reduce the number of babies born with syphilis, it is critical for all pregnant women to visit a health care provider as soon as possible during every pregnancy and to be tested for syphilis. Without early and regular prenatal care, a pregnant woman may not know that she has syphilis and that her baby is at risk. Syphilis during pregnancy is easily cured with the right antibiotics. According to CDC, if left untreated, a pregnant woman with syphilis has up to an 80 percent chance of passing it on to her baby.<sup>60</sup>

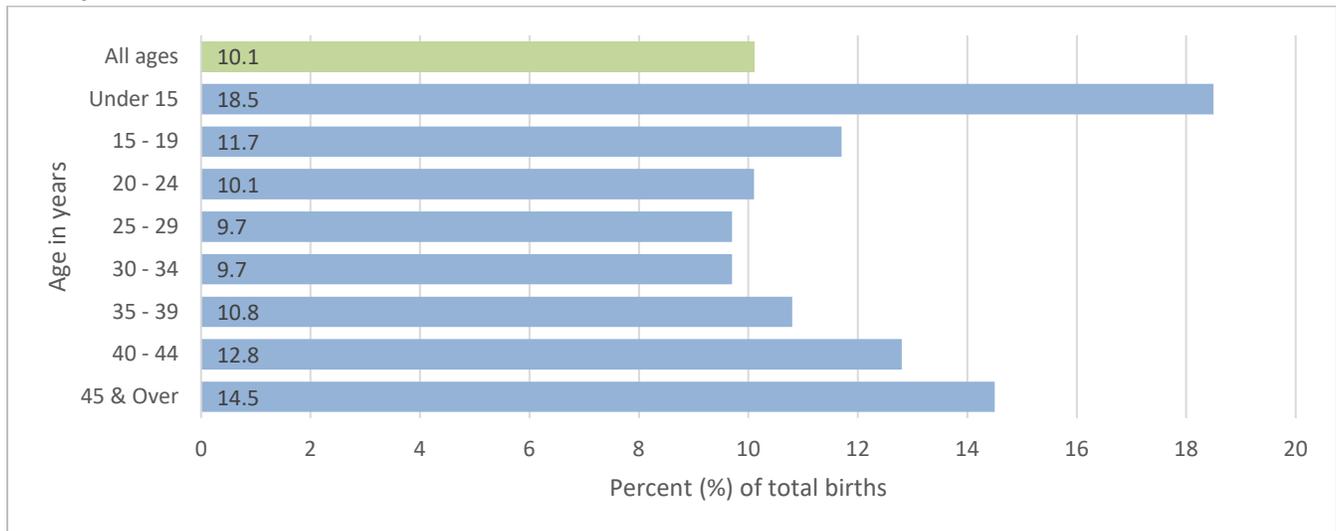
### **Infant health**

Across mothers of all ages and races, 6.9 percent of babies born in Pennsylvania during 2017 were low birth weight (1,500 to 2,499 grams), and 1.6 percent were very low birth weight (<1,500 grams). Rates of low birth weight and very low birth weight babies were higher for teen mothers, however; 10.7 percent of babies born to mothers 15 to 19 years old were low birth weight, and 2.0 percent were very low birth weight.<sup>61</sup>

Of the total births to adolescent mothers in Pennsylvania, 69.9 percent received Medicaid,<sup>62</sup> indicating a high burden of care for low birthweight and very low birth weight infants on the Medicaid system.

Birth certificate data are available for five abnormal health conditions more common to infants who are born preterm (less than 37 weeks gestation) and/or low birth weight: assisted ventilation immediately following delivery, assisted ventilation for six or more hours, admission to the neonatal intensive care unit (NICU), surfactant replacement therapy and antibiotic therapy for suspected sepsis.<sup>63,64,65</sup> Figure 7.19 compares the data for abnormal conditions of newborns of mothers by age group.

**Figure 7.19 Live Births with Abnormal Conditions in the Newborn Period by Maternal Age Group, Pennsylvania, 2016<sup>66</sup>**



## Summary

- Pennsylvania’s 2016 rate of preterm birth of 9.3 percent meets the Healthy People 2020 goal of less than or equal to 11.4 percent of live births. The rate has been steady at about 9.4 to 9.3 between 2012 and 2016.<sup>67</sup>
- 2016 LBW and VLBW rates of 8.2 and 1.5 percent of live births, respectively, did not meet Healthy People 2020 goals of 7.8 and 1.4 percent, respectively.
- Black mothers remain disproportionately affected by preterm birth and LBW infants.
- An inspection of risk factors for preterm birth and LBW shows that Pennsylvania does not meet the Healthy People 2020 goals for smoking abstinence in pregnancy or initiation of early prenatal care. The percent of female residents of reproductive age who are obese is significant.

## Intervention Strategies

- **Reduce the preterm delivery rate at < 34 weeks of gestation.** This would translate into a reduction of the LBW rate and a decrease in the neonatal mortality rate as well.
- **Improve preconception care.** Preconception care provides an opportunity to address chronic medical issues (e.g., obesity, hypertension, diabetes) and behavioral issues (e.g., smoking).
- **Improve early and adequate prenatal care.** Early prenatal care provides an opportunity to assess medical and reproductive risks and provide primary prevention and secondary prevention.
- **Focus on black mothers.** Efforts to improve preconception and prenatal care are particularly important for these mothers.
- **Focus on gestational age.** Preterm and LBW risks are greatest for the youngest mothers and the oldest. Support teen pregnancy prevention efforts and continue to address LBW data in light of gestational age.
- **Support development of MICH-16 Healthy People 2020 objective.** Information about preconception care and behaviors provides key information for addressing preterm birth and LBW risk behavior.

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## Endnotes

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## Adolescent Pregnancy and Childbearing

Although there have been declines in rates of adolescent childbearing for the nation and some states, a significant number of teens still experience unintended pregnancies each year, yielding negative outcomes for the teen parents, the child and their community. Teen mothers are more likely to drop out of high school, have lower academic achievement and have babies born at a low birth weight; if female, the child is more likely to have lower school achievement and to drop out of high school, have more health problems, be incarcerated at some time during adolescence, give birth as a teenager, and face unemployment as a young adult. <sup>1</sup> Table 7.7 shows Pennsylvania resident counts of reported pregnancies, live births and fetal deaths. The induced abortions counts are occurrence in Pennsylvania.

**Table 7.7 Teen Pregnancies by Outcomes and Age Groups, Females, Pennsylvania, 2016**

Age Group (years)	Reported Pregnancies <sup>2</sup>	Live Births <sup>3</sup>	Fetal Deaths <sup>3</sup>	Induced Abortions <sup>4</sup>
< 15	142	65	1	77
15 to 17	2,445	1,647	25	811
18 to 19	6,544	4,698	51	1,917

**Table 7.8 Percent Births to Mothers Under 18, Pennsylvania, 2014<sup>5</sup>**

All races	White	Black	Asian/Pacific Islander	Multi-Race	Hispanic (any race)
1.5	1	3.1	0.3	4.3	3.7

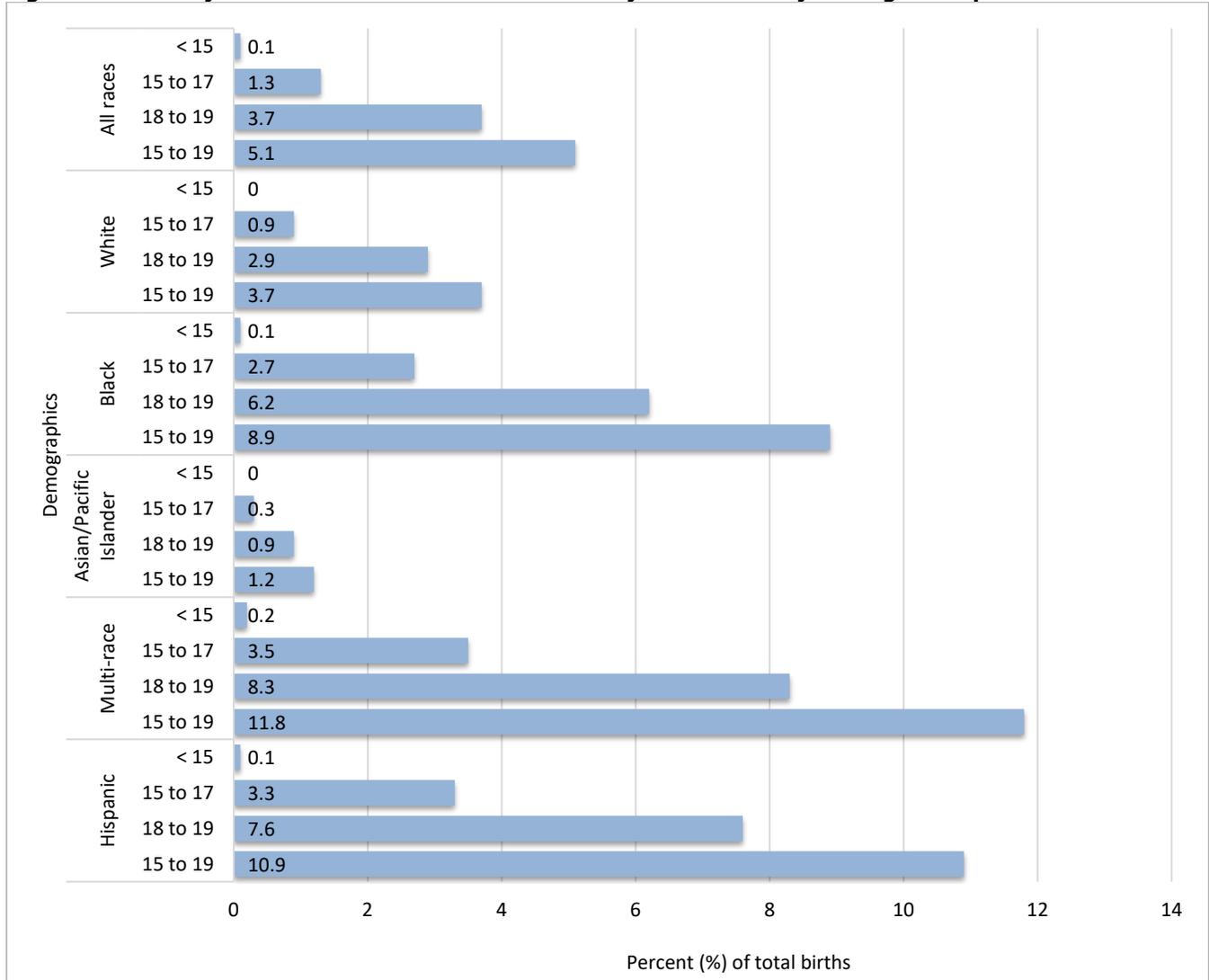
### Adolescent Births

In 2016, the U.S. rate of adolescent childbearing fell to 20.3 births per 1,000 females aged 15 to 19 years old, a 9 percent decrease from the 2015 rate and down 67 percent from 1991, when it was at a record high of 61.8. State rates ranged from 8.5 births per 1,000 females aged 15 to 19 in Massachusetts to 34.6 birth per 1,000 females 15 to 19 years old in Arkansas.<sup>6</sup>

Pennsylvania's birth rate was 14.7 births for every 1,000 females aged 15 to 19 in 2017, a decrease from 15.7 per 1,000 females ages 15 to 19 in 2016.<sup>7</sup> The state's adolescent birth rate has decreased steadily since 1970, when it was 53.2 births per 1,000 females ages 15 to 19.<sup>8</sup> The explanations for this decrease include less sex, use of more effective contraception and more information about pregnancy prevention.

The overall teen birth rate for the state is 18.8 per thousand, which is lower than the national rate. The birth rate among blacks was also lower than U.S. rates, but the rate for Hispanics exceeds U.S. rates. The 2017 adolescent birth rate for black females ages 15 to 19 years old was 25.5 per 1,000 in Pennsylvania, compared with 27.5 per 1,000 for the U.S. Among Hispanic females, the rate was 36.7 per 1,000 females 15 to 19 years old in Pennsylvania, compared with 28.9 nationally. For white adolescent females in 2017 in Pennsylvania, the rate was 9.6 compared to 13.2 per 1,000 females 15 to 19 years old nationally.<sup>9,10</sup>

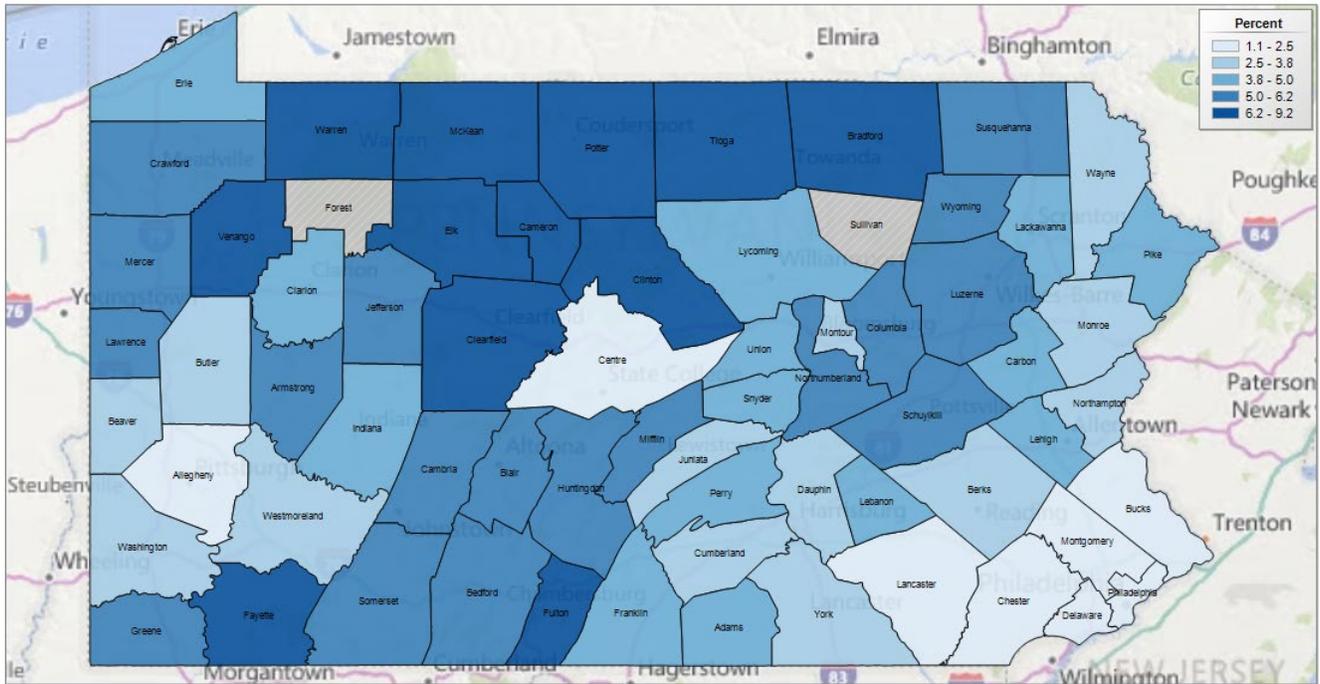
**Figure 7.20 Pennsylvania Live Births to Teen Mothers, by Race, Ethnicity and Age Group, 2014-2016<sup>11</sup>**



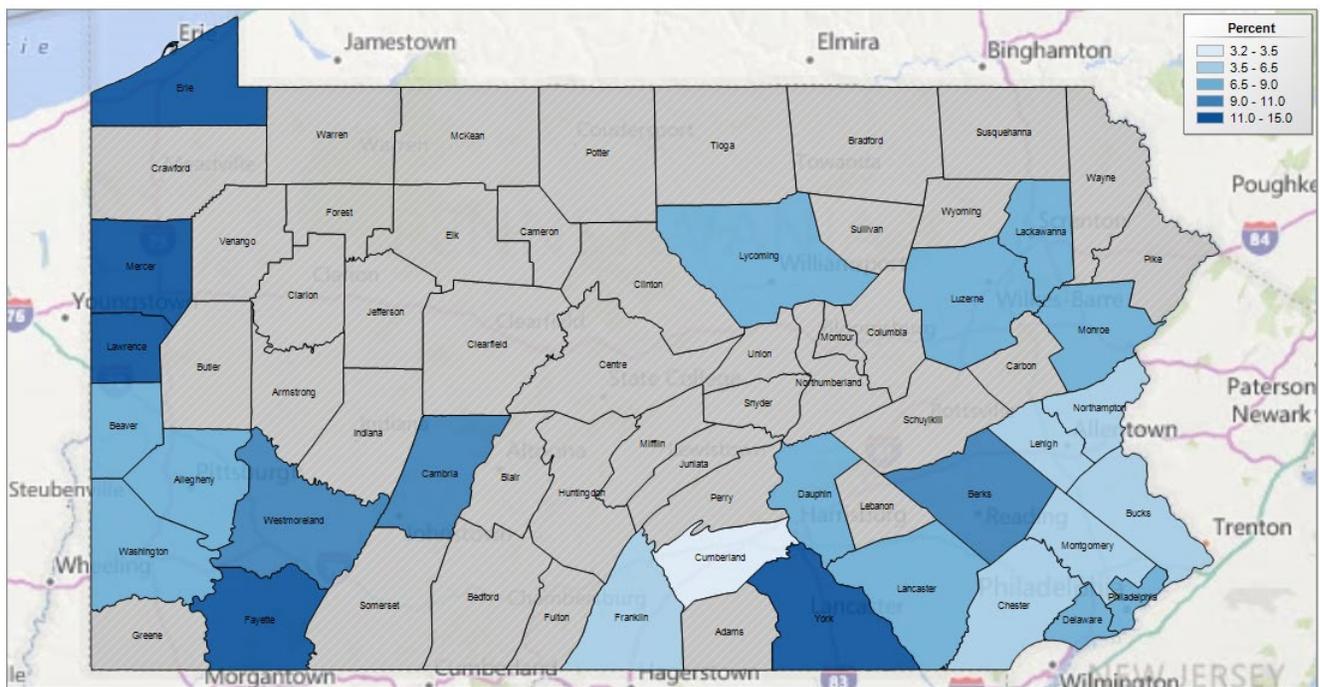
**Geographic distribution**

For 2015-2017, 42 of Pennsylvania’s 67 counties had adolescent birth rates that exceeded the state’s rate of 16.0 per 1,000 females aged 15 to 19 years old. The highest rates were in Fayette County, with a rate of 31.5 per 1,000 females aged 15 to 19 years; Cameron with 30.0 per 1,000 females aged 15 to 19 years old; and Venango with 28.7 per 1,000 females of this age group. Figures 7.20, 7.21 and 7.22 show the geographic distribution of teen births by race and ethnicity for white, black and Hispanic births.

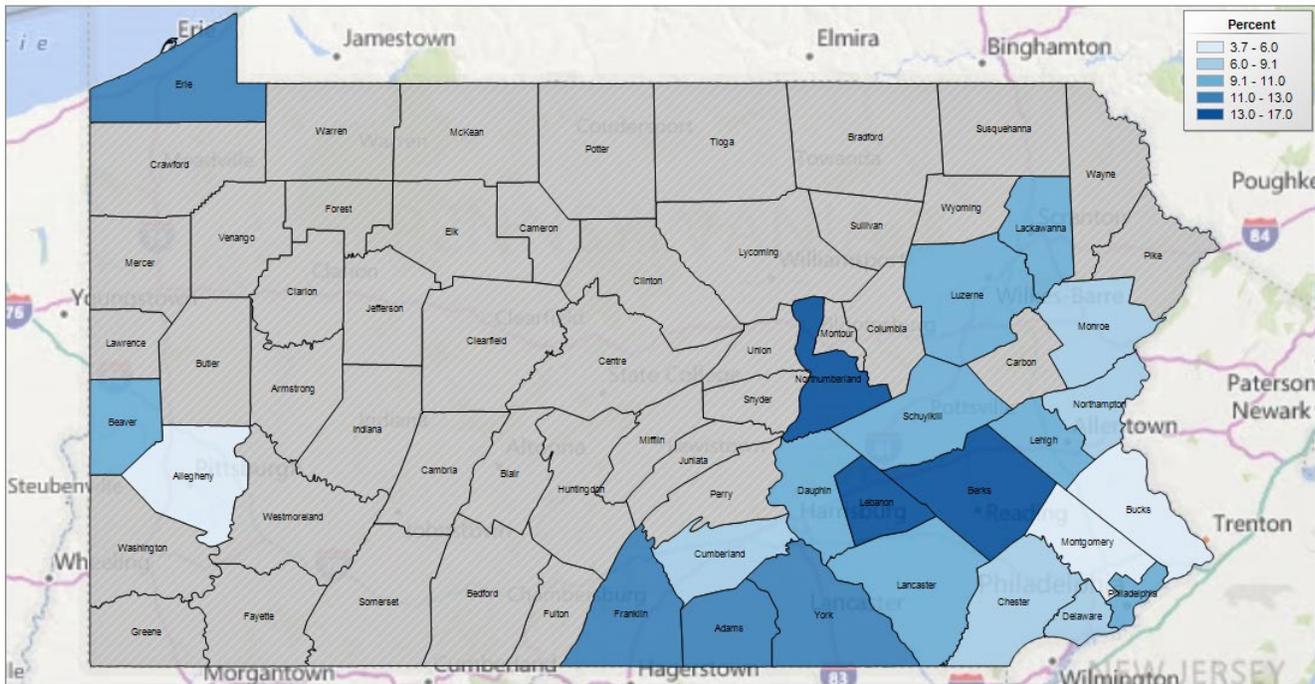
**Figure 7.21 Geographic Distribution of Teen Births, White, Ages 15 to 19, Pennsylvania 2015-2017<sup>12</sup>**



**Figure 7.22 Geographic Distribution of Teen Births, Black, Ages 15 to 19, Pennsylvania 2015-2017<sup>13</sup>**



**Figure 7.23 Geographic Distribution of Teen Births, Hispanic, Ages 15 to 19, Pennsylvania 2015-2017<sup>14</sup>**



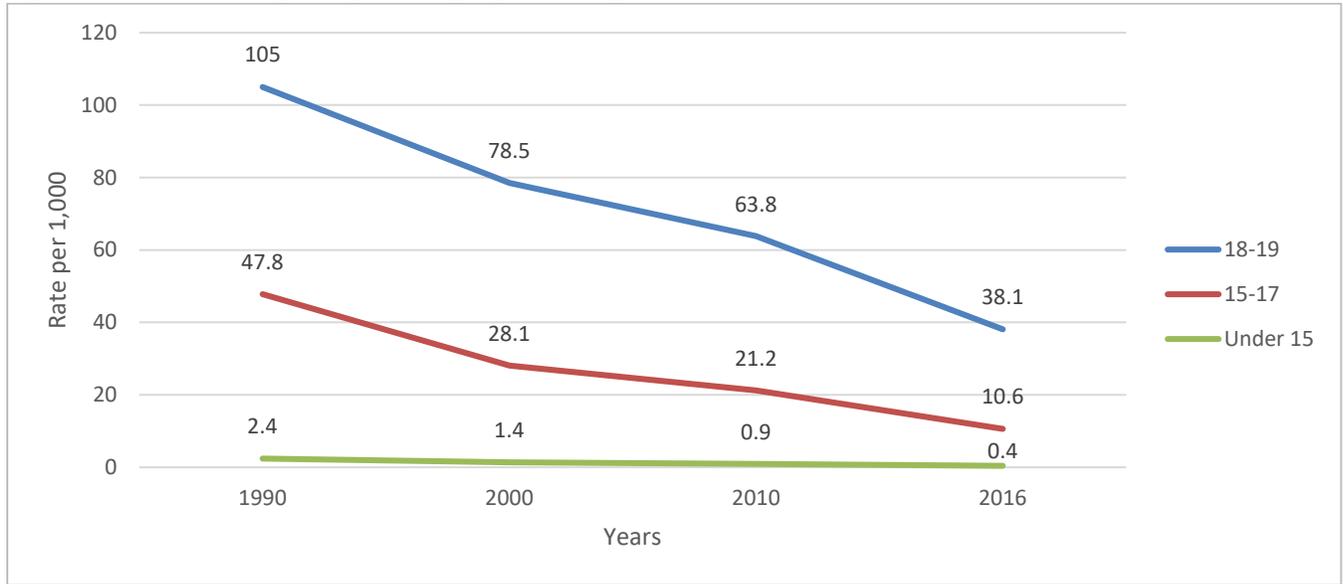
## Adolescent Pregnancies

The U.S. Department of Health and Human Services has set the Healthy People 2020 goal for pregnancy rate of females aged 15 to 17 at 36.2 per 1,000 population, a decrease of 10 percent below the 2005 baseline of 40.2 per 1,000 population. Adolescent pregnancies are the sum of all U.S. resident live births, induced abortions and fetal losses to females in an age group. The Healthy People 2020 goal for pregnancies among females aged 18 to 19 is 104.6 per 1,000 females of this age category, a 10 percent decrease from the 2005 rate of 116.2 per 1,000 females 18 and 19 years old.<sup>15</sup>

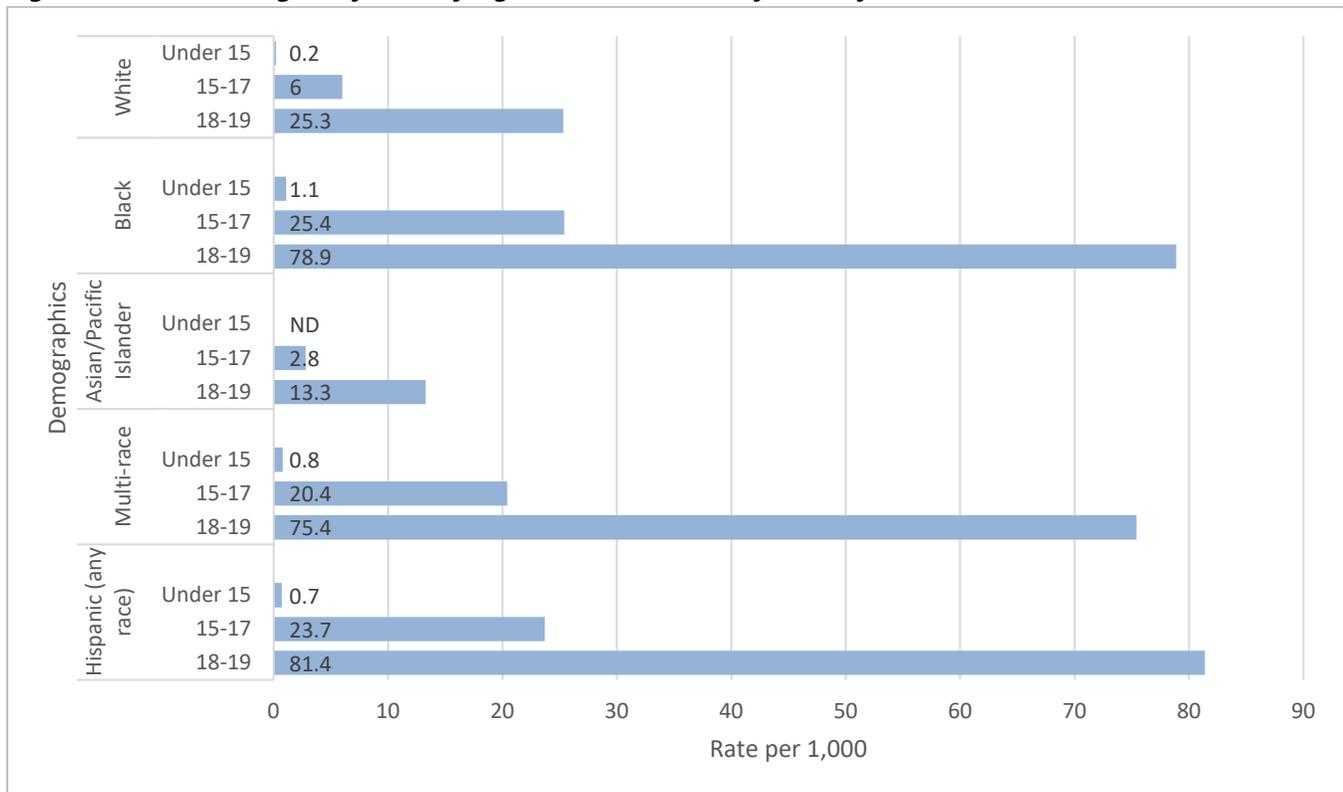
In Pennsylvania, the 2016 pregnancy rate for teens aged 15 to 17 was 10.6 per 1,000 females of this age range, well below the Healthy People 2020 goal for the nation. At the same time, the pregnancy rate among 18 and 19-year-old Pennsylvania females was 38.1 per 1,000.<sup>4</sup>

However, black, Hispanic and multi-race women are disproportionately affected by adolescent pregnancy. As shown in Figure 7.25, the rate for blacks aged 15 to 17 was 25.4 per 1,000 females of this age range in 2016; for Hispanics, the rate was 23.7 per 1,000 females aged 15 to 17 years old. These rates far exceed both state and national levels.

**Figure 7.24 Crude Pregnancy Rate by Age, Pennsylvania Residents, 1990, 2000, 2010 and 2016<sup>16</sup>**



**Figure 7.25 Crude Pregnancy Rate by Age, Race and Ethnicity, Pennsylvania Residents, 2016<sup>17</sup>**

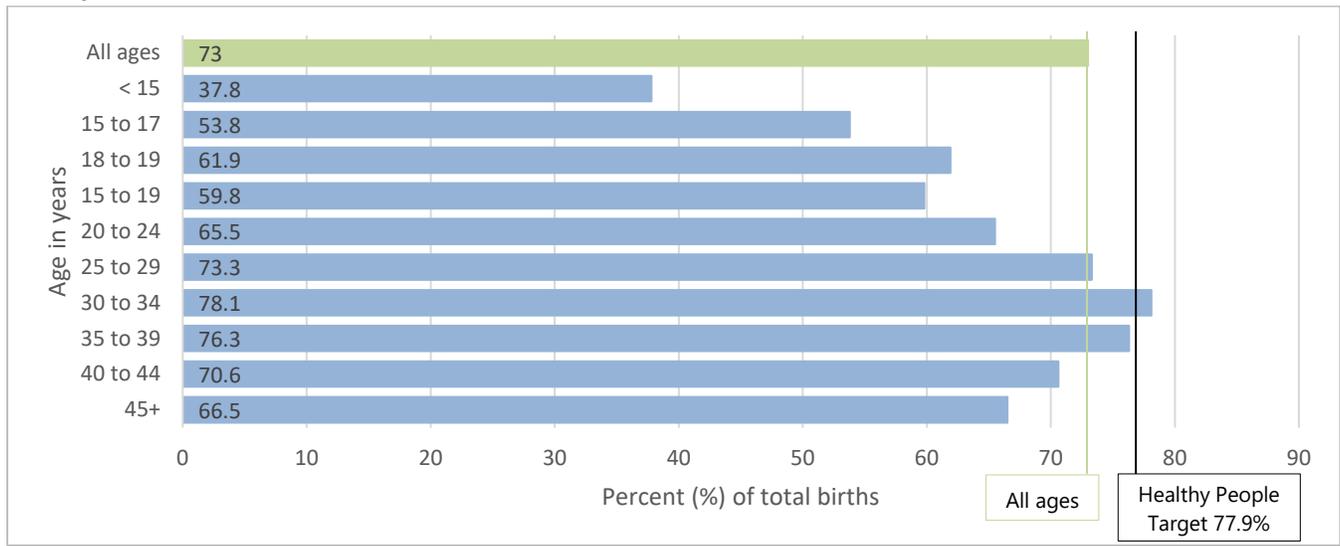


**Geographic distribution**

For 2015-2017, the 15 to 19-year-old adolescent pregnancy rates of 30 counties exceeded the state rate of 22.6 per 1,000 females 15 to 19 years old. Of these 30 counties, the highest rate, 48.5 per 1,000 females of this age group, was seen in Philadelphia. The lowest number of pregnancies in this age group was in Forest County, but with an age group population too small to accurately calculate the rate. The lowest calculable rate was in Centre County with an adolescent pregnancy rate at 4.1 percent.<sup>18</sup>



**Figure 7.28 Births to Mothers Who Obtained Prenatal Care During the First Trimester by Maternal Age, Pennsylvania, 2015-2017<sup>23</sup>**



**Data Note**

The primary sources of data for adolescent pregnancy and childbearing were retrieved from the Pennsylvania Department of Health’s Enterprise Data Dissemination Informatics Exchange (EDDIE). Birth certificate dataset is the source for adolescent childbirth. Birth certificate, fetal death certificate and induced abortion datasets are the source for teen pregnancy.

**Endnotes**

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# Postpartum Depression

Depression is more than just feeling “blue” or “down in the dumps” for a few days. It’s a serious illness involving the brain in which sad, anxious or “empty” feelings linger, interfering with day-to-day life and routines. Depression can be mild to severe. Most people with depression get better with treatment.<sup>1</sup>

Perinatal depression encompasses a wide range of mood disorders that can affect a woman during pregnancy and after the birth of her child, including prenatal depression, the “baby blues,” postpartum depression and postpartum psychosis.<sup>2</sup>

Depression with onset after childbirth, but within the first year postpartum, is called postpartum depression. Most often, onset occurs within four weeks of delivery, and this is the timeframe used in the definition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). The diagnosis of postpartum depression is based not only on the length of time between delivery and onset, but also on the severity of the symptoms.<sup>3</sup>

According to the National Institute of Mental Health (NIMH), women are particularly vulnerable to depression after giving birth, when hormonal and physical changes and the new responsibility of caring for a newborn can be overwhelming.<sup>4</sup> Hormonal changes may trigger symptoms of postpartum depression. Within the first 24 to 48 hours after childbirth, estrogen and progesterone hormone levels quickly return to normal. Researchers think this rapid drop in hormone levels may lead to depression in some women. Low levels of thyroid hormones can also cause symptoms of depression and can be diagnosed by a simple blood test.<sup>5</sup>

The CDC notes that symptoms of postpartum depression are similar to those of depression unrelated to childbirth, but may also include:

- Difficulty sleeping even when the baby is asleep;
- Sense of disconnectedness from the baby;
- Feelings of over-attachment to the baby;
- Scary, unwanted, intrusive, negative thoughts about the baby (ex., thinking someone will take away the baby, or hurt the baby);
- Worry about hurting the baby; and
- Feelings of guilt about not being a “good mom.”

Findings from a CDC survey suggest that between 8 and 19 percent of new mothers experience frequent postpartum depressive symptoms.<sup>6</sup> Although depression can be hard to recognize, those in contact with new mothers — health care providers, family, friends — should support mothers in seeking professional help.<sup>7</sup>

## Healthy People 2020

The U.S. Department of Health and Human Services has identified several objectives for the primary goal of “improving mental health through prevention and by ensuring access to appropriate, quality mental health services.”<sup>8</sup>

One objective is to reduce the proportion of persons who experience major depressive episodes (MDEs). Mental Health/Mental Disorder (MHMD) objective 9.2 is to increase the proportion of adults aged 18 years and older with major depressive episodes who receive treatment. The baseline for this objective is the 68.3 percent of adults aged 18 years and older with major depressive episodes who received treatment in 2008. The target for this is a 10 percent improvement to 75.1 percent.

Another objective is to increase depression screening by primary care providers. MHMD objective 11.1 is to increase the proportion of primary care physicians who screen adults aged 19 years and older for depression during office visits. The baseline for this objective is 2.2 percent of primary care physicians who screened adults aged 19 years and older for depression during office visits in 2007. The target is a 10 percent increase to 2.4 percent.<sup>9</sup>

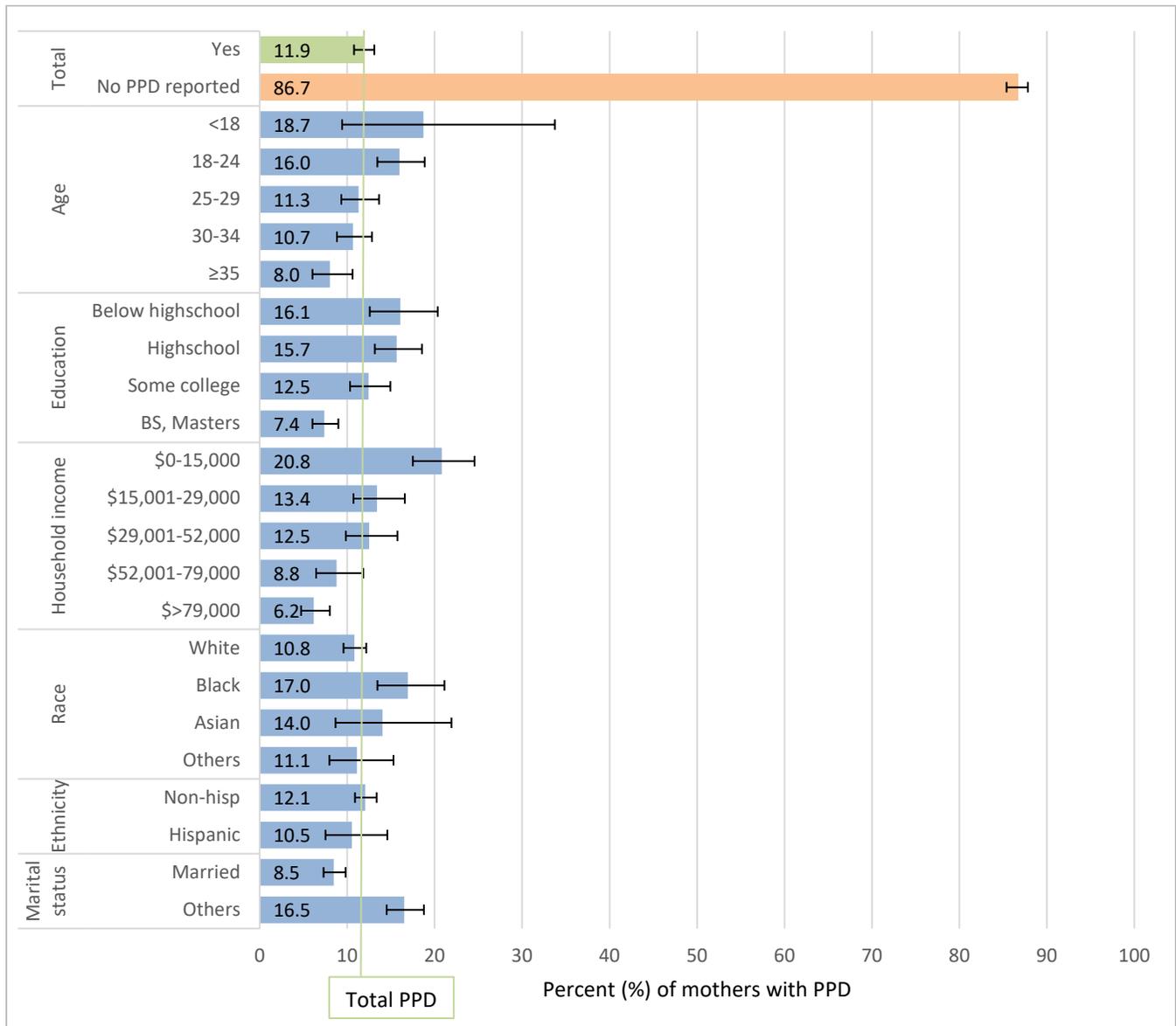
One of the concerns identified in Pennsylvania's 2018 Maternal and Child Health Services Title V Block Grant 2017/2019 Interim Needs Assessment Report is that service recipients feel they are receiving unequal treatment if they have a disability, including physical, mental or behavioral. Of 14 possible reasons for unequal treatment listed in the Title V MCHSB Interim Needs Assessment, disability was listed second to income level.<sup>10</sup>

### **Postpartum depression**

Several questions within the Pa. PRAMS survey serve to identify postpartum prevalence and intervention. Data from the Pa. PRAMS reveal that in 2015, 10.1 percent (95% Confidence Interval [CI]=8.2-12.4) of Pennsylvania's new mothers experience frequent postpartum depressive symptoms, which differs from the mean of 12.8 percent for PRAMS participating sites.<sup>11</sup>

The Pa. PRAMS questionnaire captures responses to how sampled mothers felt since delivery. Survey participants are asked: "Since your new baby was born, how often have you felt down, depressed or hopeless?" (Always, Often, Sometimes, Rarely, Never) and "Since your new baby was born, how often have you had little interest or little pleasure in doing things?" (Always, Often, Sometimes, Rarely, Never). Responses of "Always" and "Often" to either question are coded as reports of PPD symptoms.

**Figure 7.29 New Mothers with Postpartum Depression (PPD), Pennsylvania PRAMS, 2012-2015<sup>12</sup>**



While Pa. PRAMS utilizes a statewide sample large enough to produce scientifically valid, weighted data representative of Pennsylvania, it was not designed for facilitating analysis at the county level. However, in describing Pennsylvania’s unique geographic profile indirectly through proxy indicators and risk factors, it is possible to establish counties likely to contain high rates of postpartum depression.

**Sociodemographic factors:** Hobfoll, et al. found higher rates of postpartum depression among low income, inner-city women.<sup>13</sup> In that study, a sample of 192 financially impoverished inner-city women was assessed for clinical depression twice during pregnancy and once postpartum. Postpartum depression was found among 23.4 percent of participants. At the time of that study, the percentage was approximately double the percentage realized for middle-class samples.

Pennsylvania is a large state with significant differences in county population size across its 67 counties. According to 2017 estimates of the U.S. Census Bureau, Philadelphia is the sixth most populated city in the nation. There were 64,809 births in its county, also called Philadelphia, from 2015 to 2017 (three-year sum). The next largest

county in the state, Allegheny, had 61 percent as many births (39,491) during that time period. By comparison, 56 of Pennsylvania's counties, or 84 percent of them, had fewer than 10,000 births.<sup>14</sup>

**Adolescent childbearing:** Chen and Sierra Manzano, et al. found a higher incidence of postpartum depression in teenage or adolescent mothers.<sup>15,16</sup> Chen found that among 21 symptoms of depression, adolescent mothers exhibited significantly higher cognitive-affective symptoms than adult mothers. Utilizing the Edinburgh Postnatal Depression Scale (EPDS)<sup>17</sup> in a study of 306 women, Manzano and co-investigators found that the age of the mother was one of the independent variables associated with postpartum depression. More details about this risk factor can be found in the "Adolescent Pregnancy and Childbearing" portion of this report, on pages 7-10.

**Maternal age:** Considering Pa. PRAMS survey responses in light of maternal age, the highest percent of respondents reporting postpartum depressive symptoms (PPD) is younger than 18 years old, at 18.7 percent. While the sample size is low and the confidence interval is wide, the percent indicating PPD symptoms in the age group of adolescent mothers is 2.3 times greater than the 8.0 percent in the 35 and older population.<sup>18</sup>

**Race and ethnicity:** Using the Pa. PRAMS data to draw conclusions about postpartum depression with regard to race and ethnicity is problematic due to the relatively low sample response rates among persons from some racial and ethnic groups, as well as low sample sizes with the PPD variable. Therefore, caution should be taken in interpreting these results.

About 17.0 percent (CI=13.5-21.1) of black respondents reported symptoms of PPD, compared with Hispanic (all races) respondents at 10.5 percent (CI=7.5-14.6), and white respondents at 10.1 percent (CI=9.6-12.2) in 2015.

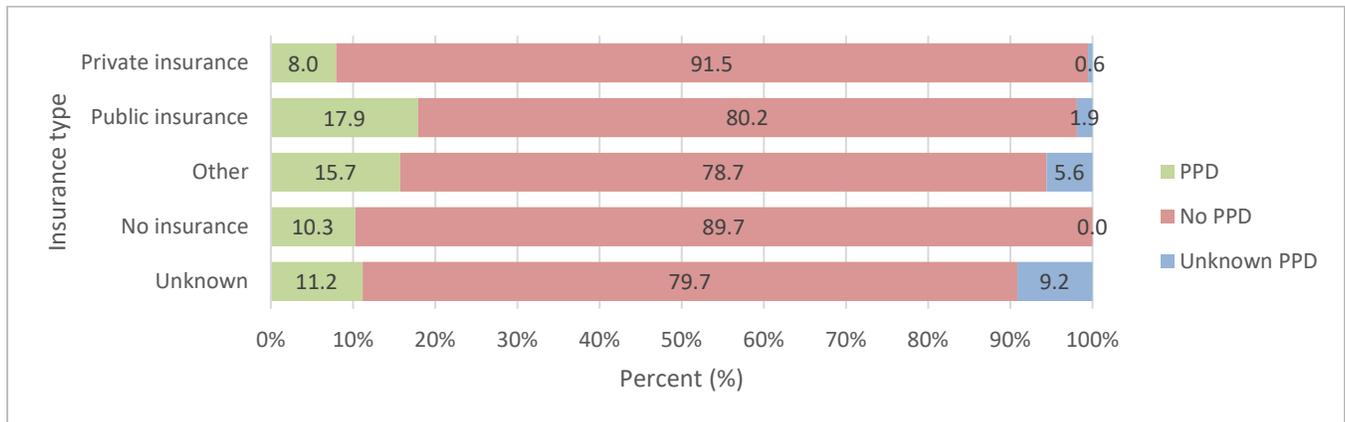
Although the sample size was low, the data do support a conclusion that Pennsylvania mothers in the white population are reporting postpartum depressive symptoms significantly less often than mothers in the black populations.

**Income:** Based on the Pa. PRAMS 2012-2015 data, mothers with household incomes less than \$15,000 (before taxes) report symptoms of PPD with a relatively high frequency of 20.8 percent (CI=17.5-24.6) compared to 11.9 percent in the general maternal population (CI=10.8-13.1).

**Insurance type:** To identify and compare postpartum depression frequency within two subpopulations, sampled mothers were asked to identify if they had public (Medicaid, Medical Assistance, Health Choices, CHIP, TRICARE) or private insurance (employer based or purchased). Mothers having public insurance were more likely to report postpartum depressive symptoms.

Of those mothers with public insurance, 17.9 percent (CI=15.6-20.6) indicated PPD symptoms. Of those mothers with private insurance, 8.0 (CI=6.8-9.3) percent indicated PPD symptoms. This difference is significant.

**Figure 7.30 Mothers with Postpartum Depression by Insurance Type, Pennsylvania PRAMS, 2012-2015<sup>19</sup>**



Private insurance is defined as insurance purchased from employment or courtesy of husband, partner or parents. Public insurance includes Medicaid, Medical Assistance, Health Choices, CHIP or TRICARE or other military.

**Education:** Mothers who completed the PRAMS survey and had below high school and a high school education had the highest percentage of PPD symptoms. Respondents in those groups had PPD rates of 16.1 (CI=12.6-20.4) and 15.7 (CI=13.2-18.6) percent, respectively. This is significantly higher than the overall population at 11.9 (CI=10.8-13.1) percent in 2015.

**Marital status:** Some studies have suggested that unmarried women are more likely than their married counterparts to experience postpartum depression. Pfof, et al. found in a 1990 study of 69 white women that marital status was a significant predictor of postpartum depression. The strength of this correlation was second only to that of preexisting depression.<sup>20</sup>

An examination of the weighted 2012-2015 Pa. PRAMS data reveals a significant association between marital status and postpartum depressive symptoms. As defined within the Pa. PRAMS dataset, mothers' marital status is derived from the vital records birth certificate file with two possible values: "married" and "other." Mothers identified as "other [than married]" reported PPD at a rate of 16.5 (CI=14.5-18.8) percent compared to married mothers who were nearly twice as likely to self-report postpartum depressive symptoms at 8.5 (CI=7.3-9.8) percent.

**Other risk factors:** In a study published in 2006, research faculty from the Oklahoma State University College of Osteopathic Medicine in Tulsa conducted a study to describe possible correlations between postpartum depression and various characteristics. Their results indicated that a history of depression, formula feeding in place of breastfeeding and cigarette smoking were all significant risk factors for an Edinburgh Postnatal Depression Scale of 13 or higher, indicating probable postpartum depression.<sup>21</sup>

There is no single cause of postpartum depression. Physical, emotional and lifestyle factors may all play a role. However, certain factors have been identified as possibly increasing one's risk of depression after pregnancy:

- Depression during pregnancy;
- Personal history of depression or another mental illness;
- Family history of depression or another mental illness;
- Lack of support from family and friends;
- Anxiety or negative feelings about the pregnancy;
- Unplanned or unwanted pregnancy;

- Problems with a previous pregnancy or birth;
- Marriage or money problems;
- Stress, such as from life events or child care;
- Young age;
- Substance use;
- Cigarette smoking;
- Infant temperament;
- Unmarried status;
- Lower socioeconomic status; and
- Formula feeding.

## Intervention Strategies

Targeting populations at risk for postpartum depression and implementing effective programs to minimize its impact on maternal and infant health is key, including the following goals:

- **Enhance prenatal awareness.** Educate pregnant women about postpartum depression during the third trimester, with information about risks, symptoms and how to get help.<sup>22</sup>
- **Screen pregnant and postpartum women.** Obstetricians/gynecologists should screen patients during prenatal care visits, birth and obstetrical postpartum appointments, well-baby visits, and postpartum internal medicine/family practice visits.<sup>23,24</sup>
- **Train health care providers.** Training should be specialized and focus on particulars of PPD.<sup>25</sup>
- **Develop connections for referral.** For health care organizations that serve pregnant and postpartum women.<sup>26</sup>
- **Share resources about PPD.** The Office of Mental Health or its designee should update and widely distribute resources in multiple formats for diverse audiences to ensure accurate listings for referral agencies.<sup>27</sup>
- **Provide home-based “mobile” therapy.**<sup>28</sup>
- **Develop and evaluate pilot projects.** Ensure that the range of available treatment services align with the level of need for mothers who have perinatal depression.<sup>29</sup>
- **Increase public awareness.** Perinatal depression coverage through an education campaign.<sup>30</sup>
- **For teens, implement policy changes to build upon school-behavioral health infrastructure.** Improve systemic detection, screening, referrals and treatment; provide training for school counselors and contracted social service providers.
- **For teens, increase awareness about perinatal depression among child behavioral health providers.** Include training explicitly focused on differentiating between perinatal depression symptoms and situational stressors or developmental behaviors associated with adolescence.

The Pennsylvania Department of Health supports initiatives designed to raise awareness about postpartum depression, decrease stigma associated with it and increase screening. The department has funded training of practitioners, medical personnel and community social service providers in an effort to advance this goal. Additionally, the department provides information and referral on resources for postpartum depression through the Healthy Baby Line (800-986-BABY).

Potential barriers to accessing mental health care include health insurance, child care, transportation, stigma, language, awareness and resources. These represent ideal focal points for addressing postpartum depression and thus improving the health of mothers and babies.

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## Infant Mortality

The infant mortality rate is the number of deaths prior to first birthday per 1,000 live births. In the United States, the infant death rate in 2017 was 5.8 deaths per 1,000 live births. The number of infant deaths and rate in Pennsylvania in 2017 was 841 and 6.1 per 1,000 live births.<sup>1</sup> Neonatal mortality, a subset of infant mortality, is the number of deaths in the first 28 days of life for every 1,000 births. Neonatal mortality is the largest component of infant mortality, accounting for approximately 65 to 70 percent of all infant deaths.<sup>2</sup> In 2018, neonatal mortality was 3.9 per 1,000 live births, and post neonatal mortality was 1.9. Overall infant mortality was 5.8 per 1,000 live births.<sup>3</sup>

The leading causes of infant death in the United States in 2017 were congenital malformations, 118.8 per 100,000 live births, and low birth weight, 97.2 per 100,000 live births.<sup>4</sup> “Certain conditions originating in the perinatal period” as listed in the Death Certificate Dataset are the largest contributors to infant death at 3.4 per 1,000 in 2016. The rate of Sudden Infant Death Syndrome (SIDS) is 0.4 per 1,000.<sup>5</sup>

Although neonatal and infant deaths are vital outcome measures of maternal and child health, they do not provide an overall perspective on pregnancy outcomes. A complete assessment must also account for fetal losses, particularly those that occur before the fetus is viable or able to survive outside of the mother’s body. In many cases, the only difference between a fetal loss and a neonatal death is that the baby exhibited signs of life briefly, for perhaps minutes.<sup>6</sup> Otherwise, the outcome of the pregnancy is the same. Fetal losses are not included in the calculation of neonatal and infant mortality, which may cause the numbers, based on a relatively low number of instances, to be dramatically affected by small changes.

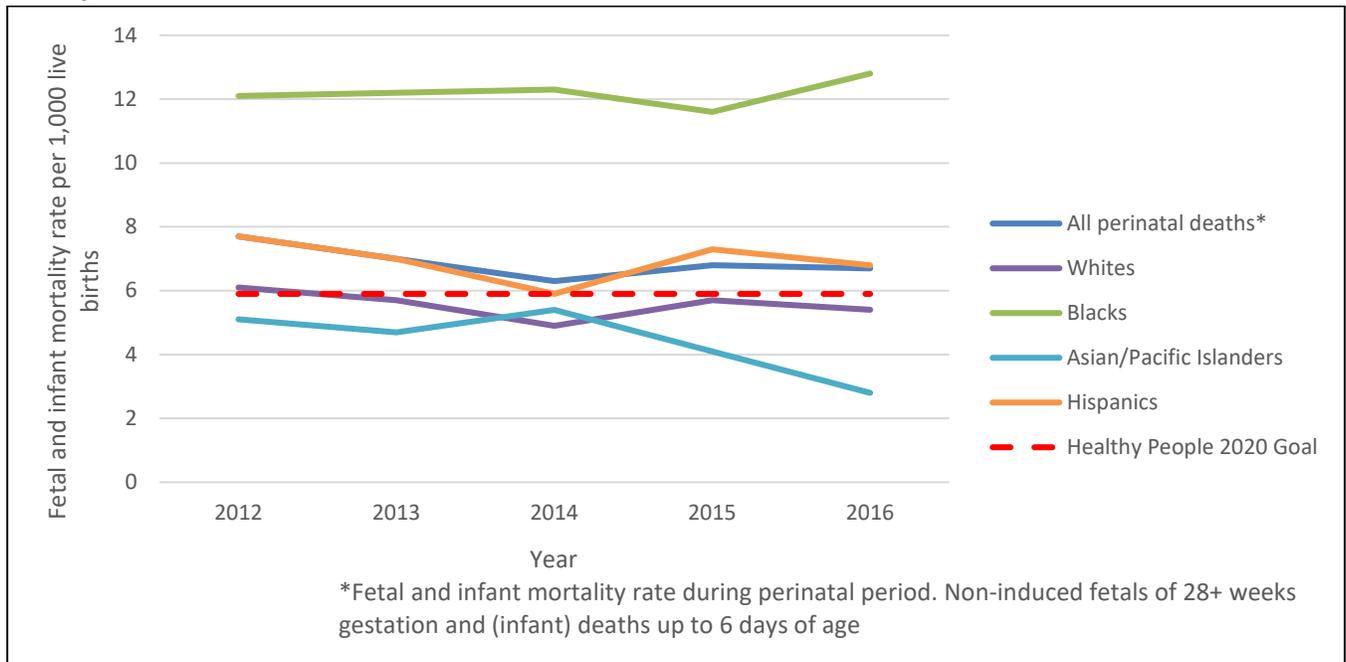
In order to effectively reduce the rate of infant death while controlling health care costs, the causes of poor pregnancy outcomes must be identified and treated, especially those related to early delivery. It is vital to understand the cause of continuing racial disparities and provide ways to improve comprehensive services that prolong pregnancies among black women, bringing their infants to term, or closer to term, before delivery.

### Healthy People 2020

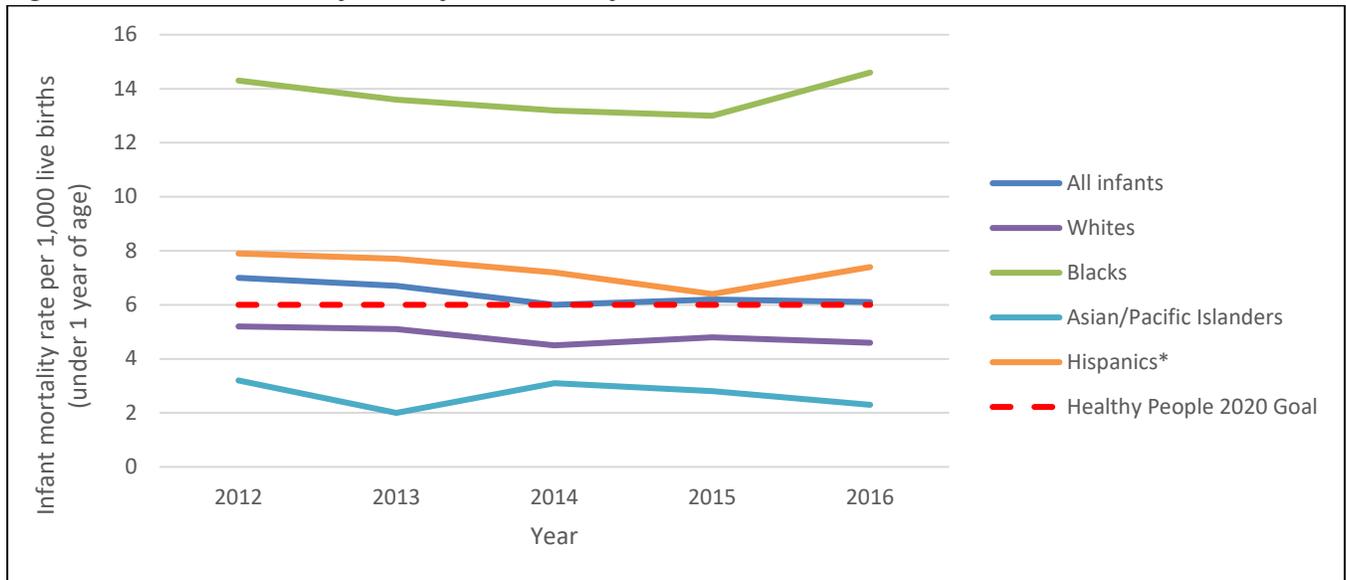
The U.S. Department of Health and Human Services has targeted a 10 percent reduction in the infant mortality rate as its Healthy People 2020 objective for this health topic. In the 2006 baseline year, the national rate was 6.7; in 2014, the rate had reached a low of 6.0 per 1,000 live births, and in 2017 was 5.8 per 1,000 live births.<sup>7,8</sup>

However, disparities persist among infants belonging to racial and ethnic minority groups. As shown in Figures 7.30, 7.31 and 7.32, the 2016 Pennsylvania rates of infant mortality, neonatal mortality and post-neonatal mortality for black infants far exceeded rates among white infants, Hispanic infants and Asian/Pacific Islander infants.

**Figure 7.31 Perinatal Mortality Rate and Non-induced Fetal Deaths of 28+ Weeks Gestation by Race, Pennsylvania, 2012-2016<sup>9</sup>**

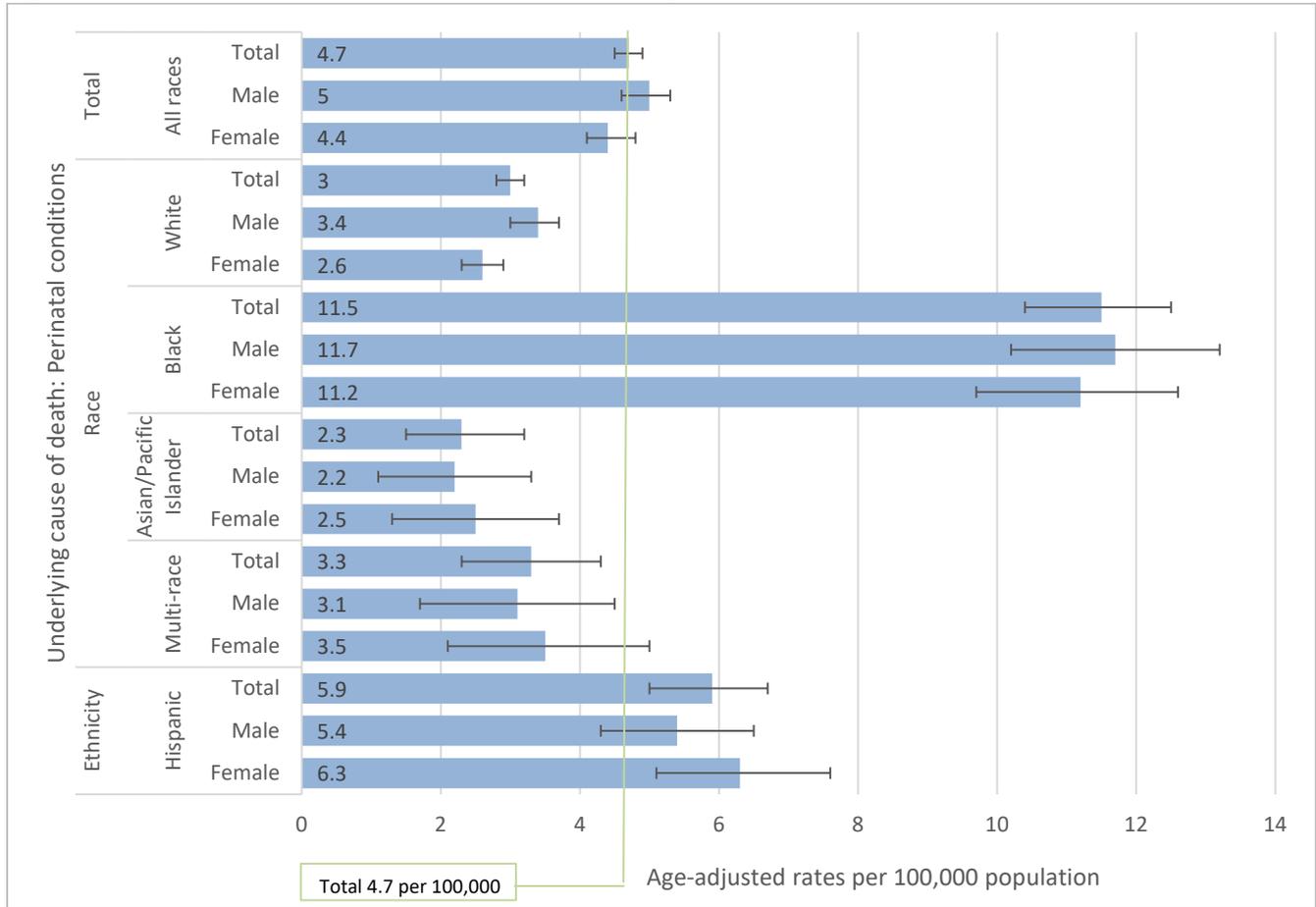


**Figure 7.32 Infant Mortality Rate by Race, Pennsylvania 2012-2016<sup>10</sup>**



As can be seen in these two figures, black and Hispanic infant mortality has consistently not met the Health People 2020 targets for perinatal mortality and infant mortality.

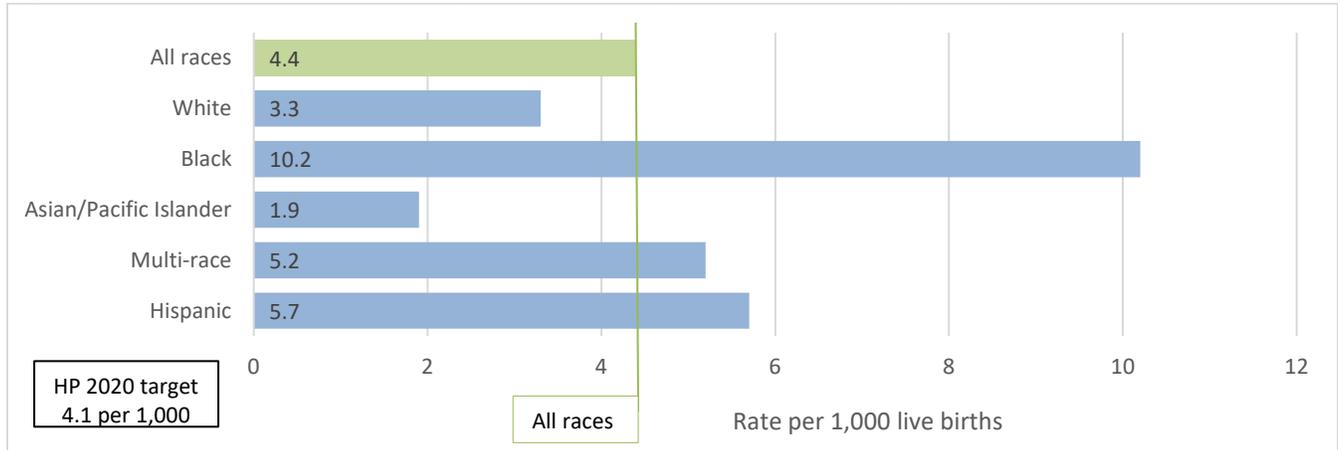
**Figure 7.33 Deaths Due to Perinatal Conditions, Pennsylvania, 2014-2016<sup>11</sup>**



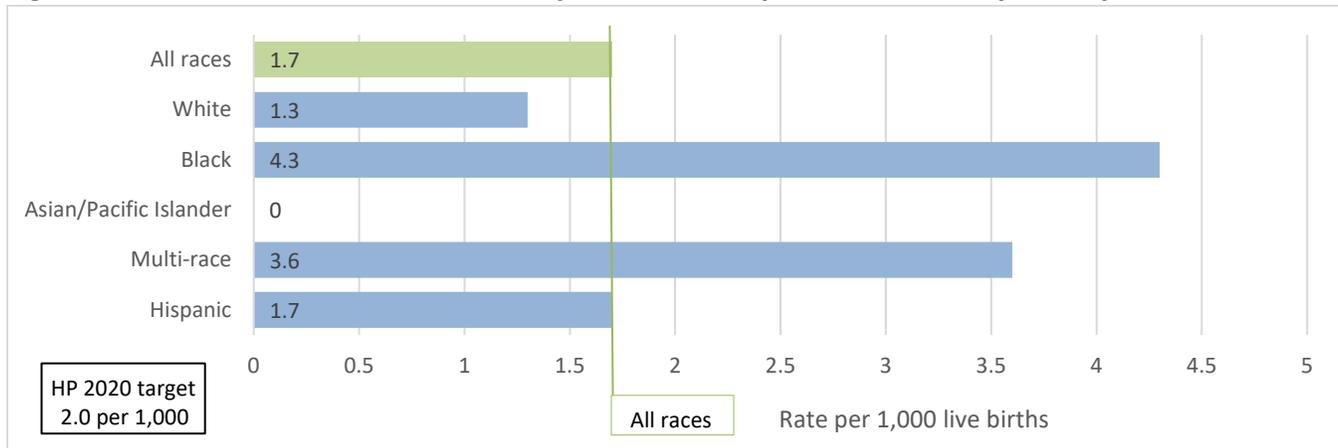
Preterm birth is the most common cause of perinatal mortality.<sup>11</sup> Figure 7.33 and the following figures show that blacks are the highest risk population, followed by Hispanic and multi-race. The higher risk holds for infants both below and above 28 days old. Figure 7.34 indicates that this is both an urban and rural concern across the state.



**Figure 7.36 Infant Neonatal (<28 Days) Death Rate by Race and Ethnicity, Pennsylvania, 2016<sup>14</sup>**



**Figure 7.37 Infant Post Neonatal (28-364 Days) Death Rate by Race and Ethnicity, Pennsylvania, 2016<sup>15</sup>**



**Infant mortality**

Despite declines in infant mortality, disturbing trends continue. The rate of preterm delivery, the leading cause of infant mortality, has not significantly changed over the last 20 years, especially for VLBW infants.<sup>16</sup> Therefore, the improvement in the infant mortality rate cannot be considered a result of fewer infants at risk but in improved care by neonatal intensive care units (NICUs). In addition, racial disparities continue to exist, particularly with those dying from prematurity and sleep-related deaths (e.g., suffocation, asphyxia, entrapment). Finally, the U.S. continues to have higher infant mortality rates than other industrialized countries, including most of Europe, Canada and Japan.<sup>17</sup>

The rate of infant mortality in Pennsylvania decreased from 7.0 per 1,000 live births in 2012 to 6.1 per 1,000 live births in 2016, but it remains higher than the national average of 5.9 per 1,000 live births. The rate of mortality for black infants is more than twice the rate for all infants in the state, and the rate for black infants increased between 2012 and 2016, while the rate for white, Asian/Pacific Islander and Hispanic infants decreased.

Of the 856 infant deaths that occurred in Pennsylvania in 2016, 619 were neonatal deaths (72.3 percent), while 237 occurred after the neonatal period (27.7 percent). The primary causes of death are shown in Table 7.9.

**Table 7.9 Leading Causes of Infant Death, Pennsylvania, 2016<sup>18</sup>**

Cause	Number	Rate (per 1,000 births)
Certain conditions originating in the perinatal period (most commonly, prematurity)	479	3.4
Disorders related to length of gestation and fetal malnutrition	196	1.4
Congenital malformations, deformations, chromosomal abnormalities	141	1.0
Newborn affected by maternal factors and by complications of pregnancy, labor and delivery	126	0.9
Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified	106	.08
Sudden infant death syndrome (SIDS)	51	.04

Prematurity seems to have a stronger effect on infant mortality in Pennsylvania than is shown in the national data, which has about 34 to 36 percent of infant deaths related to prematurity. However, even nationally, the percent is higher for both blacks and Hispanics.<sup>19</sup> Higher numbers of premature infant deaths in Pennsylvania may represent the fact that blacks are overrepresented in Pennsylvania infant mortality compared to the country as a whole. It may also, however, reflect that previable births (occurring before 23 weeks of gestation) may be more commonly identified as live births in Pennsylvania and less likely to be identified as such elsewhere. Therefore, they would be included in Pennsylvania infant mortality statistics.

For an in-depth review of factors that may lead to international and state variations in infant mortality, the reader is referred to “The U.S. Infant Mortality Rate: International Comparisons, Underlying Factors, and Federal Programs,” published by the Congressional Research Services in 2012.<sup>20</sup>

### Neonatal mortality

Neonatal mortality trends closely mirror infant mortality trends.

As with infant mortality rates, the overall decline in Pennsylvania’s neonatal mortality rate was not consistent across racial and ethnic groups. However, the decrease among black infants was significantly greater than the decrease in neonatal mortality for all infants. The rate for white infants remained relatively unchanged.

Infant and neonatal mortality rates in Pennsylvania are slowly declining but, overall, have not mirrored nationwide improvement. There appears to be a greater racial disparity in Pennsylvania’s rates than the national rates. More work must be done to address the infant and neonatal rates and racial disparities.

## Intervention Strategies

Based on these trends, the following approaches are recommended to reduce infant and neonatal mortality in Pennsylvania:

- **Review infant death records.** Correctly identify underlying conditions contributing to these deaths. Each county in the state has a Child Death Review team, and the data gathered by them can help identify areas in which potentially preventable deaths are occurring.
- **Promote safe sleep recommendations.** Pennsylvania’s legislature has mandated that parents receive safe sleep education in the hospital before the newborn is discharged. This education must be reinforced after discharge by home care agencies, primary care physicians, the media and others.
- **Address “toxic stress.”** Evidence now suggests that stress over the life course, including stress as a result of discrimination at individual, community and system levels, can have an adverse impact on pregnancy outcomes, the leading cause of infant mortality. The effect may be felt more in Pennsylvania than elsewhere,<sup>21,22</sup> and improving pregnancy outcome will require a coordinated and collaborative effort

among medical professionals, community agencies, insurers and families. Efforts to enhance collaboration will increase access to community-based programs available to women in need.

- **Alter reimbursement structures.** Changes in payment mechanism to physicians and hospitals should reward healthier pregnancy outcomes and decrease the profit from poor outcomes.
- **Continue research.** Funding must be made available to identify the underlying mechanisms of early labor and develop interventions that will prolong pregnancy.

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## Endnotes

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# Breastfeeding

In 1965, the U.S. breastfeeding initiation rate had dropped to just 30 percent.<sup>1</sup> In 1972, eligible low-income, non-breastfeeding mothers began to receive formula products through the federal government's Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Around the same time, new evidence of the health benefits of human milk consumption for mothers and babies sparked a small breastfeeding revival. By this time, however, social and community support for breastfeeding had disappeared.<sup>2</sup>

In the 1990s, national and international initiatives for breastfeeding support began to emerge. New evidence showed the relationship between breastfeeding and health. The rate of breastfeeding initiation rose, from about 47 percent to 59 percent, at the end of the decade.<sup>3</sup>

Today, breastfeeding is recognized widely as an important public health issue.<sup>4</sup> The challenge remains to remove individual and social barriers and return to a culture that supports breastfeeding.

## Healthy People 2020

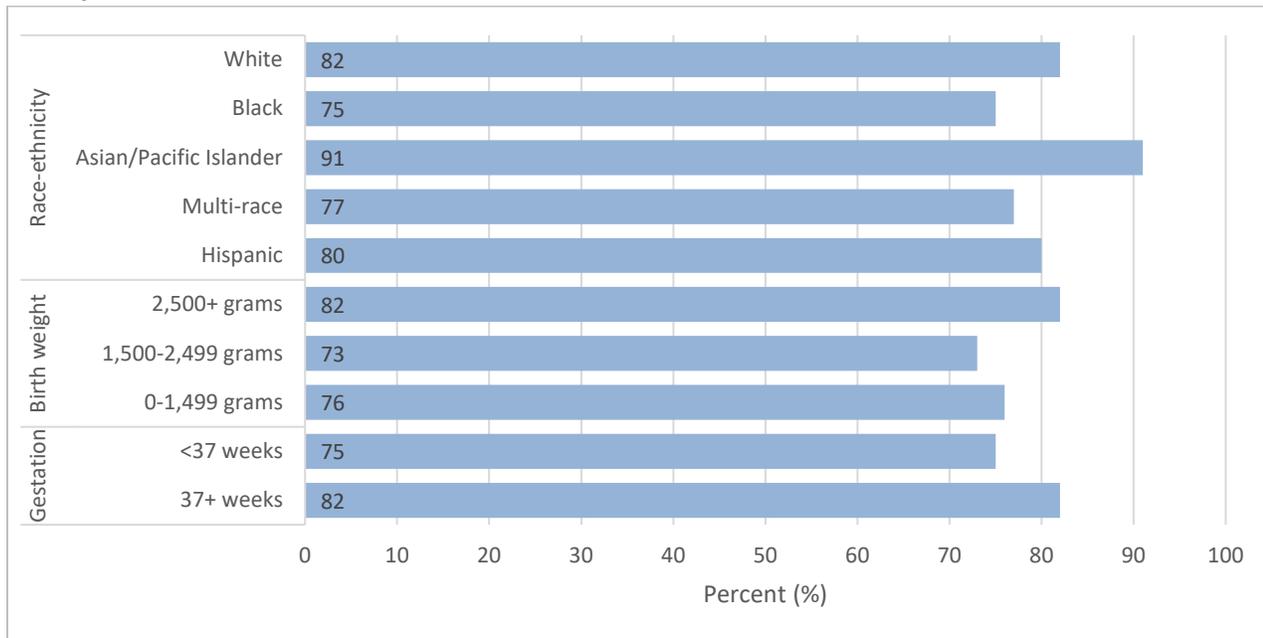
In its Healthy People 2020 guidance, the U.S. Department of Health and Human Services sets objectives for any breastfeeding, as well for exclusive breastfeeding. For the former, measures include infants who "are ever breastfed," "are breastfed at 6 months," and "are breastfed at 1 year." For the latter, objectives measure those who "are breastfed exclusively through 3 months" and "are breastfed exclusively through 6 months."

Healthy People 2020 also includes objectives to support the breastfeeding mother, by "increas[ing] the proportion of employers who have worksite lactation support programs," "reduc[ing] the proportion of breastfed newborns who receive formula supplementation within the first 2 days of life," and "increase[ing] the proportion of live births that occur in facilities that provide recommended care for lactating mothers and their babies."

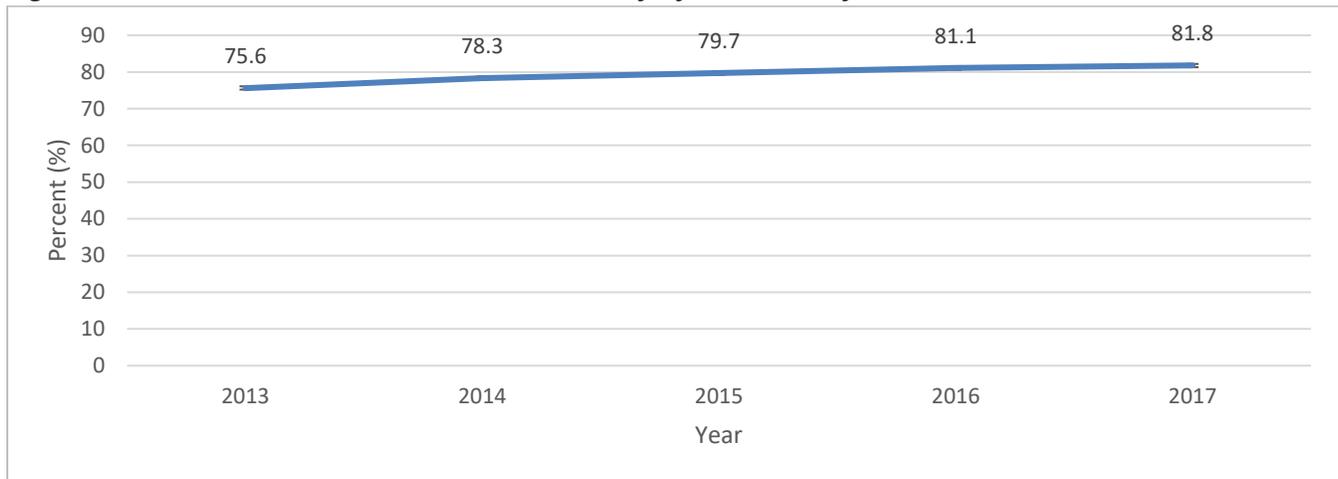
The proportion of Pennsylvania's infants who are ever breastfed continues to increase, based on birth certificate data. In 2010, approximately 70 percent of newborns in the state were breastfed, compared with 61 percent in 2003. By 2015, the national and Pennsylvania these initiation rates were both over 83 percent, exceeding the Healthy People 2020 objective of 81.9 percent. Based on data from the CDC for infants born in 2015, Pennsylvania's rank is 23 of the 50 states for infants ever breastfed. By comparison, Alaska ranked first with 93 percent, and Mississippi ranked last with 63 percent of its infants ever breastfed.<sup>5</sup> As shown in Figure 7.38 rates of breastfeeding initiation in Pennsylvania vary widely by county. In 2017, 27 of 67 counties met the objective for "ever breastfed." The state rate for breastfeeding in 2017 was 81.8 percent.



**Figure 7.39 Mothers Who Reported Breastfeeding Their Baby by Race, Birth Weight and Gestation, Pennsylvania, 2016<sup>9,10</sup>**



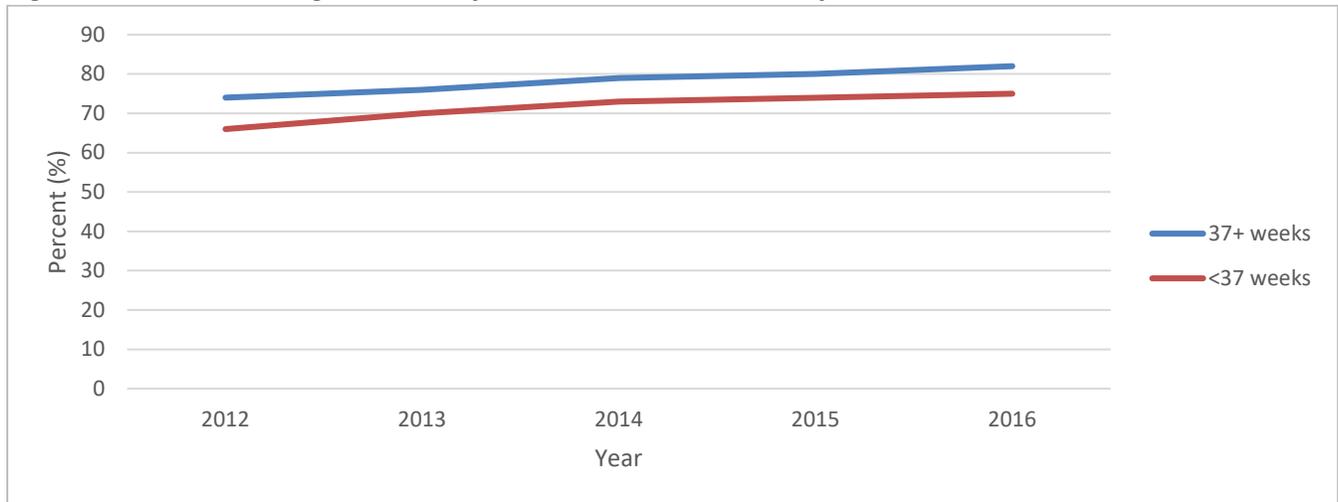
**Figure 7.40 Mothers Who Ever Breastfed Their Baby by Year, Pennsylvania 2012-2016<sup>11</sup>**



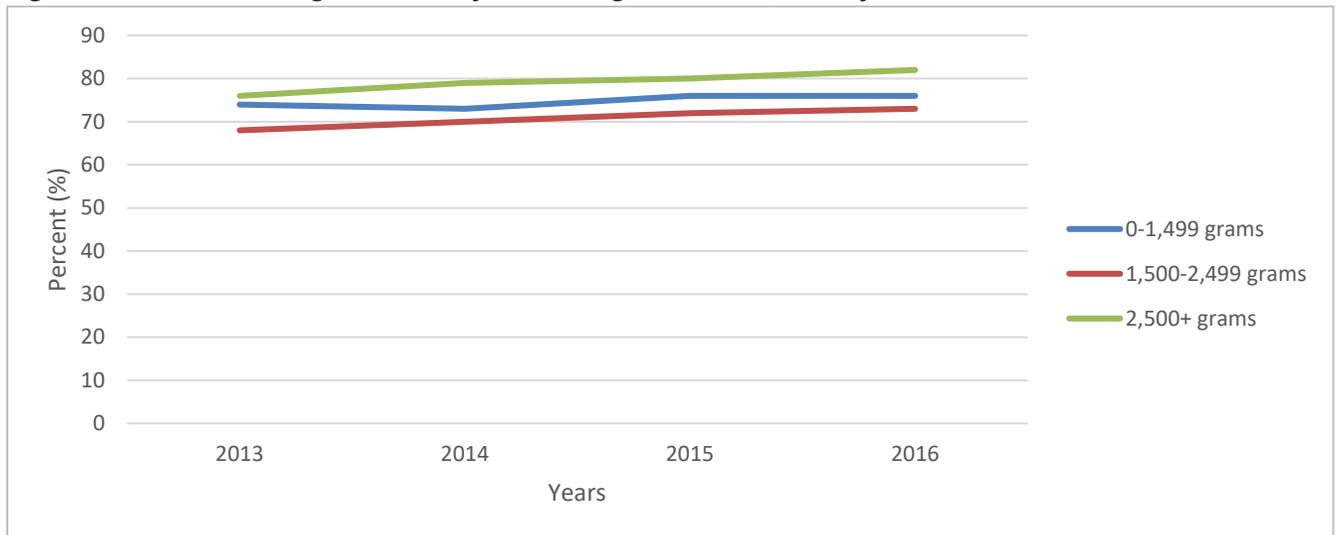
Healthy People 2020 target: Greater than or equal to 81.9% by 2020

The following two figures for breastfeeding initiation by gestation and birthweight show that premature birth and low birth weight were associated with lower breastfeeding rates. Support for mothers in initiating breastfeeding and for the mothers' physical and emotional well-being should be considered.

**Figure 7.41 Breastfeeding Initiation by Gestation and Year, Pennsylvania 2012-2016<sup>12</sup>**



**Figure 7.42 Breastfeeding Initiation by Birth Weight and Year, Pennsylvania 2012-2016<sup>13</sup>**



### Breastfeeding factors

Pa. PRAMS data indicate several factors positively influence mothers having ever breastfed. Mothers 20 years of age or older, mothers with higher levels of education, mothers who are married and those mothers without public insurance or those who did not participate in WIC during pregnancy all report higher rates of breastfeeding. Moreover, all mothers indicate a lower breastfeeding/pumping rate when reporting they were not trying to get pregnant compared to those mothers who reported they were trying to get pregnant.

### Health effects

The influence of breastfeeding on maternal and child health has been well-reported in the literature and was the subject of a Surgeon General's report in recent years.<sup>14</sup> Babies who breastfeed have fewer ear infections and diarrhea, while formula fed infants are at higher risk for some serious infections and diseases, including lower respiratory infections, leukemia, Sudden Infant Death Syndrome (SIDS), type 2 diabetes, asthma and childhood obesity. Breastfeeding also reduces a mother's risks for certain health outcomes such as breast cancer and ovarian cancer. The information in Table 7.11 is drawn from the 2011 Surgeon General's Call to Action to Support Breastfeeding.

**Table 7.11 Excess Health Risks Associated With Not Breastfeeding, Surgeon General’s Call to Action, 2011**<sup>15</sup>

Outcome	Excess Risk
<b>Among full-term infants</b>	
Acute ear infections (otitis media)	100%
Eczema (atopic dermatitis)	47%
Diarrhea and vomiting (gastrointestinal infection)	178%
Hospitalization for lower respiratory tract diseases in the first year	257%
Asthma, with family history	67%
Asthma, with no family history	35%
Childhood obesity	32%
Type 2 diabetes mellitus	64%
Acute lymphocytic leukemia	23%
Acute myelogenous leukemia	18%
Sudden Infant Death Syndrome	56%
<b>Among preterm infants</b>	
Necrotizing enterocolitis (NEC)	138%
<b>Among mothers of full-term infants</b>	
Breast cancer	4%
Ovarian cancer	27%

Note: Excess risk is approximated based on odds ratios in referenced studies.

According to the American Academy of Pediatrics (AAP), the evidence for breastfeeding and health is strong enough to warrant a change in perspective and policy. In its strongly worded statement on breastfeeding, the nation’s leading professional pediatric organization noted that “[b]reastfeeding and human milk are the normative standards for infant feeding and nutrition. Given the documented short- and long-term medical and neurodevelopmental advantages of breastfeeding, infant nutrition should be considered a public health issue and not only a lifestyle choice.”<sup>16</sup>

The multidisciplinary Academy of Breastfeeding Medicine (ABM) finds that “[i]ncreasing breastfeeding rates is one of the most important behaviors that can decrease infant death and illness worldwide. In times of disaster or food insecurity, infants who are not breastfed have a markedly higher risk of infant mortality and morbidity from infectious diseases. Long-term consequences of not breastfeeding have become apparent such as a higher risk of sudden infant death syndrome, necrotizing enterocolitis (a gastrointestinal disease), elevated blood pressure and cholesterol, obesity, diabetes and cancers.”<sup>17</sup>

## Intervention Strategies

**Support of health care providers:** Health care providers are often the first contacts many modern women have with the subject of breastfeeding, so they must understand how to support breastfeeding. Health care organizations must be designed to support breastfeeding mothers as well. The Pennsylvania Department of Health assists health care providers in this effort by making small grants (up to \$5,000) available to hospitals and by providing a training model for use with pediatric office staff. Grant-funded projects include assisting with breastfeeding needs in the NICU, providing education for nursing staff and more. EPIC-BEST, Educating Practices In Their Communities — Breastfeeding Education Support and Training is a joint venture between the Department of Health and the Pennsylvania chapter of AAP that provides more than 100 office practices with 60 to 90 minutes of training for office staff, as well as reference materials, technical assistance and follow-up.

**Provision of data:** A dedicated breastfeeding page within the Department of Health’s website provides state residents and others with a variety of information on breastfeeding. State and national data provide a clear picture of breastfeeding rates. The Pennsylvania Breastfeeding Awareness and Support State Plan is available as well,

explaining many ways partner groups can support breastfeeding and sharing handouts for parents. The Pennsylvania Breastfeeding Referral Guide provides a list of local breastfeeding resources by county.

**Support of community efforts:** Pennsylvania has seen an increase in the number of local breastfeeding coalitions over the last year. Currently, 21 meet regularly to represent 28 (of 67) counties. While each coalition has its own mission and activities, all are focused on increasing breastfeeding rates in the state. Ongoing communications and technical assistance continue to increase the strength and number of coalitions. Lactation support in the workplace is also an area for intervention. Using the Business Case for Breastfeeding materials from the Health Resources and Service Administration (HRSA), staff work with local employers to discuss the economic impact of supporting employee breastfeeding and become breastfeeding-friendly workplaces.

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## Endnotes

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# Childhood Screening

In Pennsylvania, mandated childhood health screenings in the school setting are typically carried out by school nurses or their designees. Other screenings are performed in the primary care setting by pediatricians, family practitioners or their designees. These primary care screenings follow American Academy of Pediatrics (AAP) preferred practice patterns. Through these and other community-based screening opportunities, children are screened for various medical issues. Recommended and required screenings are outlined below and efficacy described.

## **National initiative for screening**

The American Academy of Pediatrics (AAP), through its Bright Futures national initiative, recommends various screening in the “medical home,” typically the usual pediatric office the child visits.<sup>1</sup> Measurements of length, height and weight are performed throughout infancy, and at 12 months, 15 months, 18 months, 24 months, 30 months and 36 months of age; thereafter, they can be assessed every year through childhood and adolescence. Calculation of body mass index (BMI) is to begin at 24 months, and continue at 30 months, 36 months and yearly. Risk assessment for high blood pressure should be performed up to 30 months of age, with blood pressure monitoring yearly from age three.<sup>2</sup>

Before a child is three years old, the AAP recommends that signs of vision or eye problems be evaluated, and appropriate referrals made. For children age three and older, acuity is also to be assessed; children are to be referred if there is poor acuity or signs of eye or vision abnormalities.<sup>3</sup>

Hearing screening risk assessment is to be performed throughout infancy, at 12 months, 15 months, 18 months, 24 months, 30 months, 36 months, 7 years, 9 years and 11 years of age; then, it is to be assessed yearly. Hearing testing is to be performed in the newborn and at ages 4, 5, 6, 8 and 10 years old.<sup>4</sup>

## **Newborn screening**

Each year approximately 135,000 to 140,000 newborns are delivered in Pennsylvania.<sup>5</sup> Mandated newborn screening in Pennsylvania requires babies to have the following newborn screenings completed shortly after birth: dried blood spot screening, newborn hearing screening and critical congenital heart defects screening (CCHD). Mandated newborn screenings are completed by birth hospitals, birthing centers and home birth midwives. Pennsylvania’s Newborn Screening and Follow-up Program works closely with this broad network of stakeholders to ensure individual level screening takes place within recommended timelines and that all newborns identified to have abnormal screenings receive appropriate referral for diagnosis, treatment or early intervention.

## **Dried blood spot screening**

All newborns in Pennsylvania are required to receive a newborn genetic and metabolic screening pursuant to the Newborn Child Testing Act (35 P.S. § 621, et. seq.) and the regulations promulgated thereunder (28 Pa. Code § 28.1, et. seq.) Most birthing hospitals and birthing centers in Pennsylvania now screen for over 35 metabolic/genetic conditions. Newborns identified to have presumptive positive screening results receive timely referrals to accredited treatment centers or pediatric specialists throughout the commonwealth for more inclusive diagnostic testing and evaluation. While these metabolic and genetic conditions are rare, with proper treatment, the serious medical problems related to these conditions may be averted or minimized.

The Newborn Screening and Follow-up Program interacts with local, state and federal partners to implement national recommendations pertaining to newborn dried blood spot testing. The Newborn Screening Technical

Advisory Board comprised of pediatric specialists with diverse medical specialties provides expertise and advice to the follow-up program.

### Critical congenital heart defects (CCHD) screening

Congenital heart defects are the most common type of birth defect in the United States. Approximately one in four babies born with a heart defect have CCHD, which will require surgery or other procedure with the first year of life.<sup>6</sup> Utilizing a pulse oximeter during newborn screening for CCHDs can identify babies with these condition before signs or symptoms are evident and before the baby is discharged from birthing facility. The department recommends all newborns delivered in an out of hospital setting receive a pulse oximetry screen between 24-48 hours of life. In the event of a failed screen, the Newborn Screening and Follow-up Program works with providers to ensure a follow-up echocardiogram is performed and interpreted by a pediatric cardiologist and appropriate referrals are in place.

### Vision screening

The 2002 Department of Health’s “Procedures for the Vision Screening Program for Pennsylvania’s School-Age Population” prescribes how vision screening is to be carried out in Pennsylvania’s schools,<sup>7</sup> noting that the Public School Code of 1949 requires every school-age child to be given a vision test. The test should be administered by a certified school nurse, medical technician (health room aide), or teacher, using a Snellen chart or other screening device approved by the Department of Health. Test requirements include the following:

**Table 7.12 Vision Screening Test Requirements, Pennsylvania<sup>8</sup>**

Test Requirements	Condition	Grade Levels
Far visual acuity test	Amblyopia, astigmatism, myopia	All students yearly
Near visual acuity test	astigmatism, focusing problems, Hyperopia	All students yearly
Convex lens test (plus lens)	Excessive hyperopia	1st grade students meeting criteria, new students not previously screened
Color vision test	Color discrimination	1st or 2nd, new students not previously screened
Stereo/depth perception test	Binocularity, strabismus	1st or 2nd, new students not previously screened

Although it is mandated that every child receive a vision screening yearly with a minimum of both near and far vision, there appears to be recognition that this may not be possible and that resources should be focused on those children at the highest risk. It is mandated that parents must be notified whether a child passes or fails the vision screening. For children who fail a screening, follow-up with an eye specialist is mandatory. The physician must provide a written report. If this is not returned to the school within four to six weeks, the school must contact the parents or guardians and conduct a home visit, if necessary. Each school district is required to submit aggregate information to the Pennsylvania Department of Health by Sept. 30 of each year.

### Hearing screening

Between one and three children per thousand are born each year with some form of hearing loss. Early identification of hearing impairment, coupled with early intervention, helps children overcome impediments to speech and language development and can greatly improve social, emotional and cognitive development.<sup>9</sup> Hearing screening is to be performed on all newborns prior to hospital or birth center discharge, consistent with the Infant Hearing Education, Assessment, Reporting and Referral (IHEARR) Act (11 P.S. § 876-1, et seq.), as well as the Health Resources and Services Administration’s and Healthy People 2010 Objectives on Newborn Hearing Screening. The department recommends that all newborns delivered in the home setting receive a newborn hearing screening within 30 days of birth. A confirmation of any hearing loss detected on such screening should

be made by three months of age, with further audiological assessment and possibly early intervention services provided by the age of six months. The DOH requires birthing facilities and midwives to report individual level screening data within seven days of a screening completion date.

The department's Newborn Hearing Screening Follow-up Program each year identifies approximately 300 infants with some form of hearing loss who are then linked to ongoing medical treatment and early intervention services.

Pennsylvania state regulations require students in kindergarten; grades one, two, three, seven and 11; and those in special, ungraded classes to be given a sweep hearing test.<sup>10</sup> Testing is also recommended for all new children entering the school without documented audiometric hearing test results. This is required for:

- Any students in any grades who are known to have a hearing loss which meets or exceeds the criteria for otologic referral established by the Department of Health;
- Any students who present a history of recurrent upper respiratory infection or who may evidence other possible ear, nose and throat pathology; and
- Any students who show, by classroom behavior, speech pattern or both, that a hearing difficulty may exist.

State guidelines stipulate that the "A student whose threshold test shows a hearing level of 30 dB or more for two or more tones in one or both ears, or 35 dB or more for one tone in either ear, shall be referred to the family's provider or usual source of care for a complete ear examination."<sup>11</sup>

### **Growth screening**

The Department of Health also provides guidance on the minimum growth screening each school district must provide and information for performing proper measures of height and weight, as well as revised growth charts and information about plotting Body Mass Index (BMI).<sup>12</sup>

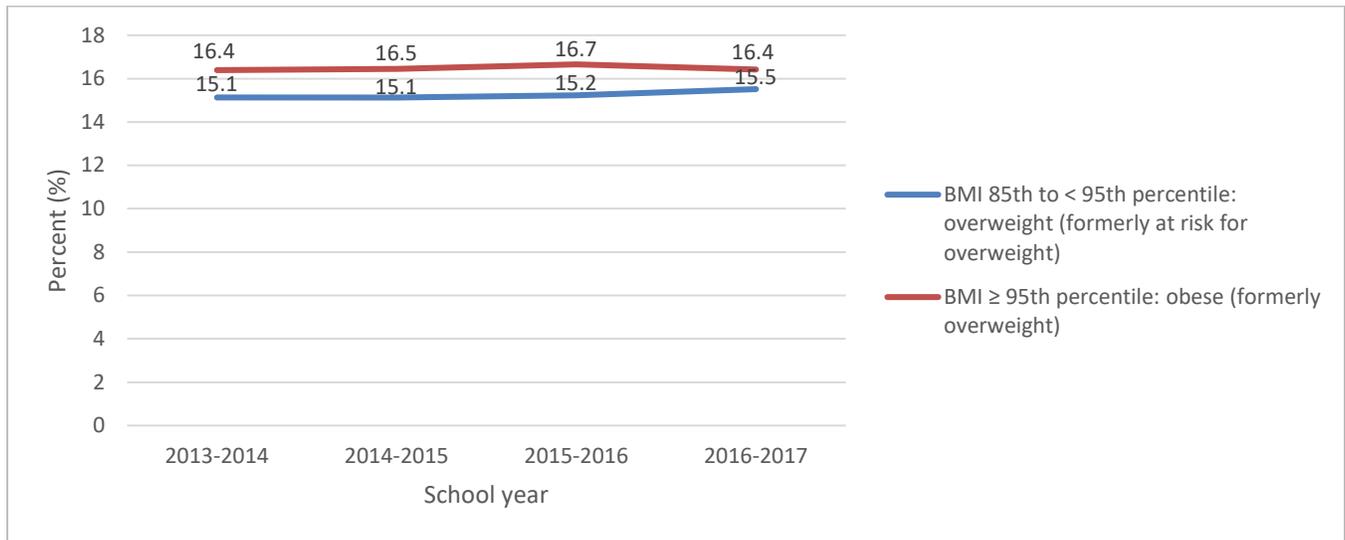
### **Figure 7.43 Pennsylvania Growth Screening Regulations<sup>13</sup>**

#### **28 Pennsylvania Code Section 23.7. Height and weight measurements**

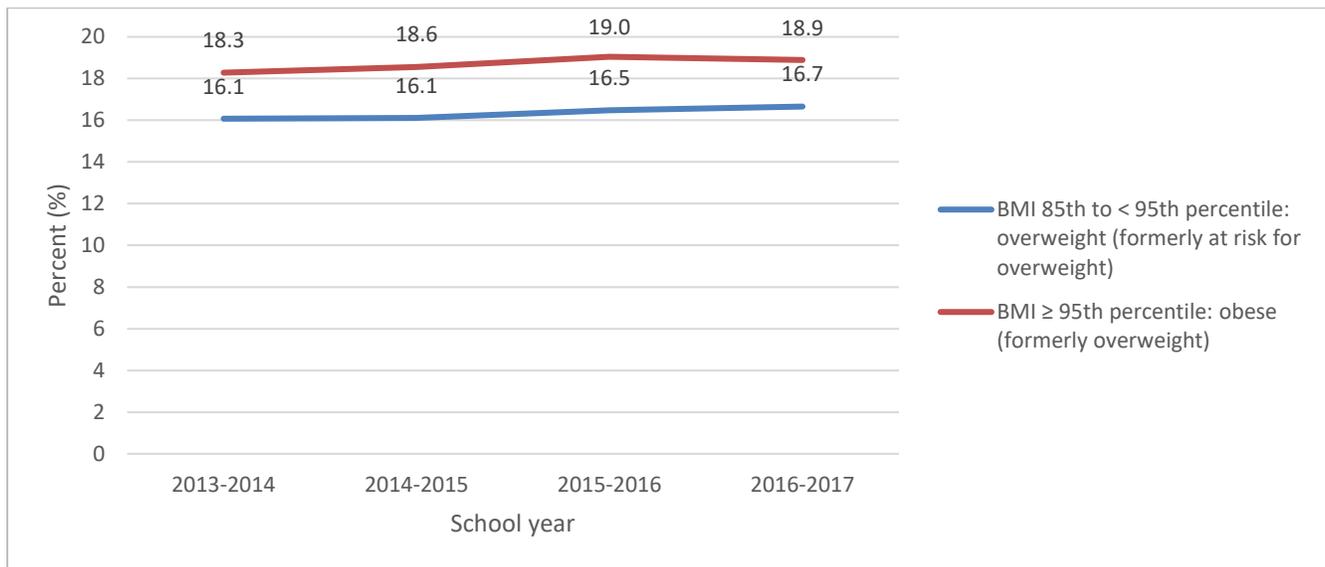
- (a) Height and weight measurements shall be conducted at least once annually and preferably twice annually. Every effort shall be made to determine the pattern of growth for each child so that his weight and height can be interpreted in light of his own growth patterns rather than those of his classmates.
- (b) Height and weight measurements shall be conducted by a nurse or teacher.

The Department of Health recommends that schools provide information about the growth screening program, and BMI in particular, to parents and guardians in advance of children's screening; this has been shown to prompt a more positive response from parents. Notifications of screening results are to be sent home for all children, even if the measurements fall within the normal range. Children with a BMI-for-age of less than 5 percent are considered at risk for malnutrition; those with a BMI-for-age greater than 85 percent are at risk for overweight; those with a BMI-for-age greater than 95 percent are considered to be at risk for obesity.<sup>14</sup>

**Figure 7.44 School Growth Screen, Grades K-6, by School Year and BMI Classification, Pennsylvania, 2012-2013 to 2016-2017<sup>15</sup>**



**Figure 7.45 School Growth Screen, Grades 7-12 by School Year and BMI, Pennsylvania, 2012-2013 to 2016-2017<sup>16</sup>**



For children who measure below the fifth percentile, schools are recommended to:

- Send the notification letter home in a timely manner. If an eating disorder is suspected, school staff should communicate directly with the parent or guardian;
- Recommend evaluation of the student’s nutritional status by the primary care provider;
- Provide educational materials with the notification letter; and
- Provide a list of community-based food supplementation programs in the area, if under-nutrition may be related to inadequate food supply, including: local food pantries, WIC program, county cooperative extension agencies and local programs offering education to low-income families about minimizing costs while maximizing nutrition.

For children who measure at or above the 85th percentile, schools are recommended to:

- Send the notification letter home in a timely manner and communicate directly with parent or guardian, if needed;
- Recommend health evaluation by the primary care provider, for: blood pressure, total cholesterol, family history, exogenous causes of overweight and obesity (e.g., Prader-Willi Syndrome), Type II diabetes in children;
- Encourage healthy eating behaviors and regular physical activity;
- Provide age-appropriate educational materials on nutrition, physical activity and weight management with the notification letter;
- Refer to a school-based healthy lifestyle program, if offered;
- Encourage or monitor a weight maintenance plan to be implemented by the primary care physician when BMI is between the 85<sup>th</sup> and 95<sup>th</sup> percentiles; and
- Support implementation of a treatment plan for students whose BMI  $\geq$  95<sup>th</sup> percentile, if recommended by the primary care provider.

Although school districts must report yearly to the Department of Health about screening completion, there is no requirement to return a reporting form from follow-up with a primary care provider. Figures 7.42 and 7.43 shows little change in screening or obesity rates between 2013 and 2017.

### **Scoliosis screening**

The Department of Health guidelines address how scoliosis screening should be carried out in Pennsylvania schools. Each student in grades six and seven, and those ages 11 and 12 in ungraded classes must be screened for scoliosis.<sup>17</sup> As with other school-based screening programs, schools are to send letters of notification to parents or guardians of children who are to be screened. The screening can involve an initial screening by school personnel or other community health facility personnel. A second screening of those who are assessed to have abnormal results is to be performed by a second, different screener (e.g., community personnel, school nurse, school physician). Following the re-screening, students with findings positive for scoliosis are to be referred for evaluation by a physician. A "Parent-Physician Letter" should reflect the screener's findings. Each school district must provide aggregate data about scoliosis screening programs to the Department of Health.

### **Conclusion**

State recommendations are available for performing childhood vision, hearing, BMI and scoliosis screening, and reporting results to parents so they can obtain medical care for children who have abnormal screening results. However, there are no requirements for data collection about the effectiveness of the screening programs. It does not appear that most of the relevant data are currently available in Pennsylvania, although its collection and analysis could: 1) identify trends; 2) provide a picture of the health of Pennsylvania's school students, districts and the state; and 3) enhance understanding of health-related activities in the schools.

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## Children’s Emotional Development

Healthy People 2010 addressed the earliest stages of childhood in its maternal, infant and child health goals, but failed to address the rest of childhood emotional development. Healthy People 2020 sought to correct this by including “Early and Middle Childhood” and “Adolescence” among its topics.<sup>1</sup>

To understand the continuity of emotional development, consider the physical body. It begins at birth with certain capacities but lacks many others. As it goes through predictable stages, it gains capacities, changes size and form and, if all goes well, reaches adult form and function. Similarly, the mind (consider it “the emotional body”) begins with certain capacities and grows in predictable stages. If all goes well, it attains the capacity for autonomy, the ability to be a productive member of society and have a range of interpersonal relationships, regulate and manage personal and public affairs, and compassionately and effectively take responsibility for the development of the next generation.

The continuities in these developments can be recognized, for example, by the intergenerational transmission of child abuse. About one-third of children who were abused during their own childhood will go on to abuse their children; another one-third of abused children are at risk of becoming abusive in their parenting role, dependent upon the stress they experience.<sup>2</sup>

Services that aid mothers of newborns in high risk populations are effective and efficient in preventing delinquency, high school dropout, teen pregnancy and illicit drug use in the “newborn’s” later adolescence.<sup>3</sup>

A focus on continuity is about more than parenting in the newborn period or providing services to members of disadvantaged populations. It is also about optimizing children’s emotional growth, so they can reach their full potential. An example is Parents’ work with a curriculum for teaching students in kindergarten through 12th grade how to be effective parents.<sup>4</sup>

Within the last decade, both mental health and pediatric care providers have become more sensitive to children’s emotional growth and difficulties, including those on the autistic spectrum. Although there is much to discover, we already know a great deal about healthy emotional development in children and how to support it.

### Assessment

The goal of healthy emotional development is a contented, productive life. In children, this can be measured by successful completion of developmental challenges and avoidance of deleterious conditions that leave children unable to participate in society.<sup>5</sup>

One general measure is the number of persons aged 18 to 24 years who are either attending school, working, or completing a degree beyond high school. In 2016, Pennsylvania ranked tied for 18<sup>th</sup> of the 50 states, with 88 percent of this cohort engaged in such efforts. Iowa placed first with 93 percent of their young adults either attending school, working or completing a degree beyond high school.<sup>6</sup> Another measure is on-time high school graduation; for this, Pennsylvania was ranked tied for 21<sup>st</sup> in the nation, with an 86 percent on-time graduation rate in 2015-2016. The best state, Iowa, had a 91 percent rate.<sup>7</sup>

Similar and more detailed data can be found at the National Center for Higher Education Management Systems (NCHEMS). Data show that, in 2015, of adults age 18 to 24 in Pennsylvania, 87.6 percent have a high school diploma, placing Pennsylvania 18<sup>th</sup> among the 50 states. For adults age 25 to 64, 91.6 percent have a high school diploma, also ranking 18<sup>th</sup> for this indicator.<sup>8</sup>

Measures of contentment can be discerned by considering children free of anxiety and depression. The Centers for Disease Control and Prevention’s Youth Risk Behavior Surveillance System (YRBSS) includes information gathered from students in grades nine through 12, about whether the respondent “felt sad or hopeless within the past 12 months,” as well as questions about participation in violent activities. In 2017, 29.4 percent (confidence interval of 27.3–31.5) said they felt so sad or hopeless almost every day for two weeks or more in a row during the past year that they stopped doing some usual activities, compared with 31.5 percent (confidence interval of 29.6–33.4) youth in grades nine through 12 nationally.<sup>9</sup>

The YRBSS also asks youth whether they have thought of suicide in the past year, a measure of poor well-being for children and adolescents. In Pennsylvania in 2017, 15.1 percent (confidence interval of 13.5–16.8) of ninth through 12th grade students responded that they seriously considered attempting suicide over the past 12 months. The U.S. rate was 17.2 percent (confidence interval of 16.2–18.3).<sup>10</sup>

Pennsylvania ranks poorly in terms of youth involved with the juvenile justice system at 45<sup>th</sup> of the fifty states. In 2015, Pennsylvania had a rate of 228 per 100,000 youth residing in juvenile detention, correctional and/or residential facilities in the United States, compared to the U.S. rate of 152 per 100,000 youth.<sup>11</sup>

The teen birth rate is another indicator of the difficulty in addressing developmentally appropriate challenges. In 2016, Pennsylvania ranked eleventh lowest across the country, with an average of 16 births per 1,000 female teens 15 to 19 years old, compared with the national average of 20 per 1,000 female teens ages 15 to 19.<sup>12</sup>

Parents’ ability to provide a nurturing environment for the emotional growth of their children is also important to youth emotional development. Child abuse can serve as a surrogate measure. In 2016, Pennsylvania ranked second lowest in the country for investigated child abuse, with a rate of 15 in 1,000 cases compared to a national average of 46 in 1,000. It ranked lowest for confirmed cases, with a rate of just two in 1,000 cases compared with nine in 1,000 nationally.<sup>13</sup> While these rates may indicate a low frequency of child abuse, it may also be an indicator of poor surveillance.

## **Intervention Strategies**

Education and services to expectant and new parents, such as those provided by hospitals, obstetricians and pediatricians, can help address issues related to children’s emotional development. Parents of older children and adolescents can also benefit from such education, which can be led by child protective services, mental health services, or juvenile justice systems that address troubled parents, children and adolescents.

## **Resources**

National Center for Higher Education Management Systems (NCHEMS)—<http://www.higheredinfo.org>

KIDS COUNT, Annie E. Casey Foundation annual data reports—<http://www.kidscount.org>

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# Children and Youth with Special Health Care Needs

There are two criteria for identifying children and youth with special health care needs (CSHCN):

- They have or are at increased risk for one or more chronic physical, developmental, behavioral, or emotional conditions.
- They require health and related services beyond that required by most children.

The broad definition of CSHCN allows for the inclusion of children with a variety of ongoing health, developmental and behavioral conditions throughout their lifespan. Despite variations in diagnoses, many of these children have similar health, educational and other service needs. As a result, it is useful to consider them as a group rather than by each specific condition.<sup>1</sup> The 2016-2017 National Survey of Children's Health indicates that over half a million children in Pennsylvania ages 17 and younger have a special health care need (511,324 children); 19.1 percent of children statewide meet the criteria of this definition, compared to 18.8 nationally. Special health care needs are more common among older children.<sup>2</sup>

## National and State Goals

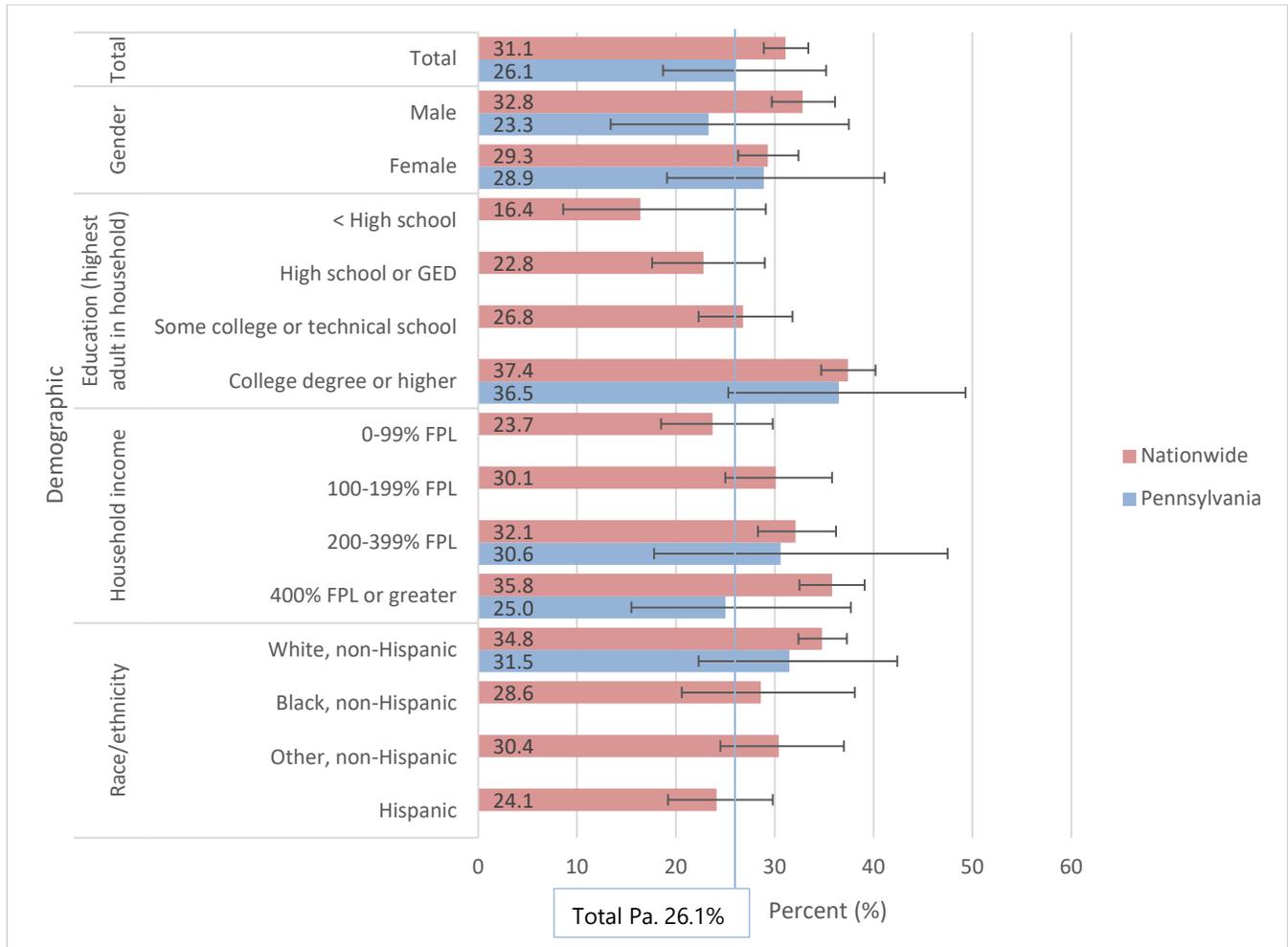
The Pennsylvania Department of Health receives funding from the United States Department of Health and Human Services through the Title V Maternal and Child Health Services Block Grant (MCHSBG). The mission of the Title V MCHSBG is to improve the health and well-being of the nation's mothers, infants, children and youth, including children and youth with special health care needs, and their families. A requirement of the Title V MCHSBG is the development of a state action plan. This state action plan guides the work of Title V in Pennsylvania and outlines the priorities, objectives, strategies and measurement framework used to track the progress of MCH programming in Pennsylvania. Several specific goals and objectives identified in the context of this grant align with measures from the National Survey of Children's Health (NSCH).<sup>3</sup>

The Pennsylvania priorities identified for the 2015-2020 Title V grant cycle are:

1. MCH populations reside in a safe and healthy living environment.
2. Appropriate health and health related services, screenings and information are available to the MCH populations.
3. MCH populations are able to obtain, process and understand basic health information needed to make health decisions.
4. Protective factors are established for adolescents and young adults prior to and during critical life stages.
5. Families are equipped with the education and resources they need to initiate and continue breastfeeding their infants.
6. Adolescents and women of childbearing age have access to and participate in preconception and interconception health care and support.
7. Safe sleep practices are consistently implemented for all infants.
8. Title V staff and grantees identify, collect and use relevant data to inform decision-making and evaluate population and programmatic needs.
9. Women receiving prenatal care or home visiting are screened for behavioral health and referred for assessment if warranted.

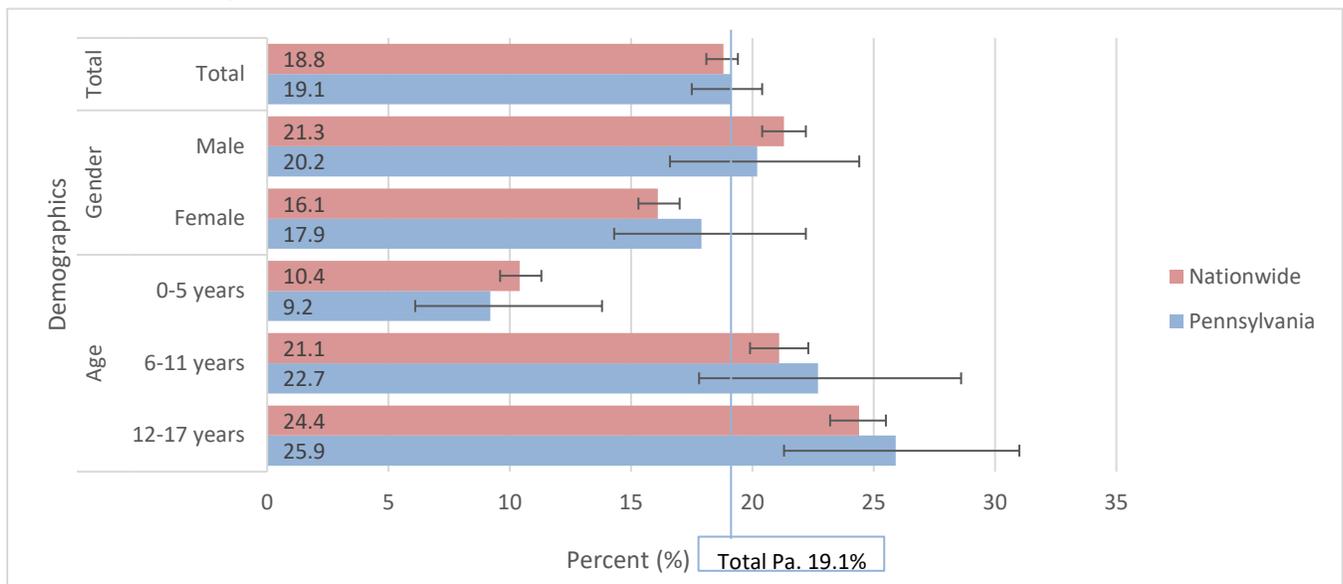
Nationally, children receiving a developmental screening are more likely from white, non-Hispanic, college educated families with incomes at the 400 percent or greater federal poverty level (FPL). Data for comparison for Pennsylvania was not available for all demographic categories.

**Figure 7.46 Children, Ages 9 Through 35 Months, Who Received a Developmental Screening Using a Parent-completed Screening Tool in the Past Year by Demographics, Pennsylvania and United States, 2016-2017<sup>4</sup>**



## Characteristics of Special Needs Children

**Figure 7.47 Children With Special Health Care Needs, Ages 0 Through 17 by Demographics, Pennsylvania and United States, 2016-2017 Combined<sup>5</sup>**



**Age and sex:** The Pennsylvania CSHCN data shows that the state’s needs are primarily with children in the 6-11 years and 12-17 years age groups.

More Pennsylvania males are CSHCN than females, with rates of 20.2 percent and 17.9 percent, respectively.<sup>6</sup>

**Race and ethnicity:** The 2016-17 National Survey of Children’s Health shows the highest percentage of CSHCN in Pennsylvania is among Hispanic persons, with 25.1 percent of youth 0 to 17 years. The next highest percentage is “other” with 23.1 percent, followed by whites with 18.0 percent and blacks with 17.1 percent of youth identified as CSHCN.

**Income and education:** The percent of CSHCN in Pennsylvania living below the federal poverty level is significantly higher than the national rate. In 2016-17, 24.6 percent of Pennsylvania CSHCN fell within 0 to 99 percent of the federal poverty level, putting this population at greater need for assistance in access to health care and more inclined to be Medicaid dependent. The prevalence of CSHCN in Pennsylvania by federal poverty level in all other categories also exceeds the national rate.<sup>7</sup>

In 2016-17, the proportion of parents with less than a high school education in households of CSHCN in Pennsylvania is 4.0 (1.9 - 8.4) percent, which is less than the national level of 9.0 (7.5 - 10.8) percent. Households of CSHCN with parents who have a high school diploma or GED is 23.3 (16.1 - 32.6) percent, which is compared to the national level of 20.9 (19.2 - 22.7).<sup>8</sup>

## Measures of Impact and Burden

**Access to care:** According to the 2016-2017 National Survey of Children's Health, children in Pennsylvania have similar access to care compared to children nationally. In Pennsylvania, 28.3 percent of CSHCN were currently receiving special services to meet developmental needs such as speech, occupational or behavioral therapy; 14.8 percent of CSHCN in Pennsylvania had help arranging or coordinating the child’s care among the different doctors or services that the child uses compared with 22.0 percent nationally; 63.5 percent of CSHCN had problems

getting referrals to see any doctors or receive any services during the past 12 months; 88.0 percent of CSHCN had a usual source of care when sick; and 80.9 percent of CSHCN have a personal doctor or nurse.<sup>9</sup>

Every five years, the Pennsylvania Department of Health’s Bureau of Family Health engages stakeholders who have an interest in improving the health of maternal and child populations in discussions to learn what is working and what needs to be improved. In the 2010 needs assessment, one of three areas of concern identified for CSHCN was families needing access to comprehensive information about available services and programs. When attempting to obtain information and services for their CSHCN, families often face challenges finding the necessary resources and information or, if identified, knowing how to utilize those resources to meet the needs of their children across the lifespan.

**Impact on families:** A comparison of data from the 2016-2017 National Survey of Children's Health shows Pennsylvania is slightly better than the national figures for CSHCN receiving care when needed and for families having problems paying for care.

**Table 7.13 Impact of CSHCN on Families, Percent (%), Pennsylvania, 2016-2017<sup>10</sup>**

Indicator	Pennsylvania	United States
Any time when child needed health care, but it was not received during the past 12 months (Indicator 4.18)	6.5 (CI=2.8 - 14.1)	8.1 (CI=6.8-9.6)
Families had problems paying for child’s medical or health care bills during the past 12 months (Indicator 4.19)	15.7 (CI=10.0-23.8)	17.3 (CI=15.9-18.8)

**Children’s health:** All children are entitled to fully participate within their communities and schools, regardless of whether they have special health care needs. Legislation provides protection for such inclusion. In spite of this, CSHCN and family members can experience challenges to participation, including misperceptions of their needs, prejudice, reluctance of facility or organization to be inclusive, or inability of group to be inclusive. According to the 2016-2017 National Survey of Children's Health, 48.1 (CI= 40.2 - 56.1) percent of Pennsylvania CSHCN reported the child does not live in a supportive neighborhood. This compares to nationwide 51.9 (CI=50.1 - 53.7) the child does not live in a supportive neighborhood (Indicator 7.1).

## Intervention Strategies

CSHCN can benefit from early diagnosis and access to a variety of medical, community, social and school services. While CSHCN use more health and other community services than those without special needs, they are also more likely to report unmet health care needs.<sup>11</sup> Assuring that families have access to quality, comprehensive, coordinated systems of services for CSHCN and their families is a must. Programs should be family-centered, community-based and culturally competent to help ensure the best outcomes for all children.

- **Special Kids Network System of Care (SKN SOC)** has been connecting families, providers and CSHCN to services through the SKN SOC Helpline (1-800-986-4550) since 1996. Today, the organization addresses the needs of CSHCN and families through three components:
  - Information on health care resources, respite care, advocacy, assistive technology, inclusive recreation and leisure activities, and more through the Helpline or an online database at [www.gotoskn.state.pa.us](http://www.gotoskn.state.pa.us);
  - Service coordination assistance through a partnership of SKN SOC and the Pennsylvania Elks Home Service Program through an Elks Home Service Nurse who will make a home visit to determine needs, identify a plan to meet those needs and guide the family as necessary to implement the plan; and

- Assistance for communities in understanding and identifying service gaps and developing partnerships with organizations and agencies to address the unique challenges of a local service system, through the effort of Regional Coordinators (CSHCN parents).

- The **Medical Home Initiative (MHI)** is a project of the Pennsylvania Department of Health.

The MHI educates and supports PCP professionals on the adoption and implementation of the medical home approach. Medical home PCPs assure that care is accessible, continuous, comprehensive, family-centered, coordinated, compassionate and culturally competent.

- Currently Pennsylvania has 143 PCPs that operate from a medical home perspective. These PCPs serve multiple racial and ethnic groups in 47 counties; all six health districts; and urban, suburban and rural settings.
- The PCPs serve 204,299 CSHCN.
- A total of 204 Parent Partners, who are family members/caregivers with a stake in medical home, serve on PCP-level teams. Parent Partners provide guidance based on their personal experience to help PCPs achieve more family-centered care.
- The “Especially for Parents, Caregivers and Youth” Facebook page has 317 members.

The MHI Advisory Committee provides guidance and includes the following people and organizations:

- Family members/caregivers of CSHCN;
- Family advocacy organizations;
- Primary care practice (PCP) professionals;
- Specialty care professionals;
- Social services;
- Health insurers;
- Health system executives;
- Public health professionals; and
- State and local government.

Title V Maternal and Child Health Services Block Grant funds support MHI implementation and facilitate improvement of one of Pennsylvania's National Performance Measures: the percent of children with or without special health care needs who receive care within a medical home. The MHI also supports efforts to improve transition from pediatric PCPs to family practices or general practitioners.

- The **Medical Home Initiative (MHI) Family Survey** collects responses from patients/family members/caregivers about primary care utilization, satisfaction, unmet needs, care coordination, usual sources of care, family-centered care, cultural competency and health status. The MHI has collected and analyzed 4023 surveys since 2006. During SFY17-18:
  - Accessible: 74 percent of respondents had to call their PCP for an immediate appointment for their child; over 85 percent of them were able to get an appointment right away.
  - Accessible: 85 percent of respondents reported they usually or always received an answer the same day concerning their child's care.
  - Care coordination: Over 70 percent reported that care coordination provided at the PCP was usually or always helpful.

- Care coordination: Less than 10 percent of respondents reported spending an average of more than five hours per week on coordinating care for their child.
- Family-centered: 51.5 percent of respondents noted that someone from the PCP's office provided a written plan of care.

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