

# Health

# Children's Health Insurance

## DEFINITION

Children's health insurance is the percentage of children under age 19 who were covered by any kind of private or public health insurance, including Medicaid.

## SIGNIFICANCE

Children who have health insurance coverage are healthier and have fewer preventable hospitalizations. They are more likely to receive preventive medical and dental care, be screened for the achievement of developmental milestones, obtain needed timely treatment, have access to prescription medications, and miss fewer days of school.<sup>1,2</sup> Children are more likely to be insured if their parents also have health insurance (especially continuous coverage).<sup>3,4</sup>

Medicaid and the Children's Health Insurance Program (CHIP) provide low-income children with affordable, comprehensive health benefits, which have been shown to increase access to primary and preventive care for children and improve long-term health, academic and economic outcomes.<sup>5,6</sup> RIt Care/RIt Share, Rhode Island's Medicaid/CHIP managed care health insurance program, is available to children and families who qualify based on family income. RIt Care also serves as the health care delivery system for

specific groups of children who qualify for Medical Assistance based on a disability or because they are in foster care or receiving an adoption subsidy.

On December 31, 2015, 71% of RIt Care members who qualified based on family income were children under age 19. There were also 49,844 low-income parents with RIt Care coverage on December 31, 2015.<sup>7,8</sup> RIt Care enrollment rose to a new high of 141,901 in December 2015 (up from 130,639 in December 2014).<sup>9,10</sup>

In 2014, an estimated 3.3% of children in Rhode Island were uninsured, with older children, Asian, Black, Native American, and Hispanic children, and those living in urban communities being most likely to be uninsured.<sup>11,12,13,14</sup>

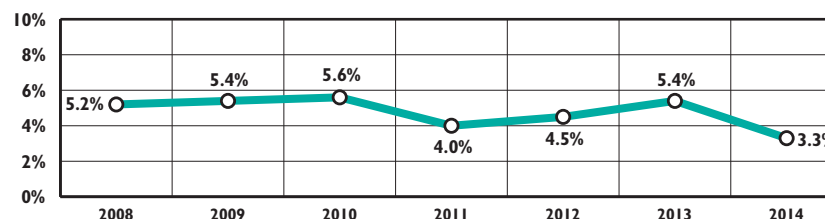
Children Without Health Insurance		
	2008	2014
RI	5.2%	3.3%
US	9.3%	6.0%
National Rank*		7th
New England Rank**		3rd

\*1st is best; 50th is worst

\*\*1st is best; 6th is worst

Source: For 2014: U.S. Census Bureau, American Community Survey, 2014. Table R2702. For 2008: U.S. Census Bureau, American Community Survey, 2012. Table CP03.

Children Without Health Insurance, Rhode Island, 2008-2014



Source: U.S. Census Bureau, American Community Survey, 2012 & 2014. Table CP03. Data are for children under 18 years of age and are not comparable to Factbooks prior to 2015.

◆ In 2014, 3.3% of Rhode Island's children under age 18 were uninsured. Rhode Island ranks seventh best in the U.S., with 96.7% of children having health insurance. Just over half (57%) of Rhode Island children are covered by private health insurance, most of which is obtained through their parents' employers.<sup>15,16</sup>

◆ Approximately 72% (6,925) of the estimated 9,590 uninsured children under age 18 in Rhode Island between 2010 and 2014 were eligible for RIt Care coverage based on their family incomes, but were not enrolled. An estimated 2,665 uninsured children lived in families with incomes above 261% of the federal poverty level (the income limit for RIt Care eligibility) and 61% (1,625) of them may have been eligible for financial assistance through HealthSource RI based on income.<sup>17,18</sup>

◆ The RIt Share premium assistance program helps low-income families afford the cost of employer-sponsored coverage. As of December 31, 2015, 5,915 children and 2,249 parents (8,164 total) were enrolled in RIt Share.<sup>19</sup>

◆ Between 2013 and 2014, the percentage of children covered exclusively by their parents' employer-sponsored health plan increased from 50% to 51% and the percentage of children insured exclusively by Medicaid/RIt Care increased from 31% to 33%.<sup>20</sup>

◆ Children and families in need of health insurance can enroll in coverage through HealthSource RI, Rhode Island's health insurance marketplace under the federal *Affordable Care Act*. As of October 2015, 1,651 children were enrolled in commercial coverage in the individual market of HealthSource RI, which is a 29% increase from 2014 (1,282).<sup>21</sup>

Table 15. Children Under Age 19 Receiving Medical Assistance, Rhode Island, December 31, 2015

CITY/TOWN	RITE CARE	SSI	KATIE BECKETT PROVISION	ADOPTION SUBSIDY	FOSTER CARE	TOTAL
Barrington	443	13	41	20	8	525
Bristol	1,011	29	15	47	21	1,123
Burrillville	996	55	21	81	41	1,194
Central Falls	4,734	269	4	31	42	5,080
Charlestown	412	13	9	14	6	454
Coventry	1,911	77	48	113	68	2,217
Cranston	6,614	236	82	190	125	7,247
Cumberland	1,664	78	52	61	33	1,888
East Greenwich	446	27	35	30	16	554
East Providence	3,652	178	43	106	88	4,067
Exeter	253	9	6	18	7	293
Foster	276	14	7	15	13	325
Glocester	351	19	7	45	38	460
Hopkinton	550	9	8	31	11	609
Jamestown	106	4	7	3	11	131
Johnston	2,175	87	38	61	48	2,409
Lincoln	1,328	52	30	50	27	1,487
Little Compton	136	2	5	1	1	145
Middletown	971	38	21	31	31	1,092
Narragansett	428	27	11	24	37	527
New Shoreham	58	0	3	0	0	61
Newport	2,036	116	6	38	50	2,246
North Kingstown	1,532	55	35	41	52	1,715
North Providence	2,434	104	27	68	56	2,689
North Smithfield	469	24	16	39	17	565
Pawtucket	10,999	558	37	137	149	11,880
Portsmouth	629	22	19	23	49	742
Providence	32,289	1,860	58	373	490	35,070
Richmond	223	9	4	5	4	245
Scituate	534	19	20	32	10	615
Smithfield	704	19	26	48	43	840
South Kingstown	1,236	53	41	60	33	1,423
Tiverton	813	40	12	27	16	908
Warren	768	30	10	32	28	868
Warwick	4,792	184	109	211	125	5,421
West Greenwich	211	2	9	16	8	246
West Warwick	2,891	140	17	82	58	3,188
Westerly	1,855	82	25	37	27	2,026
Woonsocket	6,645	547	26	128	123	7,469
Unknown Residence	318	60	0	43	79	500
Four Core Cities	54,667	3,234	125	669	804	59,499
Remainder of State	44,908	1,866	865	1,700	1,206	50,545
Rhode Island	99,893	5,160	990	2,412	2,089	110,544

### Source of Data for Table/Methodology

Rhode Island Executive Office of Health and Human Services, MMIS Database, December 31, 2015.

The table includes children enrolled in Rite Care managed care, fee-for-service, and Rite Share as of December 31, 2015. Children with special health care needs who are covered through Rite Care or Medical Assistance are also included because they receive SSI, adoption subsidies, or qualify for the Katie Beckett provision.

The Rite Care numbers include children who are also enrolled in RI Works. Prior to the 2015 Factbook, children enrolled in both Rite Care and RI Works were reported separately. Due to eligibility system changes and enrollment changes to RI Works and Rite Care, these data are no longer able to be reported.

The Providence numbers include some children in substitute care who live in other towns because the Medicaid database lists some foster children as Providence residents for administrative purposes.

Unknown residence: All children are Rhode Island residents, but specific city/town information was unavailable.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

\*Beginning with the 2015 Factbook, the children without health insurance trend line is based on U.S. Census Bureau American Community Survey (ACS) data due to changes in survey protocol and methodology with the Current Population Survey (CPS). Trend data reported prior to 2015 Factbook are not comparable.

### References

- <sup>1</sup> *America's uninsured crisis: Consequences for health and health care.* (2009). Washington, DC: National Academies Press, Institute of Medicine.
- <sup>2</sup> Majerol, M., Newkirk, V., & Garfield, R. (2015). *The uninsured: A primer. Key facts about health insurance and the uninsured in the era of health reform.* Washington, DC: The Henry J. Kaiser Family Foundation, Kaiser Commission on the Uninsured.

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# Childhood Immunizations

## DEFINITION

*Childhood immunizations* is the percentage of children ages 19 months to 35 months who have received the entire 4:3:1:3:3:1:4 series of vaccinations as recommended by the Advisory Committee on Immunization Practices (ACIP). In 2014, the complete series included 4 doses of diphtheria, tetanus and pertussis (DTaP); 3 doses of polio; 1 dose of measles, mumps, rubella (MMR); 3-4 doses of Haemophilus influenzae type b (Hib); 3 doses of hepatitis B vaccines; 1 dose of varicella (chickenpox); and 4 doses of pneumococcal conjugate vaccine (PCV).

## SIGNIFICANCE

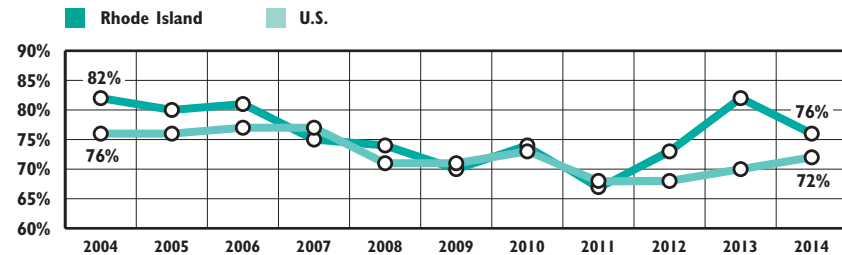
Timely and complete immunization protects children against a number of infectious diseases that were once common and resulted in death or disability. Vaccines interact with the immune system to produce antibodies that protect the body if it is later exposed to disease. The benefits of immunization include improved quality of life and productivity, reduced health spending, and prevention of illness and death. Society benefits from high vaccination levels because disease outbreaks are minimized. Although many of the diseases against which children are vaccinated are rare, it is important to continue to immunize against them until the diseases are completely eradicated.<sup>1,2,3</sup>

The federal Vaccines for Children program is used to eliminate cost as a barrier to vaccination. It allows states to obtain vaccines at a discounted price. Local providers then administer the vaccines at no cost to eligible children under age 19, including those who are uninsured, underinsured, or Medicaid-eligible.<sup>4</sup> Due to the federal *Affordable Care Act (ACA)*, children and individuals enrolled in new health insurance plans now have access to recommended vaccines without deductibles or copays, when delivered by an in-network provider.<sup>5</sup>

Rhode Island obtains vaccines for all children and distributes them to health care providers. In order to ensure that vaccines reach all children, the Rhode Island Department of Health works in partnership with local health care providers to maintain and share KIDSNET immunization data for children from birth to age 18.<sup>6</sup>

Rhode Island requires vaccination against the following diseases prior to entry into child care, preschool, Head Start, or Kindergarten: diphtheria, tetanus, and pertussis; Haemophilus influenzae type b; hepatitis A; hepatitis B; influenza; measles, mumps, and rubella; pneumococcal; polio; rotavirus; and varicella (chickenpox). Kindergarten entry requires all of these except hepatitis A, Haemophilus influenzae type B, influenza, pneumococcal conjugate, and rotavirus.<sup>7,8</sup>

Fully Immunized Children\*, Ages 19 Months to 35 Months, Rhode Island and United States, 2004-2014

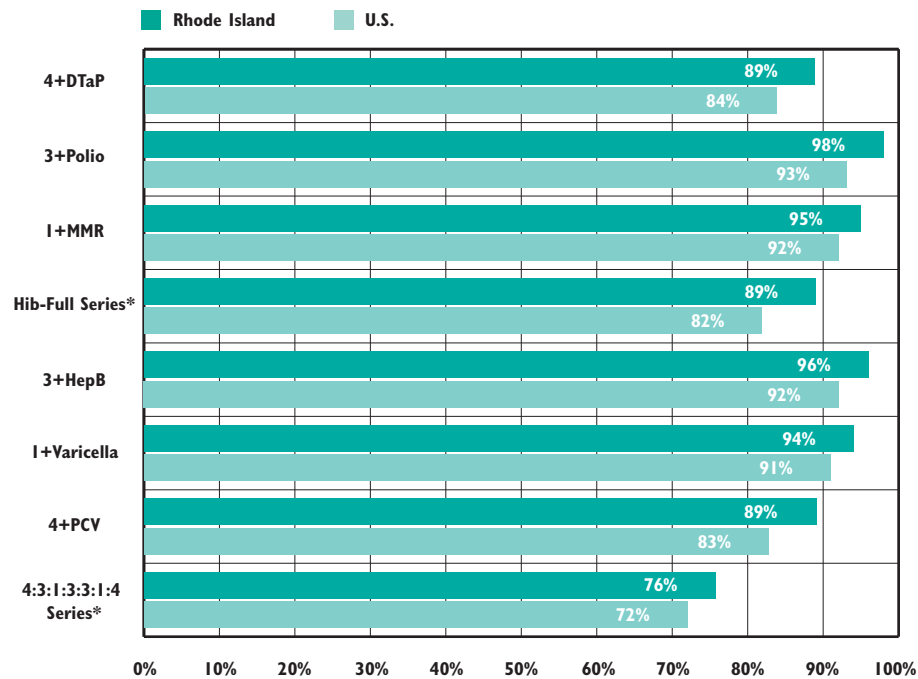


\*Fully immunized children received the 4:3:1:3:3:1 series from 2004 to 2007; the 4:3:1:0:3:1:4 series in 2008 to 2010; and the 4:3:1:3:3:1:4 series in 2011-2014.

Source: Centers for Disease Control and Prevention, *National Immunization Survey*, 2004-2014.

- ◆ In 2014, Rhode Island's rate of children ages 19 months to 35 months that were fully immunized (76%) was above the national average of 72% and 11th best in U.S.<sup>9</sup>
- ◆ In 2014, the U.S. rate for fully immunized children ages 19 months to 35 months ranged from 66% for children living below the federal poverty level to 75% for children living at or above the federal poverty level. The 2014 U.S. rate was 74% for Hispanic children, 73% for White, non-Hispanic children, 70% for Asian, non-Hispanic children, and 65% for Black, non-Hispanic children.<sup>10</sup>
- ◆ Concerns about vaccine safety have resulted in some parents refusing to have their children immunized and some requesting alternative vaccination schedules, both of which contribute to under-immunization.<sup>11,12</sup> As required by the *National Childhood Vaccine Injury Act*, families must be provided with informational materials about each vaccine and given the opportunity to clarify issues or concerns with their healthcare provider.<sup>13</sup> In Rhode Island, children may be exempt from receiving one or more vaccines for medical or religious reasons.<sup>14</sup> In the 2014-2015 school year, 1% (127) of kindergarten students and 0.8% (95) of 7th grade students received exemptions from vaccination requirements. Of the 222 exemptions, 73% were for religious reasons and 28% were for medical reasons.<sup>15</sup>
- ◆ Since 2015, Rhode Island child care workers are required to obtain one dose of tetanus, diphtheria, pertussis (Tdap) vaccine, two doses of measles, mumps, and rubella (MMR) vaccine, two doses of varicella (chickenpox) vaccine, and an annual influenza vaccination.<sup>16</sup>

## Vaccination Coverage Among Children, Ages 19 Months to 35 Months, Rhode Island and United States, 2014



Source: Rhode Island Department of Health analysis of data from the *National Immunization Survey-Children*, 2014.

\*Depending on the product type received, 3+ or 4+ doses of Hib vaccine is a full dose.

◆ In 2014, Rhode Island ranked first in the U.S. for the rotavirus vaccines; third for the 3+Polio vaccine; fourth for the 3+HepB, 4+PCV and 4+DTaP vaccines; eighth for 1+VAR vaccine; and ninth for the 1+MMR vaccine.

◆ In 2014, Rhode Island's rate of completion for the 4:3:1:3:3:1:4 series (76%) did not reach the national *Healthy People 2020* target (80%), but a number of individual vaccine coverage rates in Rhode Island did. Polio, MMR, HepB, varicella, and rotavirus had coverage rates that surpassed the *Healthy People 2020* targets (90%) set for each type of vaccine for children ages 19 months to 35 months.<sup>17,18</sup>

### References

<sup>1</sup> Centers for Disease Control and Prevention. (2014). *Why are childhood vaccines so important?* Retrieved January 14, 2016, from www.cdc.gov

<sup>2</sup> *Immunization*. (2015). Washington, DC: Child Trends.

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## Immunizations for Elementary and Middle School Students

◆ The 2014-2015 *Rhode Island School Immunization Assessment* analyzed student immunization status reports through a web-based survey of all kindergarten and 7th grade school nurse teachers. The immunization statuses of 98.9% of kindergarten students and 99.7% of 7th grade students were reported. Of the immunizations needed for school entry, entering kindergarteners had coverage rates between 95% and 98%, while entering 7th grade students had rates between 79% and 99%.<sup>19</sup>

## Adolescent Immunization

◆ All Rhode Island adolescent students are required to receive the human papillomavirus (HPV), tetanus, diphtheria, pertussis (Tdap), and meningococcal conjugate (MCV) vaccines for entry into school as well as any needed catch-up doses.<sup>20</sup>

◆ According to the 2014 *National Immunization Survey-Teen*, Rhode Island adolescents ranked first in the U.S. for the 3+HPV vaccine for males, 2+MMR vaccine, and the 2+VAR vaccine, third for the 3+HPV vaccine for females, fourth for the 1+MCV vaccine, seventh for the 3+HepB vaccine, and eighth for the 1+Tdap vaccine. In 2014, 98% of Rhode Island adolescents had received the 2+MMR vaccine, 96% had received the 2+VAR vaccine, 95% had received the 3+HepB vaccine, 94% had received the 1+MCV vaccine, 92% had received the 1+Tdap vaccine, and 54% of females and 43% of males had received the 3+HPV vaccine.<sup>21</sup>

◆ To ensure that all high school seniors are fully vaccinated before beginning college or work, the Rhode Island Office of Immunization runs the *Vaccinate Before You Graduate (VBYG)* program in high schools throughout the state. The program holds vaccination clinics throughout the year at each participating school. The immunizations are funded by the federal Vaccines for Children program, local insurers, and other federal grants and are offered at no cost to students.<sup>22,23</sup>

◆ During the 2014-2015 school year, 94 schools participated in VBYG. In total, 10,766 vaccine doses were administered to 8,875 students. The three most administered vaccines were influenza (7,667 doses), HPV (871 doses), and MCV4 (685 doses). Other vaccines administered included hepatitis A (HepA), hepatitis B (HepB), measles, mumps, and rubella (MMR), polio (IPV), tetanus, diphtheria (TD), tetanus, diphtheria, pertussis (Tdap), and varicella (chicken pox).<sup>24</sup>



# Access to Dental Care

## DEFINITION

*Access to dental care* is the percentage of children under age 21 who were enrolled in RIte Care, RIte Share, or Medicaid fee-for-service on June 30 who had received dental services at any point during the previous State Fiscal Year.

## SIGNIFICANCE

Dental caries (tooth decay) is a common chronic disease among children. Poor oral health has immediate and significant negative impacts on children's overall health, growth and development, school attendance, and academic achievement.<sup>1,2</sup>

Insurance is a strong predictor of access to health and dental care. Nearly one in five (17%) uninsured children in the U.S. have unmet dental needs, compared with 5% of those with Medicaid and 3% of those with private health insurance.<sup>3</sup> In 2014, 94% of children in Rhode Island had dental insurance that paid for routine dental care, up from 73% in 2001 and 62% in 1990.<sup>4,5</sup>

Children living in poverty are more likely to have untreated tooth decay than higher-income children. Medicaid-eligible children are more than three times as likely to have untreated tooth decay as higher-income children. For children in low-income families, the efficacy and continuity of public dental insurance is a critical factor in access to

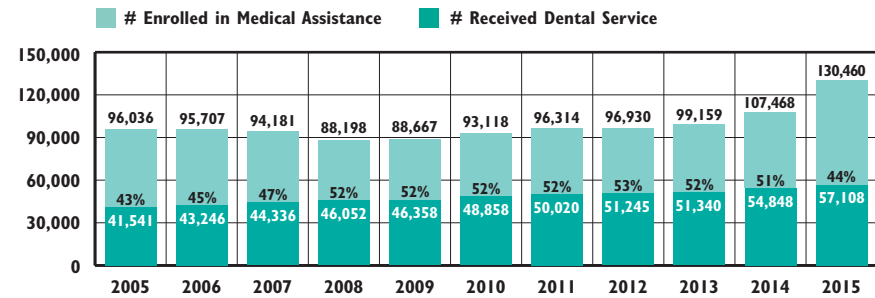
dental care. In the U.S. and in Rhode Island, children who have public health insurance coverage have greater access to dental and medical care than children who have no insurance.<sup>6,7,8</sup>

Minority children have the highest rates of tooth decay and untreated dental problems. In Rhode Island and the U.S., non-Hispanic White children are more likely to have had a recent dental visit than non-Hispanic Black or Hispanic children.<sup>9,10,11</sup>

Poor oral health during pregnancy has been shown to be a potential risk factor contributing to pregnancy complications and poor birth outcomes, including preterm birth and low birthweight infants.<sup>12,13</sup> Although oral health care can be safely delivered during pregnancy, only about half (53%) of Rhode Island women report having a dental visit during their pregnancy. Women with low incomes are less likely to see a dentist; 41% of women with RIte Care coverage and 42% of women participating in WIC reported a dental visit during their pregnancy.<sup>14</sup>

Children with special health care needs may have problems finding and accessing providers who are trained and equipped to address their special dental, medical, behavioral, and mobility needs. A dental home can provide comprehensive, continuously accessible, coordinated, and family-centered dental care for all children, especially those with special needs.<sup>15,16</sup>

**Children Enrolled in Medical Assistance\* Programs Who Received Any Dental Service, Rhode Island, SFY 2005-2015**



Source: Rhode Island Executive Office of Health and Human Services, State Fiscal Years (SFY) 2005-2015. \*Medical Assistance includes RIte Care, RIte Share, and Medicaid fee-for-service and include children under age 21.

- ◆ **Forty-four percent (57,108) of the children and youth under age 21 who were enrolled in RIte Care, RIte Share, or Medicaid fee-for-service on June 30, 2015 received a dental service during State Fiscal Year (SFY) 2015. This is down from SFY 2014, but the number of children receiving dental services has increased by 37% since 2005.<sup>17</sup> Rhode Island ranked 32nd in the U.S. for children enrolled in Medicaid with a dental visit in 2014.<sup>18</sup>**
- ◆ **The federal Early and Periodic Screening, Diagnostic and Treatment (EPSDT) mandate requires that states provide comprehensive dental benefits to children with Medicaid coverage.<sup>19</sup> States have been asked to increase preventive dental services by 10% between Federal Fiscal Year (FFY) 2010 and 2015. With a baseline of 43% and a goal of 53%, 44% of children with Medicaid in Rhode Island received a preventive dental visit in FFY 2014.<sup>20,21</sup>**
- ◆ **RIte Smiles, Rhode Island's managed care oral health program for children born on or after May 1, 2000, has been credited with improving access to dental care (both preventive and treatment services) for young children.<sup>22,23,24</sup> As of December 31, 2015, there were 88,504 children under age 15 enrolled in RIte Smiles. During SFY 2015, 76% of all Medicaid dental claims for children were for RIte Smiles members.<sup>25,26</sup>**
- ◆ **The federal *Affordable Care Act* (ACA) made pediatric dental benefits mandatory offerings for plans sold in the individual and small group market.<sup>27</sup> As of October 2015, 1,651 children under age 19 were enrolled in commercial health coverage in the individual market of HealthSource RI (Rhode Island's state-based insurance marketplace). One-third (36%) obtained commercial dental coverage through HealthSource RI; 64% did not.<sup>28</sup>**

## Dental Provider Participation in Medicaid and RIte Smiles

- ◆ Nationally, children and adults with public insurance coverage face access problems because many private dentists do not accept Medicaid for payment. Dental providers cite low reimbursement rates, administrative requirements, and patient-related issues (e.g., missed appointments and poor treatment compliance) as reasons why they do not see more patients with Medicaid coverage. Additional access barriers for children and families with public insurance include difficulty with transportation, limited language proficiency, lack of oral health literacy, and negative provider experiences.<sup>29,30</sup>
- ◆ Since RIte Smiles (Rhode Island's managed care oral health program) started in 2006, reimbursement rates have been raised for participating dental providers.<sup>31</sup> The number of dentists accepting qualifying children increased from 27 before RIte Smiles began to 90 at the launch of RIte Smiles.<sup>32</sup> In October 2015, there were 359 unduplicated dentists in 195 practice locations participating in RIte Smiles.<sup>33</sup>
- ◆ General dentists and dental specialists who provide dental care to older children who do not qualify for enrollment in the RIte Smiles program continue to be reimbursed at the Medicaid fee-for-service reimbursement rate.<sup>34</sup> Medicaid reimbursement rates often lag behind fees charged by dental providers and private commercial rates, which reduces incentives for providers to treat children with Medicaid coverage. In 2013, Rhode Island had the second lowest Medicaid fee-for-service reimbursement rate for pediatric dental services in the nation.<sup>35</sup>

## Consequences of Untreated Dental Disease

- ◆ Between 2010 and 2014, an average of 696 children under age 21 were treated for a primary dental-related condition in Rhode Island emergency departments annually. Of these children and youth, 20% were ages five and under, 16% were ages six to 11, 16% were ages 12 to 17, and 48% were age 18-21.<sup>36</sup>
- ◆ Each year between 2010 and 2014 in Rhode Island, an average of 69 children under age 19 were hospitalized with a diagnosis that included an oral health condition. During this time period, an average of 19 children per year under age 19 were hospitalized with an oral health condition as the primary reason for the hospitalization.<sup>37</sup>

## Importance of Early Dental Visits for Very Young Children

- ◆ Clinical recommendations are that children first visit the dentist before age one.<sup>38</sup> However, only 1.8% of infants and one-year-old children in the U.S. have ever visited a dentist, compared with 89% who have seen a physician annually.<sup>39</sup> In Rhode Island, children under age six (63%) are less likely to have received a dental visit in the past 12 months than children over age six (97% of 6-11 year olds and 93% of 12-17 year olds).<sup>40</sup>
- ◆ There are too few dentists trained to treat very young children, and too few who treat children with special health care needs or those who have public insurance.<sup>41</sup>
- ◆ As of FFY 2014, 41% of Rhode Island children under age five with Medicaid coverage received any dental service, and 37% received a preventive dental service.<sup>42</sup>
- ◆ In 2015, the Rhode Island General Assembly passed legislation to increase access to oral health care for children by allowing dental hygienists to perform approved services in public health settings.<sup>43</sup>
- ◆ Primary care providers can conduct oral health risk assessment, refer for dental care, and provide preventive services, all of which improve oral health outcomes and lead to a dental home.<sup>44</sup>
- ◆ In addition to covering dental visits for children before the age of one, Rhode Island is one of 49 state Medicaid programs that reimburse primary care medical providers for preventive oral health services for very young children, including risk assessment, anticipatory guidance, and fluoride varnish application.<sup>45,46</sup>

### References

<sup>1,6,9,15,29,38,41</sup> *The state of little teeth.* (2014). Chicago, IL: American Academy of Pediatric Dentistry.

<sup>2</sup> *Oral health in America: A report of the Surgeon General.* (2000). Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health.

<sup>3,10</sup> National Health Interview Survey. (2014). *Table C-11a: Age-adjusted percent distributions (with standard errors) of unmet dental need due to cost in the past 12 months and of length of time since last visit with a dentist or other dental health care professional for children aged 2-17 years, by selected characteristics: United State, 2014.* Retrieved January 27, 2016, from [www.cdc.gov/nchs/nhis/shs.htm](http://www.cdc.gov/nchs/nhis/shs.htm)

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# Children's Mental Health

## DEFINITION

*Children's mental health* is the number of acute care hospitalizations of children under age 18 with a primary diagnosis of a mental disorder. Hospitalization is the most intensive type of treatment for mental disorders and represents only one type of treatment category on a broad continuum available to children with mental health problems in Rhode Island.

## SIGNIFICANCE

Mental health in childhood and adolescence is defined as the achievement of expected developmental, cognitive, social, and emotional milestones and the ability to use effective coping skills. Mental health status influences children's health and behavior at home, in child care or school, and in the community. Mental health conditions can impair academic achievement, increase involvement with the juvenile justice and child welfare systems, result in high treatment costs, diminish family incomes, and increase the risk for suicide. Children with mental health issues are also likely to have other chronic health conditions.<sup>1,2,3,4</sup>

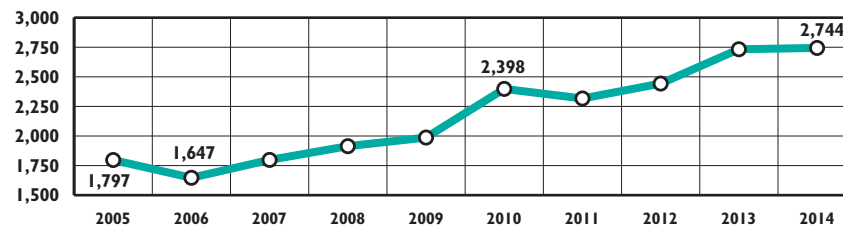
Behavioral health problems affect children of all backgrounds. In Rhode Island, one in five (19.0%) children ages six to 17 has a diagnosable mental health problem; one in ten (9.8%) has significant functional impairment.<sup>5</sup> Children most at risk for mental disorders are those with prenatal

exposure to alcohol, tobacco and other drugs; children born with low birthweight; those suffering abuse and neglect; children exposed to toxic stress; children of parents with a mental health disorder and/or an inherited predisposition to a mental disorder; and children living in poverty.<sup>6,7</sup> Young people in the juvenile justice and child welfare systems experience mental health problems at higher rates than their peers.<sup>8</sup>

Mental health problems, whether arising from biological, environmental, and/or psycho-social causes, affect the physical functioning of the brain and can be prevented or treated in many cases.<sup>9,10</sup> An estimated 34% of Rhode Island children who needed mental health treatment or counseling in the past 12 months did not receive it.<sup>11</sup>

Mental health treatment systems tend to be fragmented and crisis-driven with disproportionate spending on high-end hospital and residential care and often lack adequate investments in prevention and community-based services that would allow children to receive appropriate treatment levels of care in their own communities.<sup>12,13,14,15,16</sup> Over the past two decades, Rhode Island has worked to build a preventive and treatment system of care that is based in multiple settings including the home, schools, and community, but more progress is still needed.<sup>17,18,19</sup>

**Hospitalizations with Primary Diagnosis of Mental Disorder, Children Under Age 18, Rhode Island, 2005-2014\***



Source: RI Hospital Discharge Database (HDD), RI Department of Health, 2005-2014. \*Data are for hospitalizations, not number of children. Children may be hospitalized more than once. Mental disorders include ICD-9-CM codes 290-319, including alcohol/drug dependence, psychoses, and anxiety, depressive, mood, and personality disorders. Trend line is based on a new method of analyzing the HDD and is comparable to Factbooks since 2012.

- ◆ In 2014, there were 2,744 hospitalizations of children with a primary diagnosis of mental disorder at Bradley, Butler, Hasbro Children's Hospital, Newport, and Memorial Hospitals, a 53% increase from 2005. Of the Rhode Island children hospitalized in 2014, 74% were ages 13 to 17, 50% had Medicaid/RIte Care coverage and 47% had commercial coverage, and 39% lived in one of the four core cities (where 33% of the child population lives).<sup>20,21</sup>
- ◆ When a young person needs inpatient behavioral health treatment, but there is no appropriate placement available, they may be "boarded" on medical floors at acute care hospitals or in emergency departments.<sup>22</sup> In Federal Fiscal Year (FFY) 2015, 251 children and youth under age 18 with a psychiatric diagnosis were boarded for an average of less than one day on medical floors at Hasbro Children's Hospital or Rhode Island Hospital, which is a decrease from FFY 2014 when 328 children were boarded for an average of two days. The expanded Medical/Psychiatric Program at Hasbro Children's Hospital provides both inpatient and partial hospitalization care to children with complex mental and medical health conditions who seek treatment through the emergency department or a medical provider.<sup>23,24</sup>
- ◆ When a child or adolescent is ready to leave the psychiatric hospital and needs a "step-down placement" of lesser clinical intensity, but there is none available due to insufficient capacity or type or there is no other safe placement (including at home), they are referred to as "stuck." Bradley Hospital reported having an average of eight "stuck kids" per day in FFY 2015, up from four "stuck kids" in FFY 2014.<sup>25</sup>



## Psychiatric Hospitals

Children Under Age 19 Treated at Rhode Island Psychiatric Hospitals, October 1, 2014 – September 30, 2015 (FFY 2015)

	BRADLEY HOSPITAL GENERAL PSYCHIATRIC SERVICES		BRADLEY HOSPITAL DEVELOPMENTAL DISABILITIES PROGRAM		BUTLER HOSPITAL ADOLESCENT PSYCHIATRIC SERVICES	
	# TREATED	AVERAGE LENGTH OF STAY	# TREATED	AVERAGE LENGTH OF STAY	# TREATED	AVERAGE LENGTH OF STAY
Inpatient	941	15 days	143	38 days	489*	9 days
Residential	43	217 days	30	198 days	--	--
Partial Hospitalization	824	18 days	18	18 days	102	5 visits
Home-Based	0	0	24	23 visits	--	--
Outpatient	1,644	61 visits	86	61 visits	52	NA

Source: Lifespan, 2014-2015 and Butler Hospital, 2014-2015. Programs can have overlapping enrollment. Number treated is based on the hospital census (i.e., the number of patients seen in any program during FFY 2015).

The average length of stay is based on discharges. \*An additional 51 youth were treated in adult programs.

-- = Service not offered. NA = Data not available for this service.

◆ The two hospitals in Rhode Island that specialize in providing psychiatric care to children and youth are Bradley Hospital and Butler Hospital. Inpatient treatment at a psychiatric hospital is the most intensive type of behavioral health care. The most common diagnoses for young people treated at Butler or Bradley Hospitals in FFY 2015 in an inpatient setting were depressive disorders (48%), bipolar disorders (24%), anxiety disorders (14%), and adjustment disorders (4%).<sup>26,27</sup>

◆ Bradley Hospital has a Developmental Disabilities Program that offers highly specialized inpatient and residential services to children and adolescents who show signs of serious emotional and behavioral problems in addition to developmental disabilities. Lifespan School Solutions owns and operates five Bradley schools and nine community-based classrooms/public school partnerships for children with behavioral health problems and developmental disabilities, which together had an average daily enrollment of 377 students in FFY 2015.<sup>28</sup>

## Children with Medicaid and RItE Care with a Mental Health Diagnosis

◆ In State Fiscal Year (SFY) 2015, 22% (26,930) children under age 19 enrolled in Medicaid/RItE Care had a mental health diagnosis, including but not limited to anxiety, alcohol/drug dependence, psychoses as well as depressive, mood, and personality disorders. Of those children with a mental health diagnosis, 29% were ages 6 and under, 34% were ages seven to 12, and 37% were ages 13 to 18.

◆ In SFY 2015, 595 children under age 19 enrolled in Medicaid/RItE Care were hospitalized due a mental health related condition and 1,269 children had a mental health related emergency department visit. Ninety-one percent of those mental health related emergency department visits for children under age 19 in SFY 2015 did not result in a hospitalization.<sup>29</sup>

## Suicide Among Rhode Island Children and Youth

◆ Children and youth with mental health conditions are at increased risk for suicide.<sup>30</sup> In 2015, 11% of Rhode Island high school students reported attempting suicide one or more times during the past year, down from 14% in 2013.<sup>31</sup> In Rhode Island between 2010 and 2014, there were 873 emergency department visits and 442 hospitalizations of youth ages 13-19 due to suicide attempts.<sup>32</sup> Twenty-four children and youth under age 20 died due to suicide in Rhode Island between 2010 and 2014.<sup>33</sup>

## Rhode Island's Community Mental Health Organizations

◆ The six Community Mental Health Organizations (CMHOs) in Rhode Island are the primary source of public mental health treatment services available in the state for children and adults. During 2015, 5,837 children under age 18 were treated at CMHOs, and 3,660 children were receiving treatment as of December 31, 2015.<sup>34</sup>

### References

<sup>1</sup> Centers for Disease Control and Prevention. (2013). Mental health surveillance among children: United States, 2005-2011. *Morbidity and Mortality Weekly Report*, 62(Suppl.2):1-35.

<sup>2,10,30</sup> Murphey, D., Barry, M., & Vaughn, B. (2013). *Adolescent health highlight: Mental health disorders*. (Publication No. 2013-1). Washington DC: Child Trends.

(continued on page 175)

# Children with Special Needs

## DEFINITION

*Children with special needs* are those who have a chronic disease or disability that requires educational services, health care, and/or related services of a type or amount beyond that required generally by children. Special needs can be physical, developmental, behavioral, or emotional. This indicator measures the number of children enrolled in Early Intervention, special education, Supplemental Security Income (SSI) and Medical Assistance for children with special health care needs.

## SIGNIFICANCE

An estimated 20% of children in the U.S. and 21% of children in Rhode Island have at least one special health care need.<sup>1</sup> Children with special health care needs (CSHCN) can have impairments of varying degrees in physical, developmental, emotional, and/or behavioral functioning.<sup>2</sup> Parental reports of developmental screening for young children during health care visits in Rhode Island increased from 15% in 2007 to 32% in 2012.<sup>3</sup> Nationally, 41% of CSHCN have two or more special health needs. Health conditions most commonly reported are Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder, asthma, learning disabilities, speech problems, developmental delay, behavioral problems, anxiety, and depression.<sup>4</sup>

Children with mild or severe disabling conditions have special needs related to physical health, mental health, education, family support, housing, child care, and recreation.<sup>5</sup> Health-related needs are best met via a comprehensive, coordinated, continuous, accessible, and family-centered medical home.<sup>6</sup>

Rhode Island high school students with disabilities report experiencing physical fights, being electronically bullied and being bullied at school, and acute depression more frequently than their non-disabled peers. They also had higher rates of inactivity, poor academic achievement, and risky behaviors, including being sexually active, smoking tobacco, drinking, riding with a driver who drank alcohol, and using marijuana.<sup>7,8</sup>

CSHCN may require medical services, equipment, assistive technology, or home modifications that may result in serious financial burdens on families.<sup>9,10</sup> Having children with special needs significantly impacts parents' finances, employment, and family lives.<sup>11,12</sup> In 2015, the Rhode Island General Assembly established Achieving a Better Life Experience (ABLE) tax-free saving accounts for people who become disabled before age 26, which cover a range of expenses, including health care, education, housing, transportation, and employment training.<sup>13, 14, 15</sup>

## Children Enrolled in Early Intervention

- ◆ States are required by the federal *Individuals with Disabilities Education Act (IDEA) Part C* to identify and provide appropriate Early Intervention services to all infants and toddlers under age three who have developmental delays or have a diagnosed physical or mental condition that is associated with a developmental delay.<sup>16</sup>
- ◆ In Rhode Island in 2015, 11 certified Early Intervention (EI) provider agencies served 4,359 children. As of June 30, 2015, there were 2,195 children enrolled in EI (6% of all children under age three). Nearly two-thirds (62%) of those children receiving EI services were male and just over one-third (38%) were female. EI enrollment was not evenly distributed among children by age, with 19% less than one year old, 31% between ages one and two, and 50% between ages two and three during that time period.<sup>17</sup>

## Children Enrolled in Special Education

- ◆ Under *IDEA Part B*, local school systems are responsible for identifying, evaluating, and serving students ages three to 21 who have disabilities that might require special education and related services.<sup>18</sup>
- ◆ As of June 30, 2015 in Rhode Island, there were 2,927 children ages three to five who received preschool special education services.<sup>19</sup>
- ◆ In Rhode Island as of June 30, 2015, 20,800 students in public schools ages six to 21 received special education services (15% of all students). Thirty-eight percent of students receiving special education services in Rhode Island had a learning disability.<sup>20</sup>
- ◆ Early Intervention (EI) programs are required to provide transition services for children who are enrolled in EI and who may be eligible for special education services at age three. In 2015, 64% of the 1,041 children who reached age three while in EI were determined to be eligible for preschool special education, 21% were found not eligible, and 10% were still in the eligibility determination process when exiting EI. The remainder completed their service plan prior to reaching the maximum age for EI, moved out of state, withdrew, or were otherwise unreachable for follow-up.<sup>21</sup>

## Medical Assistance for Children With Special Health Care Needs

- ◆ As of December 31, 2015, there were 5,160 Rhode Island children and youth under age 19 receiving Medical Assistance benefits through their enrollment in the federal Supplemental Security Income (SSI) program.<sup>22,23</sup>
- ◆ In Rhode Island, the Katie Beckett eligibility provision provides Medical Assistance coverage to children under age 19 who have serious disabling conditions, in order to enable them to be cared for at home instead of in an institution.<sup>24</sup> As of December 31, 2015, there were 990 Rhode Island children enrolled through the Katie Beckett provision, a decline of 44% from the peak enrollment of 1,770 in 2007.<sup>25,26</sup>
- ◆ Children with special needs enrolled in Medical Assistance in Rhode Island have shown significant gains in access to needed health services and reductions in emergency care and hospitalization use over the past decade.<sup>27,28</sup>

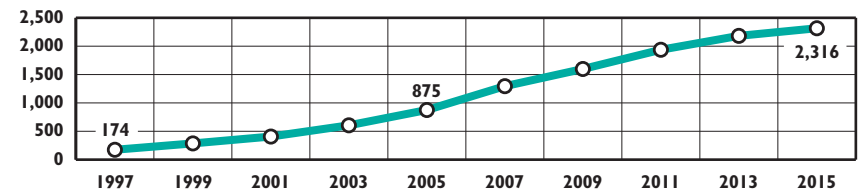
## Children With Special Needs in the Child Welfare System

- ◆ Children and youth who are in the child welfare system are more likely to have special needs, including behavioral and emotional problems, developmental delays, and serious health problems than other children. Children often enter the child welfare system in poor health and face difficulties accessing services while in care.<sup>29,30</sup>
- ◆ As of December 31, 2015, 2,089 children in Rhode Island were enrolled in Medical Assistance through the child welfare system.<sup>31</sup> Per provisions of the federal *Affordable Care Act (ACA)*, all youth who turned age 18 while in foster care are eligible for Medicaid coverage until they reach age 26 in the state in which they aged out of care.<sup>32,33</sup> In Rhode Island, estimates show that 59% of all eligible former foster youth were enrolled in Medicaid coverage as of December 31, 2015, up from 51% in 2014.<sup>34</sup>
- ◆ Children who are adopted through the Rhode Island Department of Children, Youth and Families and have special needs may qualify for Medical Assistance coverage. As of December 31, 2015, 2,412 children were enrolled in Medical Assistance because of special needs adoptions.<sup>35</sup>

## Children With Autism Spectrum Disorder (ASD)

- ◆ Autism Spectrum Disorder (ASD) is a developmental disability that can cause significant social, communication, and behavioral challenges. Children diagnosed with ASD have a variety of symptoms and experience challenges and abilities that range widely in severity. Many children with ASD face challenges in social interaction, speech/language, and communication and demonstrate repetitive behaviors and routines.<sup>36,37</sup>
- ◆ The national ASD prevalence among children age eight is estimated to be one out of every 68 children (one out of 42 boys and one out of 189 girls).<sup>38</sup>

### Children Ages Three to 21 With Autism Spectrum Disorder (ASD), Rhode Island, December 1997-June 2015



Source: Rhode Island Department of Education, Office of Student, Community and Academic Supports, December 1997-June 2015. All data prior to 2000 is a December point in time run, and all data starting in 2000 and beyond is a June point in time run. Numbers include parentally placed students.

- ◆ In June 2015, there were 2,316 Rhode Island children ages three to 21 with ASD who received special education services.<sup>39</sup> The increase in number of children with ASD has been attributed, in part, to improved awareness and better screening and evaluation tools, as well as the broadening of the definition of ASD.<sup>40,41,42</sup>
- ◆ Early and appropriate identification and sustained interventions by skilled professionals can result in improvements in the levels of independent functioning of children and youth with ASD and long-term life outcomes.<sup>43,44</sup>

#### References

<sup>1</sup> Data Resource Center for Child and Adolescent Health. (n.d.). *2011/12 National Survey of Children's Health-Children with special health care needs (CSHCN)*. Retrieved February 11, 2015, from [www.childhealthdata.org](http://www.childhealthdata.org)

<sup>24</sup> Data Resource Center for Child and Adolescent Health. (2012). *Who are children with special health care needs?* Retrieved February 13, 2015, from [www.childhealthdata.org](http://www.childhealthdata.org)

(continued on page 175)

# Infants Born at Highest Risk

## DEFINITION

*Infants born at highest risk* is the percentage of babies born in Rhode Island to Rhode Island women who were under age 20, unmarried, and had fewer than 12 years of education.

## SIGNIFICANCE

The basic architecture of the human brain develops during the infant and toddler years. By age three, a child's brain has grown to 90% of its adult size and the foundation of many cognitive structures and systems are in place. Early experiences lay the foundation for future learning, and strong, positive relationships are the building blocks for healthy development. Babies who have positive, predictable relationships with parents and other caregivers have a sturdy foundation from which to achieve healthy growth and development, while babies who do not have a strong relationship with a nurturing caregiver often encounter challenges in future learning and development.<sup>1,2,3</sup>

Infancy is a time of great opportunity and vulnerability. A child's development can be compromised by "toxic stress" and a variety of adverse childhood experiences and risk factors including poverty, maternal depression, family chaos, exposure to violence, child maltreatment, and unsafe, low-quality child care.<sup>4,5</sup>

Maternal marriage status, age, and education level at birth influence the likelihood that a child will live in poverty and predict many developmental vulnerabilities. When a child is born to a teenage, unmarried mother who has not graduated from high school, he or she is nine times more likely to grow up in poverty than a child born to a married woman over age 20 with a high school diploma.<sup>6</sup> Most children facing these three economic and social risk factors at birth continue to face great challenges throughout childhood. In 2015 in Rhode Island, 240 babies (2% of all babies) were born to unmarried teen mothers without high school diplomas.<sup>7</sup>

Providing early and intensive support to families with multiple risk factors can help parents develop critical nurturing skills.<sup>8</sup> Evidence-based home visiting programs for vulnerable families beginning during pregnancy (or as early as possible) and continuing through infancy and toddlerhood improve outcomes for children facing significant adversity.<sup>9</sup>

Rhode Island offers three evidence-based home visiting programs shown to improve outcomes in vulnerable families – Nurse-Family Partnership, Healthy Families America, and Parents as Teachers.<sup>10</sup>

## Births by Key Risk Factors, Four Core Cities and Rhode Island, 2015

CITY/TOWN	BIRTHS	% TO MOTHERS WITHOUT A HSD/GED	% TO SINGLE MOTHERS	% TO MOTHERS YOUNGER THAN 20	% TO MOTHERS WITH ALL 3 RISK FACTORS
Central Falls	300	35%	70%	12%	7%
Pawtucket	916	16%	60%	6%	3%
Providence	2,471	21%	59%	8%	4%
Woonsocket	500	17%	64%	8%	4%
<i>Rhode Island</i>	<i>10,418</i>	<i>11%</i>	<i>45%</i>	<i>5%</i>	<i>2%</i>

Source: Rhode Island Department of Health, KIDSNET Database, 2015.

- ◆ The U.S. birth rate had been declining since 2007 and reached an historic low in 2013, but rose slightly in 2014. Rhode Island had the fifth lowest birth rate in the U.S. in 2014, with 10.3 births per 1,000 women ages 15 to 44.<sup>11</sup>
- ◆ The total number of babies born in Rhode Island to Rhode Island women declined 13% between 2007 and 2015, from 12,010 to 10,418 births.<sup>12</sup>
- ◆ Between 2007 and 2015 in Rhode Island, the number of infants born at highest risk (babies born to unmarried teen mothers without a high school diploma) fell 63%. The proportion of births to single mothers declined from 47% to 45% of births, while the proportion of births to mothers without a high school diploma fell from 18% to 11%, and the proportion of births to teen mothers fell from 10% to 5% of all births.<sup>13</sup>
- ◆ All babies born in Rhode Island are screened through the Rhode Island Department of Health's Newborn Risk Assessment Program. In 2015, there were 6,546 babies born (63% of all babies born) who "screened positive," indicating the presence of one or more risk factors associated with poor developmental outcomes.<sup>14</sup>
- ◆ Of the 10,418 babies born to Rhode Island women in 2015, nearly one-third (3,052) had a mother with a history of treatment for mental health conditions. Also, 482 had a mother with a documented history of substance abuse problems and 227 had a mother who was involved or had been involved with the child welfare system (either as an adult or as a child).<sup>15</sup>

Table 16.

## Infants Born at Highest Risk, Rhode Island, 2015

CITY/TOWN	TOTAL # OF BIRTHS	BIRTHS TO MOTHERS WITHOUT A HIGH SCHOOL DIPLOMA	BIRTHS TO SINGLE MOTHERS	BIRTHS TO MOTHERS YOUNGER THAN AGE 20	BIRTHS TO MOTHERS WITH ALL 3 RISK FACTORS	% OF BIRTHS WITH ALL 3 RISK FACTORS
Barrington	113	4	21	1	0	0%
Bristol	132	9	49	7	4	3%
Burrillville	125	2	48	4	1	<1%
Central Falls	300	106	209	37	21	7%
Charlestown	38	1	15	3	0	0%
Coventry	305	9	111	8	2	<1%
Cranston	802	53	305	24	13	2%
Cumberland	320	11	91	3	1	<1%
East Greenwich	119	2	21	1	1	<1%
East Providence	433	41	178	13	5	1%
Exeter	51	2	17	2	1	2%
Foster	29	1	10	1	1	3%
Glocester	64	1	15	0	0	0%
Hopkinton	41	2	9	0	0	0%
Jamestown	28	0	5	0	0	0%
Johnston	272	17	128	12	6	2%
Lincoln	209	7	61	5	2	1%
Little Compton	15	0	4	0	0	0%
Middletown	165	11	54	7	5	3%
Narragansett	49	0	18	0	0	0%
New Shoreham	11	0	4	0	0	0%
Newport	224	30	91	7	5	2%
North Kingstown	226	8	62	7	1	<1%
North Providence	338	24	148	20	5	1%
North Smithfield	72	2	17	0	0	0%
Pawtucket	916	144	549	52	25	3%
Portsmouth	106	0	18	0	0	0%
Providence	2,471	527	1,455	189	98	4%
Richmond	30	2	13	4	2	7%
Scituate	84	2	22	3	1	1%
Smithfield	135	2	37	1	1	<1%
South Kingstown	154	4	61	6	1	<1%
Tiverton	64	2	21	2	0	0%
Warren	81	2	22	1	1	1%
Warwick	796	33	264	21	6	<1%
West Greenwich	40	2	11	1	0	0%
West Warwick	329	34	167	26	9	3%
Westerly	130	3	41	3	2	2%
Woonsocket	500	84	319	42	20	4%
Unknown	101	0	31	0	0	NA
Four Core Cities	4,187	861	2,532	320	164	4%
Remainder of State	6,130	323	2,159	193	76	1%
Rhode Island	10,418	1,184	4,722	513	240	2%

### Source of Data for Table/Methodology

Rhode Island Department of Health, KIDSNET Database, 2015. Birth data from 2015 are provisional. Data include only births that occurred in Rhode Island to Rhode Island residents. This table shows the number and percentage of all births with three risk factors that place a child at very high risk for poor developmental outcomes.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

Caution should be used with small numbers in numerators and denominators.

### References

- <sup>1</sup> U.S. Department of Health and Human Services. (2011). *Supporting brain development in traumatized children and youth*. Washington, DC: Child Welfare Information Gateway.
- <sup>2</sup> U.S. Department of Health and Human Services. (2009). *Understanding the effects of maltreatment on brain development*. Washington, DC: Child Welfare Information Gateway.
- <sup>3,4</sup> *Early experiences matter: A guide to improved policies for infants and toddlers*. (2009). Washington, DC: Zero to Three National Center for Infants and Toddlers.
- <sup>5</sup> Shonkoff, J. P., Garner, A. S., & the Committee on Psychosocial Aspects of Child and Family Health; Committee on Early Childhood, Adoption, and Dependent Care; and Section on Developmental and Behavioral Pediatrics. (2011). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, 129(1), e232-e246.
- <sup>6</sup> *Teen pregnancy, poverty, and income disparity*. (2010). Washington, DC: The National Campaign to Prevent Teen Pregnancy.
- <sup>7,12,13,14,15</sup> Rhode Island Department of Health, KIDSNET Database, 2007-2015.
- <sup>8</sup> Clothier, S. & Tweedie, J. (2012). Bringing up baby. *State Legislatures*, 38(1), 24-26.
- <sup>9</sup> *Expanding home visiting research: New measures of success*. (n.d.). Washington, DC: The Pew Charitable Trusts.
- <sup>10</sup> *Home Visiting Program: Rhode Island*. (2015). Washington, DC: U.S. Department of Health and Human Services, Health Resources and Services Administration.

(continued on page 176)



# Evidence-Based Family Home Visiting

## DEFINITION

*Evidence-based family home visiting* is the number of families enrolled in evidence-based family home visiting programs managed by the Rhode Island Department of Health.

## SIGNIFICANCE

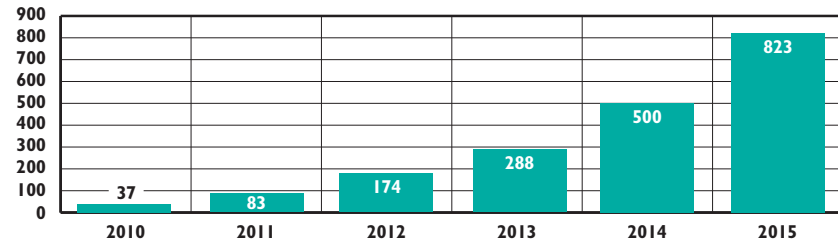
Parents are the most important individuals in a child's life, particularly during infancy and early childhood. Infants and toddlers who receive responsive, nurturing care and are provided with opportunities to learn have a strong foundation for success. When parents lack the knowledge or resources to meet the needs of their baby, the child's health, development, and learning trajectory is threatened.<sup>1,2</sup>

Home visiting programs are designed to reach young children and their families at home. Each program is different, but all provide parenting education to foster healthy, safe, and stimulating environments for young children. Children in at-risk families who participate in high-quality home visiting programs have improved language, cognitive, and social-emotional development and are less likely to experience child abuse and neglect. Families who participate are more likely to provide an enriching home environment, use appropriate discipline strategies, and become more

economically secure through education and employment. Some home visiting programs can also improve maternal and child health, reducing long-term health care costs.<sup>3,4,5</sup>

In 2010, federal legislation established the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program to expand and improve state-administered home visiting programs for at-risk families with young children. The majority of funding must be spent by states on approved models that meet rigorous evidentiary standards.<sup>6</sup> As of September 2015, there are 19 home visiting models that have been identified as effective, evidence-based programs for families during the prenatal period and early childhood years, with evidence showing they produce statistically significant improvements in outcomes for children and families.<sup>7</sup> Rhode Island uses MIECHV funding to support implementation of three of these evidence-based models: Healthy Families America, Nurse-Family Partnership, and Parents as Teachers.<sup>8</sup> In order to achieve improved outcomes for children, evidence-based programs must follow national program guidelines, use professional staff trained in the model, be implemented in the appropriate timeframes, and be implemented with fidelity.<sup>9</sup>

**Families Enrolled in Evidence-Based Family Home Visiting (MIECHV-Funded), Rhode Island, 2010-2015**



Source: Children's Friend and Service, Nurse-Family Partnership enrollment in October 2010 and October 2011. Rhode Island Department of Health, enrollment in MIECHV-funded evidence-based home visiting programs, October 2012-2015.

- ◆ As of October 2015, of the children enrolled in MIECHV evidence-based home visiting programs 16% had mothers under age 20, 35% had mothers ages 20 to 24, and 49% had mothers age 25 or older at enrollment.<sup>10</sup> One-quarter (26%) of the mothers had less education than a high school diploma or GED, 21% had a high school diploma or GED, 17% had some college or vocational training, 3% had a four-year college degree, and 33% had an unknown amount of education at enrollment.<sup>11</sup>
- ◆ At the time of enrollment, 70% of the mothers were single (had never married), 22% were married or had a domestic partner, 3% were divorced or separated, and 5% had an unknown marital status.<sup>12</sup> Among the enrolled children, 13% were in utero, 47% were under age one, 33% were age one, 7% were age two, and <1% were age three.<sup>13</sup>
- ◆ Home-based Early Head Start is also recognized as an evidence-based home visiting program that improves child outcomes.<sup>14</sup> As of October 2015 in Rhode Island, there were 367 children enrolled in home-based Early Head Start.<sup>15</sup>
- ◆ Early Intervention (EI) programs serve infants and toddlers with developmental delays and disabilities in Rhode Island and deliver nearly all (95%) services through home visits. As of June 2015, there were 2,195 children enrolled in EI in Rhode Island.<sup>16</sup>
- ◆ Rhode Island also operates First Connections, a statewide, short-term home visiting program designed to help families get connected to needed resources. In 2015, 3,648 children received at least one First Connections home visit (58% lived in one of the four core cities and 42% in the remainder of the state).<sup>17</sup>

# Evidence-Based Family Home Visiting

Table 17.

Evidence-Based Family Home Visiting, Rhode Island, 2015

CITY/TOWN	COMMUNITY CONTEXT, 2015			# FAMILIES ENROLLED IN EVIDENCE-BASED HOME VISITING PROGRAMS, OCTOBER 1, 2015				
	TOTAL # OF BIRTHS	% OF BIRTHS WITH 1 OR MORE RISK FACTORS	% OF BIRTHS WITH 3 OR MORE KEY RISK FACTORS	# RECEIVED FIRST CONNECTIONS VISIT IN 2015	HEALTHY FAMILIES AMERICA	NURSE-FAMILY PARTNERSHIP	PARENTS AS TEACHERS*	TOTAL
Barrington	113	33%	0%	14	1	0	0	1
Bristol	132	59%	3%	38	1	1	0	2
Burrillville	125	49%	1%	25	0	0	0	0
Central Falls	300	86%	7%	208	50	7	7	64
Charlestown	38	58%	0%	13	1	0	0	1
Coventry	305	53%	1%	71	9	0	0	9
Cranston	802	55%	2%	227	24	4	3	31
Cumberland	320	47%	<1%	46	1	1	1	3
East Greenwich	119	38%	1%	24	1	0	0	1
East Providence	433	58%	1%	87	14	4	1	19
Exeter	51	49%	2%	14	0	0	0	0
Foster	29	38%	3%	0	0	0	0	0
Glocester	64	36%	0%	7	0	0	0	0
Hopkinton	41	32%	0%	6	2	0	0	2
Jamestown	28	36%	0%	2	0	0	0	0
Johnston	272	61%	2%	43	1	1	0	2
Lincoln	209	45%	1%	36	3	2	0	5
Little Compton	15	53%	0%	4	0	0	0	0
Middletown	165	50%	3%	43	6	1	0	7
Narragansett	49	39%	0%	10	0	0	0	0
New Shoreham	11	73%	0%	2	0	0	0	0
Newport	224	54%	2%	79	9	3	0	12
North Kingstown	226	46%	<1%	62	7	0	0	7
North Providence	338	61%	1%	79	2	1	1	4
North Smithfield	72	43%	0%	13	0	1	0	1
Pawtucket	916	75%	3%	410	73	31	27	131
Portsmouth	106	43%	0%	17	3	1	0	4
Providence	2,471	78%	4%	1,286	259	55	60	374
Richmond	30	83%	7%	33	2	0	0	2
Scituate	84	44%	1%	12	0	0	0	0
Smithfield	135	39%	1%	12	1	0	0	1
South Kingstown	154	55%	1%	54	4	0	0	4
Tiverton	64	61%	0%	23	4	3	0	7
Warren	81	47%	1%	18	5	0	0	5
Warwick	796	53%	1%	248	11	3	0	14
West Greenwich	40	45%	0%	9	1	0	0	1
West Warwick	329	67%	3%	130	18	1	0	19
Westerly	130	51%	2%	49	9	0	0	9
Woonsocket	500	82%	4%	194	50	17	14	81
Unknown Residence	101	40%	0%	0	0	0	0	0
Four Core Cities	4,187	79%	4%	2,098	432	110	108	650
Remainder of State	6,130	52%	1%	1,550	140	27	6	173
Rhode Island	10,418	63%	2%	3,648	572	137	114	823

## Source of Data for Table/Methodology

The number of births, the percentage of births by risk factor, the number of families that received a First Connections visit, and the number of families enrolled in an evidence-based family home visiting program are from the Rhode Island Department of Health. Percentage of births with one or more risk factor is “risk positive” definition from the Developmental Risk Assessment. Percentage of births with three key risk factors are births to unmarried mothers under age 20 without a high school diploma.

\*The city/town table includes only families enrolled in MIECHV-funded Parents as Teachers programs. There are other Parents as Teachers programs in Rhode Island.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket

## References

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- <sup>5</sup> *Medicaid financing of early childhood home visiting programs: Options, opportunities, and challenges*. (2012). Washington, DC: The Pew Charitable Trusts.
- <sup>8,10,11,12,13,17</sup> Rhode Island Department of Health, 2015.
- <sup>9</sup> Howard, K. S. & Brooks-Gunn, J. (2009). The role of home-visiting programs in preventing child abuse and neglect. *The Future of Children*, 19(2), 119-146.
- <sup>15</sup> Rhode Island Early Head Start program reports to Rhode Island KIDS COUNT, October 2015.
- <sup>16</sup> Rhode Island Executive Office of Health and Human Services, Center for Child and Family Health, June 30, 2015.

# Women with Delayed Prenatal Care

## DEFINITION

*Women with delayed prenatal care* is the percentage of women beginning prenatal care in the second or third trimester of pregnancy or receiving no prenatal care at all. Data are reported by place of mother's residence, not place of infant's birth.

## SIGNIFICANCE

Early prenatal care is an important way to identify and treat health problems as well as influence health behaviors that can compromise fetal development, infant health, and maternal health. Women receiving late or no prenatal care are at increased risk of poor birth outcomes, such as having babies who are low birthweight or who die within the first year of life.<sup>1</sup>

Effective prenatal care screens for and intervenes with a range of maternal needs including nutrition, social support, mental health, smoking cessation, substance use, domestic violence, and unmet needs for food and shelter.<sup>2,3,4</sup> A prenatal visit is the first step in establishing an infant's medical home and can provide valuable links to other health services.<sup>5,6</sup>

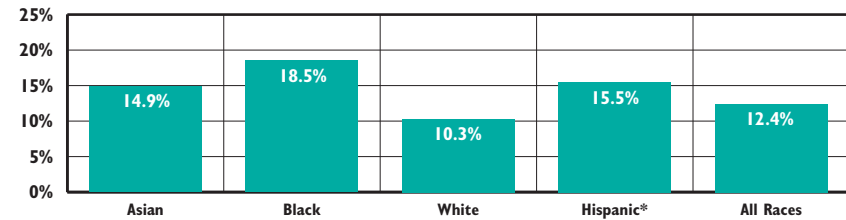
Timely initiation of prenatal care is especially important for women who face multiple risks for poor birth outcomes, as is ensuring access to preconception health care services

before pregnancy. Effective monitoring and treatment of chronic disease, education on preventive health practices, implementing and enhancing Medicaid policies to improve health insurance coverage, and ensuring access to culturally and linguistically competent health providers can improve prenatal care for women of child-bearing age.<sup>7</sup>

Barriers to prenatal care include not knowing one is pregnant, not being able to get an appointment or start care when desired, lack of transportation or child care, inability to get time off work, and/or financial constraints, including lack of insurance and/or money to pay for care. Rhode Island women with delayed or no prenatal care were more likely to report their pregnancy was unintended than women who initiated care in the first trimester.<sup>8</sup>

In Rhode Island between 2010 and 2014, 12.4% of women who gave birth either received no prenatal care or did not begin care until the second or third trimester, an improvement from 12.8% in 2009-2013. Pregnant adolescents in Rhode Island are the most likely to delay prenatal care.<sup>9</sup> Between 2009 and 2011, 22% of Rhode Island mothers who had an unintended pregnancy had delayed or no prenatal care, compared with 7.9% of mothers who had an intended pregnancy.<sup>10</sup>

**Women With Delayed Prenatal Care by Race/Ethnicity, Rhode Island, 2010-2014**



Source: Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Database, 2010-2014. \*Hispanic may be included in any racial category. Data for births in 2014 are provisional.

- ◆ Between 2010 and 2014 in Rhode Island, Black women (18.5%), Hispanic women (15.5%), and Asian women (14.9%) were more likely to receive delayed prenatal care than White women (10.3%).<sup>11</sup>
- ◆ Between 2010 and 2014 in Rhode Island, 17% of women with a high school degree or less were more likely to receive delayed prenatal care than their peers, and the rate of delayed prenatal care among pregnant women in the four core cities was 16.1%.<sup>12,13</sup>

## Insurance Coverage Improves Access to Prenatal Care

- ◆ In the U.S. and Rhode Island, women with commercial insurance have the highest rates of timely prenatal care. Rhode Island women who are most likely to initiate care in the first trimester are also older, married, and have higher levels of education.<sup>14,15</sup>
- ◆ Between 2010 and 2014, pregnant women with RIte Care coverage (Rhode Island's Medicaid managed care health insurance program) were much less likely (17.2%) to receive delayed prenatal care than women who were uninsured (33%). Pregnant women with private insurance coverage were the least likely to receive delayed prenatal care (7.6%) during this time period.<sup>16</sup>
- ◆ RIte Care has had a positive impact on the accessibility, timeliness, and quality of health care services for its members. RIte Care health plans rank above the 75th percentile in member access to timely prenatal care when compared to other Medicaid health plans in the nation.<sup>17</sup>

# Women with Delayed Prenatal Care

Table 18. Delayed Prenatal Care, Rhode Island, 2010-2014

CITY/TOWN	# BIRTHS	# DELAYED CARE	% DELAYED CARE
Barrington	503	40	8.0%
Bristol	778	83	10.7%
Burrillville	632	71	11.2%
Central Falls	1,619	256	15.8%
Charlestown	260	12	NA
Coventry	1,417	150	10.6%
Cranston	3,887	424	10.9%
Cumberland	1,613	143	8.9%
East Greenwich	552	55	10.0%
East Providence	2,453	233	9.5%
Exeter	256	23	NA
Foster	163	22	NA
Glocester	342	42	NA
Hopkinton	357	30	NA
Jamestown	117	12	NA
Johnston	1,282	143	11.2%
Lincoln	901	79	8.8%
Little Compton	79	1	NA
Middletown	834	72	8.6%
Narragansett	373	28	NA
New Shoreham	56	5	NA
Newport	1,295	121	9.3%
North Kingstown	1,020	88	8.6%
North Providence	1,582	172	10.9%
North Smithfield	412	39	NA
Pawtucket	4,941	765	15.5%
Portsmouth	573	33	5.8%
Providence	12,890	2,118	16.4%
Richmond	348	18	NA
Scituate	331	42	NA
Smithfield	593	44	7.4%
South Kingstown	897	63	7.0%
Tiverton	528	37	7.0%
Warren	458	64	NA
Warwick	3,831	389	10.2%
West Greenwich	241	24	NA
West Warwick	1,789	251	14.0%
Westerly	959	66	6.9%
Woonsocket	2,946	469	15.9%
Unknown	41	3	NA
Four Core Cities	22,396	3,608	16.1%
Remainder of State	31,712	3,119	9.8%
Rhode Island	54,149	6,730	12.4%

## Source of Data for Table/Methodology

Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014. Data for births in 2014 are provisional and do not include births among Rhode Island residents that occurred out-of-state.

The denominator is the total number of live births to Rhode Island residents from 2010-2014.

NA: Rates should not be calculated due to small numbers and the lack of statistical reliability.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

During 2004, data on delayed prenatal care began to be collected via a review of medical records, rather than via self report by the mother. Due to this change in methodology, data in this indicator only are comparable to Factbooks since 2009.

## References

- <sup>1</sup> Child Trends. (2015). *Late or no prenatal care: Indicators on children and youth*. Retrieved January 25, 2016, from www.childtrendsdatabank.org
- <sup>2</sup> Akkerman, D., et al. (2012). *Health care guideline: Routine prenatal care*. Retrieved January 25, 2016, from www.icsi.org
- <sup>3</sup> Hagan, J. F., Shaw, J. S., & Duncan, P. M. (Eds.). (2008). *Bright futures: Guidelines for health supervision of infants, children and adolescents (3rd ed.)*. Elk Grove Village, IL: American Academy of Pediatrics.
- <sup>4</sup> Zolotor, Adam J. & Carlough, Martha C. (2014). Update on prenatal care. *American Family Physician*, 89(3),199-208.
- <sup>5</sup> Cohen, G. & Committee on Psychosocial Aspects of Child and Family Health. (2009). The prenatal visit. *Pediatrics*, 124(4), 1227-1232.
- <sup>67</sup> Shore, R. & Shore, B. (2009). *KIDS COUNT Indicator brief: Reducing infant mortality*. Baltimore, MD: The Annie E. Casey Foundation.
- <sup>815</sup> Kim, H., Cain, R., & Viner-Brown, S. (2014). *2014 Rhode Island Pregnancy Risk Assessment Monitoring System data book*. Providence, RI: Rhode Island Department of Health.
- <sup>9,11,12,13,16</sup> Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014.
- <sup>10</sup> *Unintended pregnancy among women in Rhode Island, 2009-2011*. (2015). Providence, RI: Rhode Island Department of Health.
- <sup>14</sup> U.S. Department of Health and Human Services. (2013). *Women's health USA 2012*. Retrieved January 25, 2016, from www.mchb.hrsa.gov/whusa12/
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# Preterm Births

## DEFINITION

*Preterm births* is the percentage of births occurring before the 37th week of pregnancy. The data are reported by place of mother's residence, not place of infant's birth.

## SIGNIFICANCE

Preterm birth is a major determinant of infant mortality and morbidity in the U.S. Infants born before 37 weeks gestation are at higher risk than full-term infants for neurodevelopmental, respiratory, gastrointestinal, immune system, central nervous system, hearing, dental, and vision problems. Children who were born preterm may experience physical disabilities, learning difficulties, and behavioral problems later in life.<sup>1,2,3</sup>

While the specific causes of spontaneous preterm births are largely unknown, research indicates that there are a number of inter-related risk factors involved. The three leading risk factors are a history of preterm birth, current multifetal pregnancy, and uterine and/or cervical abnormalities. Other risk factors include health conditions, weight, maternal depression, late or no prenatal care, stress, domestic violence, and maternal use of tobacco, alcohol, and other drugs.<sup>4,5</sup>

Even "late preterm" infants (34-36 weeks gestation) can experience immediate and long-term complications. Infants born very preterm (<32 weeks

gestation) are at highest risk for death and enduring health problems, high hospitalization costs during their first year, and increased health care-related costs later in life.<sup>6,7</sup> Preventive interventions can improve outcomes for very preterm infants and their caregivers.<sup>8,9</sup>

After rising for more than two decades, the U.S. preterm birth rate has been in decline. In 2014, the U.S. preterm birth rate was 9.6%, a decrease of 8% from the peak of 10.4% in 2007. Preterm births also declined among White, non-Hispanic (down 10%), Black, non-Hispanic (down 10%), and Hispanic (down 3%) infants since 2007. Despite declines, Black, non-Hispanic women continue to have the highest preterm birth rate in the nation (13.2% in 2014).<sup>10,11</sup>

Preterm birth is a major contributor to infant mortality in the U.S., particularly among non-Hispanic Black, Cuban, American Indian/Alaska Native, and Puerto Rican infants.<sup>12</sup>

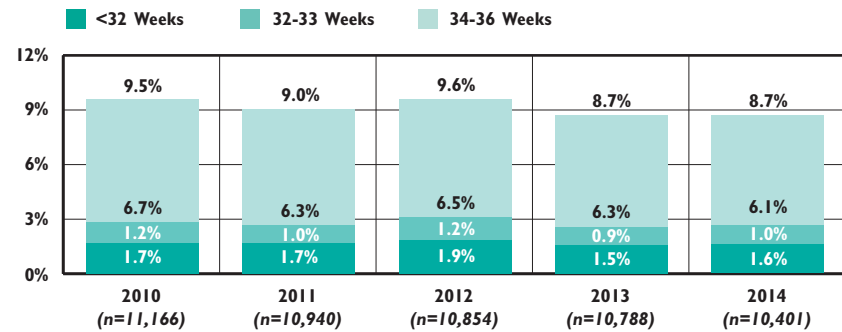
Preterm Births		
	2007	2014
RI	10.8%	8.6%
US	10.4%	9.6%
National Rank*		12th
New England Rank**		4th

\*1st is best; 50th is worst

\*\*1st is best; 6th is worst

Sources: For 2014: Hamilton, B. E., et al. (2015). Births: Final data for 2014. *NVSR*, 64(12), 1-65. For 2007: Martin, J. A., et al. (2015). Measuring gestational age in vital statistics data: Transitioning to the obstetric estimate. *NVSR*, 64(5), 1-19.

## Preterm Births by Gestational Age\*, Rhode Island, 2010-2014



Source: RI Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014. Percentages by gestational age may not sum to total percentage of preterm births due to rounding. \*See note regarding new methodology for calculating preterm births, starting with this Factbook. Data for births in 2014 are provisional.

- ◆ The single-year preterm birth rate in Rhode Island remained the same from 2013 to 2014 (8.7%). Between 2010 and 2014, 70.1% of all preterm births in Rhode Island were late preterm births (34-36 weeks gestation) and 18.3% of all preterm births were very preterm (<32 weeks gestation).<sup>13</sup>
- ◆ Multiple births are more likely to be born preterm. In Rhode Island between 2010 and 2014, 56.3% of multiple births were preterm, compared with 7.3% of singleton births.<sup>14</sup>
- ◆ Between 2010 and 2014, 11.4% of births of Black infants in Rhode Island were preterm, compared with 9.1% of Asian and 8.5% of White infants. During this same time period, 9.6% of births to Hispanic women in Rhode Island were preterm.<sup>15</sup>
- ◆ The rate of preterm births varies by age. In Rhode Island between 2010 and 2014, 9.4% of births among teen girls under age 20, 8.6% of births among women ages 20 to 34, and 11.2% of births among women age 35 and older were preterm.<sup>16</sup>
- ◆ Among women with private health insurance coverage in Rhode Island between 2010 and 2014, 8.7% of births were preterm, compared with 9.4% of those with public insurance coverage and 17.2% of births to women with no health insurance.<sup>17</sup>
- ◆ In Rhode Island between 2010 and 2014, 9.4% of births to women with a high school degree or less were preterm, compared with 8.3% of those with higher education levels.<sup>18</sup>



Table 19. Preterm Births, Rhode Island, 2010-2014

CITY/TOWN	# BIRTHS	# PRETERM BIRTHS	% PRETERM BIRTHS
Barrington	503	33	6.6%
Bristol	778	57	7.3%
Burrillville	632	56	8.9%
Central Falls	1,619	142	8.8%
Charlestown	260	23	NA
Coventry	1,417	134	9.5%
Cranston	3,887	383	9.9%
Cumberland	1,613	113	7.0%
East Greenwich	552	55	10.0%
East Providence	2,453	197	8.0%
Exeter	256	11	NA
Foster	163	13	NA
Glocester	342	36	NA
Hopkinton	357	31	NA
Jamestown	117	9	NA
Johnston	1,282	104	8.1%
Lincoln	901	89	9.9%
Little Compton	79	6	NA
Middletown	834	57	6.8%
Narragansett	373	23	NA
New Shoreham	56	2	NA
Newport	1,295	113	8.7%
North Kingstown	1,020	68	6.7%
North Providence	1,582	155	9.8%
North Smithfield	412	41	NA
Pawtucket	4,941	478	9.7%
Portsmouth	573	43	7.5%
Providence	12,890	1,335	10.4%
Richmond	348	30	NA
Scituate	331	26	NA
Smithfield	593	47	7.9%
South Kingstown	897	66	7.4%
Tiverton	528	46	8.7%
Warren	458	47	NA
Warwick	3,831	320	8.4%
West Greenwich	241	16	NA
West Warwick	1,789	157	8.8%
Westerly	959	72	7.5%
Woonsocket	2,946	294	10.0%
Unknown	41	3	NA
Four Core Cities	22,396	2,249	10.0%
Remainder Of State	31,712	2,679	8.4%
Rhode Island	54,149	4,931	9.1%

### Source of Data for Table/Methodology

Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014. Data for births in 2014 are provisional and do not include births among Rhode Island residents that occurred out-of-state.

The denominator is the total number of live births to Rhode Island residents from 2010-2014.

\*Beginning in 2015, the federal Centers for Disease Control and Prevention and the Rhode Island Department of Health transitioned to a new standard for estimating the gestational age of the newborn. The new measure – the obstetric estimate of gestation at delivery (OE) – replaces the measure based on the date of the last normal menses (LMP).

The 2010-2014 five-year preterm birth percentage and the single year average are measured by OE. Because of this change, preterm birth data reported prior to the 2016 Factbook are not comparable. National preterm birth data use the OE measurement as of the 2007 data year at the time of publication of this Factbook.

NA: Rates should not be calculated due to small numbers and the lack of statistical reliability.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

### References

- <sup>1</sup> Centers for Disease Control and Prevention. (2015). *Preterm birth*. Retrieved February 4, 2016, from www.cdc.gov
- <sup>2,6</sup> *Preterm births*. (2015). Washington, DC: Child Trends.
- <sup>3</sup> Mayo Clinic. (2014). *Premature birth*. Retrieved February 4, 2016, from www.mayoclinic.org
- <sup>5</sup> March of Dimes. (2015). *Preterm labor and premature birth*. Retrieved February 4, 2016, from www.marchofdimes.org
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- <sup>8</sup> Spittle, A. J., et al. (2010). Preventive care at home for very preterm infants improves infant and caregiver outcomes at 2 years. *Pediatrics*, 126(1), e171-e178.
- <sup>9</sup> Spencer-Smith, M. M., et al. (2012). Long-term benefits of home-based preventive care for preterm infants: A randomized trial. *Pediatrics*, 130(6), 1094-1101.
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- <sup>11</sup> Martin, J. A., Hamilton, B. E., Osterman, M. J. K., Curtin, S. C., & Mathews, T. J. (2015). Births: Final data for 2013. *National Vital Statistics Reports*, 64(1), 1-65.
- <sup>12</sup> Mathews, T. J., MacDorman, M. F., & Thoma, M. E. (2015). Infant mortality statistics from the 2013 period linked birth/infant death data set. *National Vital Statistics Reports*, 64(9), 1-29.
- <sup>13,14,15,16,17,18</sup> Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014.

# Low Birthweight Infants

## DEFINITION

*Low birthweight infants* is the percentage of infants born weighing less than 2,500 grams (5 pounds, 8 ounces). The data are reported by place of mother's residence, not place of infant's birth.

## SIGNIFICANCE

An infant's birthweight is a key indicator of newborn health. Infants born weighing less than 5 pounds, 8 ounces are at greater risk for physical and developmental problems than infants of normal weights. Factors that influence infant birthweight include maternal smoking, poverty, periodontal health, level of educational attainment, violence, stress, prenatal nutrition, and environmental hazards.<sup>1,2,3</sup>

Low birthweight often is a result of a premature birth but also can occur after a full-term pregnancy. In 2014 in the U.S., 57.9% of all preterm infants (under 37 weeks gestation) were born at low birthweight, while 2.7% of full-term infants (37 to 41 weeks gestation) were born at low birthweight.<sup>4</sup>

Cigarette smoking during pregnancy is a leading cause of low birthweight.<sup>5,6</sup> In Rhode Island, 7.6% of babies born between 2010 and 2014 had mothers who smoked during their pregnancy. During that time, Rhode Island smokers (12.3%) were nearly twice as likely to deliver a low birthweight infant as women who did not smoke (6.9%).<sup>7</sup>

Children born at low birthweight face greater risks of physical and developmental health problems and death than infants of normal birthweight. Children born at very low birthweight (less than 1,500 grams or 3 pounds, 4 ounces) are more than 100 times more likely to die within the first year of life than infants of normal birthweight. Those who survive are at significantly higher risk of severe problems, including physical and sensory difficulties, developmental delays, and cognitive impairments. Low birthweight babies are also at greater risk for long-term cognitive problems and school difficulties, and are less likely to complete high school than their peers.<sup>8,9,10</sup>

In the U.S. in 2014, 8.0% of infants were born at low birthweight, which was a 14% increase from 7.0% in 1990. Rhode Island's low birthweight rate increased from 6.2% in 1990 to 7.1% in 2014, a 15% increase.<sup>11,12</sup> The *Healthy People 2020* national target is 7.8%.<sup>13</sup>

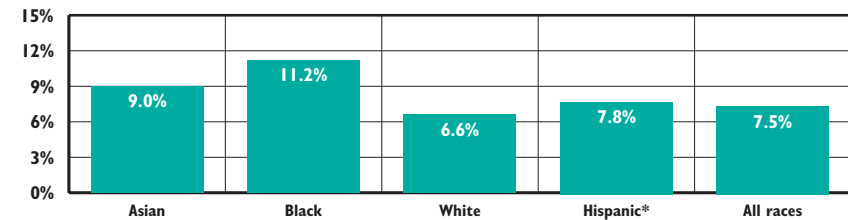
Low Birthweight Infants		
	2004	2014
RI	8.0%	7.1%
US	8.1%	8.0%
National Rank*	15th	
New England Rank**	2nd	

\*1st is best; 50th is worst

\*\*1st is best; 6th is worst

Source: For 2014: Hamilton, B. E., et al. (2015). Births: Final data for 2014. *National Vital Statistics Reports*, 64(12), 1-63. For 2004: Martin, J. A., et al. (2006). Births: Final data for 2004. *National Vital Statistics Reports*, 55(1), 1-102.

Low Birthweight Infants by Race/Ethnicity, Rhode Island, 2010-2014



Source: Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014. \*Hispanic infants can be of any race. Data for births in 2014 are provisional.

- ◆ There are racial and ethnic disparities in rates of low birthweight.<sup>14</sup> In Rhode Island between 2010 and 2014, 11.2% of Black infants, 9.0% of Asian infants, and 7.8% of Hispanic infants were born at low birthweight, compared to 6.6% of White infants.<sup>15</sup>
- ◆ Factors that persist throughout a woman's life, such as increased stress, insufficient health care, and/or lack of social supports, have been shown to increase the likelihood of delivering a low birthweight baby, particularly among Black women and other racial and ethnic minorities.<sup>16,17</sup>
- ◆ Between 2010 and 2014 in Rhode Island, 9.1% of births among women under age 20 were low birthweight compared to 7.4% of those over age 20; 8.7% of infants born to women living in the four core cities were low birthweight compared to 6.6% in the remainder of the state; and 8.2% of infants born to women with a high school degree or less were low birthweight, compared to 6.3% of those born to women with higher education levels.<sup>18</sup>
- ◆ Among women with private health insurance coverage in Rhode Island between 2010 and 2014, 6.6% of births were low birthweight, compared with 8.2% of those with public insurance (RIte Care or Medicaid) and 14.1% of births to women with no insurance.<sup>19</sup>
- ◆ Rhode Island women who deliver a low birthweight infant are more likely to report smoking while pregnant, delayed or no prenatal care, a depression diagnosis, and intimate partner violence than those with a normal weight baby, as well as health issues during their pregnancy such as high blood pressure, hypertension, preeclampsia, or toxemia.<sup>20</sup>
- ◆ Between 2010 and 2014 in Rhode Island, 1.5% of all live births were born at very low birthweight (less than 1,500 grams).<sup>21</sup>

Table 20. **Low Birthweight Infants, Rhode Island, 2010-2014**

CITY/TOWN	# BIRTHS	# LOW BIRTHWEIGHT	% LOW BIRTHWEIGHT
Barrington	503	23	4.6%
Bristol	778	46	5.9%
Burrillville	632	47	7.4%
Central Falls	1,619	124	7.7%
Charlestown	260	12	NA
Coventry	1,417	96	6.8%
Cranston	3,887	305	7.8%
Cumberland	1,613	91	5.6%
East Greenwich	552	44	8.0%
East Providence	2,453	149	6.1%
Exeter	256	11	NA
Foster	163	8	NA
Glocester	342	19	NA
Hopkinton	357	22	NA
Jamestown	117	7	NA
Johnston	1,282	84	6.6%
Lincoln	901	67	7.4%
Little Compton	79	3	NA
Middletown	834	51	6.1%
Narragansett	373	22	NA
New Shoreham	56	3	NA
Newport	1,295	88	6.8%
North Kingstown	1,020	57	5.6%
North Providence	1,582	123	7.8%
North Smithfield	412	38	NA
Pawtucket	4,941	420	8.5%
Portsmouth	573	31	5.4%
Providence	12,890	1160	9.0%
Richmond	348	18	NA
Scituate	331	16	NA
Smithfield	593	32	5.4%
South Kingstown	897	53	5.9%
Tiverton	528	31	5.9%
Warren	458	39	NA
Warwick	3,831	249	6.5%
West Greenwich	241	14	NA
West Warwick	1,789	141	7.9%
Westerly	959	54	5.6%
Woonsocket	2,946	254	8.6%
Unknown	41	1	NA
Four Core Cities	22,396	1,958	8.7%
Remainder of State	31,712	2,094	6.6%
Rhode Island	54,149	4,053	7.5%

### Source of Data for Table/Methodology

Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014. Data for births in 2014 are provisional and do not include births among Rhode Island residents that occurred out-of-state.

The denominator is the total number of live births to Rhode Island residents from 2010-2014.

NA: Rates should not be calculated due to small numbers and the lack of statistical reliability.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

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- <sup>25</sup> Shore, R. & Shore, B. (2009). *KIDS COUNT indicator brief: Preventing low birthweight*. Baltimore, MD: The Annie E. Casey Foundation.
- <sup>3</sup> Chambrone, L., Guglielmetti, M. R., Pannuti, C. M., & Chambrone, L. A. (2011). Evidence grade associating periodontitis to preterm birth and/or low birth weight: I. A systematic review of prospective cohort studies. *Journal of Clinical Periodontology*, 38(9), 795-808.
- <sup>4,11,14</sup> Hamilton, B. E., Martin, J. A., Osterman, M. J. K., Curtin, S. C., & Mathews, T. J. (2015). Births: Final data for 2014. *National Vital Statistics Reports*, 64(12), 1-63.
- <sup>6,20</sup> Kim, H., Cain, R., Viner-Brown, S., & Roach, C. (2014). *2014 Rhode Island Pregnancy Risk Assessment Monitoring System data book: 2009-2011 data to guide evidence-based decision making*. Providence, RI: Rhode Island Department of Health, Center for Health Data and Analysis.
- <sup>7,15,18,19,21</sup> Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014.
- <sup>8,15</sup> Child Trends. (2015). *Low and very low birthweight infants*. Retrieved January 26, 2016, from www.childtrendsdatbank.org
- <sup>9</sup> Matthews, T. J., MacDorman, M. F., & Thoma, M.E. (2015). Infant mortality statistics from the 2013 period linked birth/infant death data set. *National Vital Statistics Reports*, 64(9), 1-30.
- <sup>10</sup> *Child health USA 2014*. (2015). Rockville, MD: U.S. Department of Health and Human Services, Maternal and Child Health Bureau.
- <sup>12</sup> The Annie E. Casey Foundation, KIDS COUNT Data Center, datacenter.kidscount.org
- <sup>16</sup> Lu, M. C., et al. (2010). Closing the black-white gap in birth outcomes: A life-course approach. *Ethnicity & Disease*, 20, 62-76.
- <sup>17</sup> Janevic, T., et al. (2010). Neighborhood deprivation and adverse birth outcomes among diverse ethnic groups. *Annals of Epidemiology*, 20(6), 445-451.

# Infant Mortality

## DEFINITION

*Infant mortality* is the number of deaths of infants under one year of age per 1,000 live births. The data are reported by place of mother's residence, not place of infant's birth.

## SIGNIFICANCE

Infant mortality rates are associated with maternal health, quality of and access to medical care, socioeconomic conditions, and public health practices.<sup>1</sup> Communities with high poverty and disadvantaged social conditions tend to have higher infant mortality rates than more advantaged neighborhoods.<sup>2</sup>

The five main causes of infant death in the U.S. — congenital malformations, low birthweight, maternal complications, sudden infant death syndrome (SIDS), and unintentional injuries — account for 57% of all infant deaths.<sup>3</sup> Congenital malformations are the leading cause of infant death in the U.S. for all groups, except for non-Hispanic Black and Puerto Rican women, for whom low birthweight was the leading cause. These two ethnic groups also experienced high rates of infant deaths due to preterm-related causes. In both the U.S. and Rhode Island, non-Hispanic Black women had twice the infant mortality rate of non-Hispanic White women.<sup>4</sup>

The U.S. infant mortality rate declined from 26.0 deaths per 1,000

live births in 1960 to a record low of 5.8 deaths per 1,000 live births in 2014, due to improvements in health behaviors, medical advances, improved access to care, and economic growth.<sup>5,6,7,8</sup> Relative to other industrialized countries, the U.S. has made slower progress in reducing infant mortality due in part to a relatively high number of preterm births resulting in infant mortality.<sup>9,10</sup>

The overall infant mortality rate in Rhode Island between 2010 and 2014 was 6.2 deaths per 1,000 live births. The infant mortality rate was 8.0 per 1,000 live births in the four core cities, compared with 5.0 per 1,000 live births in the remainder of the state. Also during that time, mothers with a high school degree or less had a higher infant mortality rate (6.1 per 1,000 live births) than mothers with more advanced educational degrees (4.8 per 1,000 live births).<sup>11</sup>

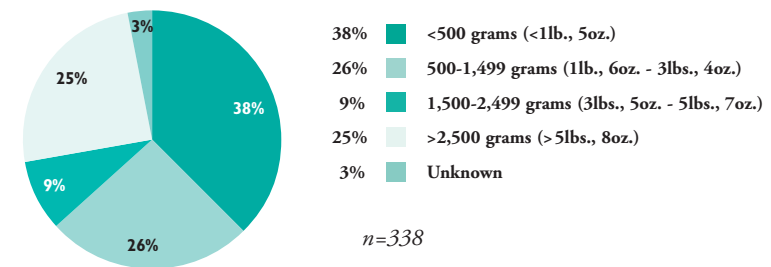
Infant Mortality Rate (rate per 1,000 live births)		
	2004	2014
RI	5.3	4.4
US	6.8	5.8
National Rank*		3rd
New England Rank**		2nd

\*1st is best; 50th is worst

\*\*1st is best; 6th is worst

Source: Population Reference Bureau calculations using CDC WONDER data, wonder.cdc.gov

## Infant Mortality by Birthweight, Rhode Island, 2010-2014



Source: Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014. Data for births in 2014 are provisional. Totals may not sum to 100% due to rounding.

- ◆ Between 2010 and 2014, 338 infants died in Rhode Island before their first birthday, a rate of 6.2 per 1,000 live births. This is an improvement from the 2009-2013 infant mortality rate of 6.6 per 1,000 live births (when there were 362 infant deaths). Between 2010 and 2014, 72% of infants who died were low birthweight, 25% were born at normal weights, and 3% had unknown birthweights.<sup>12</sup>
- ◆ Preterm birth is the leading cause of infant death in Rhode Island.<sup>13</sup> Between 2010 and 2014, 73% (242) of all infant deaths were preterm (occurring before the 37th week).<sup>14</sup>
- ◆ Of the 338 infant deaths between 2010 and 2014 in Rhode Island, 75% (253) occurred in the neonatal period (during the first 27 days of life).<sup>15</sup> Generally, infant deaths in the neonatal period are related to short gestation and low birthweight (less than 2,500 grams), malformations at birth, and/or conditions occurring in the perinatal period.<sup>16</sup>
- ◆ Between 2010 and 2014, 25% (85) of the 338 infant deaths in Rhode Island occurred in the post-neonatal period (between 28 days and one year after delivery).<sup>17</sup>
- ◆ Racial and ethnic disparities exist in infant mortality. In Rhode Island between 2010 and 2014, the Black infant mortality rate was 10.8 deaths per 1,000 live births, the Asian infant mortality rate was 6.4 per 1,000 live births, and the White infant mortality rate was 4.8 per 1,000 live births. The Hispanic infant mortality rate was 6.1 per 1,000 live births, compared with 5.7 deaths per 1,000 live births among non-Hispanics in Rhode Island.<sup>18</sup>

## Reducing Infant Mortality

◆ Comprehensive state initiatives to reduce infant mortality should include the following seven broad strategies: improve health promotion efforts; ensure quality of care for all women and infants; improve maternal risk screening for all women of reproductive age; enhance service integration for women and infants; improve access to health care of women before, during and after pregnancy; develop data systems to understand and inform efforts; and promote social equity.<sup>19</sup>

◆ Infant mortality is a result of a variety of factors and interventions to prevent infant mortality should occur at multiple levels, including individual education and counseling, ongoing evidence-based clinical interventions, long-lasting health promoting actions, creating health-promoting environments, and socioeconomic interventions to eliminate disparities.<sup>20</sup>

◆ Participation in enhanced prenatal and postnatal care programs, such as evidence-based family home visiting programs, have been shown to reduce the risk of infant death.<sup>21</sup> As of October 2015, there were 823 families enrolled in one of three MIECHV evidence-based home visiting programs in Rhode Island.<sup>22</sup>

Table 21. Infant Mortality, Rhode Island, 2010-2014

CITY/TOWN	# OF BIRTHS	# OF INFANT DEATHS	RATE PER 1,000 LIVE BIRTHS
Barrington	503	0	NA
Bristol	778	2	NA
Burrillville	632	2	NA
Central Falls	1,619	8	NA
Charlestown	260	2	NA
Coventry	1,417	6	NA
Cranston	3,887	17	4.4
Cumberland	1,613	10	NA
East Greenwich	552	7	NA
East Providence	2,453	13	5.3
Exeter	256	0	NA
Foster	163	1	NA
Glocester	342	3	NA
Hopkinton	357	0	NA
Jamestown	117	0	NA
Johnston	1,282	8	NA
Lincoln	901	6	NA
Little Compton	79	0	NA
Middletown	834	2	NA
Narragansett	373	2	NA
New Shoreham	56	0	NA
Newport	1,295	7	NA
North Kingstown	1,020	3	NA
North Providence	1,582	9	NA
North Smithfield	412	4	NA
Pawtucket	4,941	40	8.1
Portsmouth	573	4	NA
Providence	12,890	108	8.4
Richmond	348	5	NA
Scituate	331	2	NA
Smithfield	593	1	NA
South Kingstown	897	2	NA
Tiverton	528	1	NA
Warren	458	3	NA
Warwick	3,831	24	6.3
West Greenwich	241	0	NA
West Warwick	1,789	9	NA
Westerly	959	3	NA
Woonsocket	2,946	24	8.1
Unknown	41	0	NA
Four Core Cities	22,396	180	8.0
Remainder of State	31,712	158	5.0
Rhode Island	54,149	338	6.2

### Source of Data for Table/Methodology

Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014. Data for births in 2014 are provisional and do not include births among Rhode Island residents that occurred out-of-state.

The denominator is the total number of live births to Rhode Island residents between 2010 and 2014.

NA: Rates should not be calculated due to small numbers and the lack of statistical reliability.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

### References

- <sup>1</sup> Federal Interagency Forum on Child and Family Statistics. (2015). *America's children: Key national indicators of well-being, 2015*. Washington, DC: U.S. Government Printing Office.
- <sup>2</sup> MacDorman, M. F. & Mathews, T. J. (2013). Infant deaths – United States, 2005-2008. *Morbidity and Mortality Weekly Report*, 62(3), 171-174.
- <sup>37</sup> Murphy, S. L., Kochanek, K. D., Xu, J., & Arias, E. (2015). Mortality in the United States, 2014. *NCHS Data Brief*, 229, 1-7.
- <sup>4</sup> Mathews, T. J., MacDorman, M. F., & Thoma, M. E. (2015). Infant mortality statistics from the 2013 period linked birth/infant death data set. *National Vital Statistics Reports*, 64(9), 1-29.
- <sup>5</sup> MacDorman, M. F. & Rosenberg, H. M. (1993). Trends in infant mortality by cause of death and other characteristics, 1960-88. *National Vital Statistics Reports*, 20(20), 1-51.
- <sup>6</sup> Population Reference Bureau calculations using CDC WONDER, wonder.cdc.gov, 2003-2014.
- <sup>810</sup> *Child Health USA 2014*. (2015). Rockville, MD: U.S. Department of Health and Human Services, Health Resources and Services Administration.
- <sup>9</sup> Organization for Economic Cooperation and Development. (2015). *Infant mortality. Health at a glance 2015: OECD indicators*. Paris, FR: OECD publishing.
- <sup>11,12,14,15,17,18,22</sup> Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014.

(continued on page 176)



# Breastfeeding

## DEFINITION

*Breastfeeding* is the percentage of newborn infants who are exclusively breastfed at the time of hospital discharge.

## SIGNIFICANCE

Breastfeeding is widely recognized as the ideal method of feeding and nurturing infants and a critical component in achieving optimal infant and child health, growth, and development.<sup>1,2</sup> National health experts recommend exclusive breastfeeding for six months after birth, continuous breastfeeding for at least 12 months after birth, and thereafter as long as mutually desired.<sup>3</sup>

Breastfeeding decreases infant mortality and morbidity. Benefits for infants include optimal nutrition and reduced risk for sudden infant death syndrome, as well as reduced risk for chronic conditions such as childhood obesity, type 1 and 2 diabetes, and childhood leukemia. Additionally, breastfeeding benefits mothers by creating a strong bond with infants and decreasing risk for postpartum depression, type 2 diabetes, and breast and ovarian cancer. Breastfeeding provides significant social and economic benefits, including reduced cost to the family, reduced health care costs, and reduced employee absenteeism.<sup>4,5</sup>

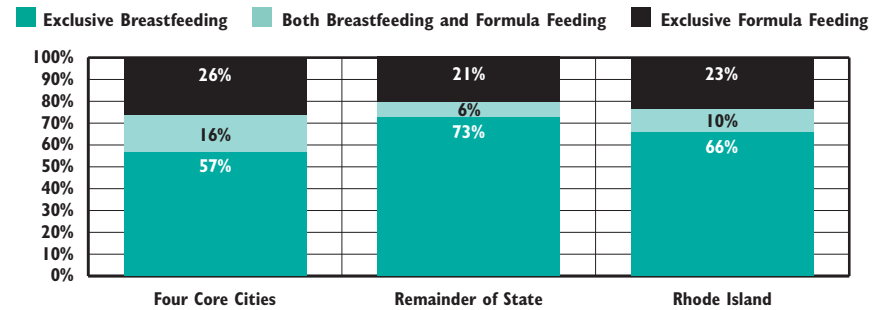
Breastfeeding can be effectively promoted by practices that take place before, during, and after labor and delivery. Hospital and other birth facility policies and practices influence the success of breastfeeding. Access to professional lactation consultants, involvement in mother-to-mother lactation support networks, and birth facility support for breastfeeding all factor into protecting, supporting, and promoting breastfeeding. Rhode Island hospitals rank among the best in the U.S. for breastfeeding support.<sup>6,7</sup>

Without adequate support, women are more likely to stop breastfeeding earlier.<sup>8</sup>

Breastfeeding rates generally increase with maternal age, higher educational attainment, and higher income levels.<sup>9</sup> Whether or not the pregnancy was intentional or not also affects rate of breastfeeding. In Rhode Island between 2009-2011, 17% of babies from intended pregnancies were not breastfed at all, compared with 22% of babies from unintended pregnancies.<sup>10</sup>

*Healthy People 2020* sets target breastfeeding rates of 81.9% of infants ever having been breastfed, 60.6% at six months of age, and 34.1% at one year of age.<sup>11</sup> Rhode Island reports 79.7% of infants ever having been breastfed, 47.0% at six months, and 22.2% at one year of age. Comparable national averages were 79.2% ever breastfed, 49.4% at six months, and 26.7% at 12 months.<sup>12</sup>

**Breastfeeding and Formula Feeding, Rhode Island, 2010-2014**



Source: Rhode Island Department of Health, Center for Health Data and Analysis, Newborn Developmental Risk Screening Program, 2010-2014. Breastfeeding and formula feeding are defined as intended feeding method at hospital discharge. Totals may not sum to 100% because data on feeding methods were not available for all births.

- ◆ Between 2010 and 2014, 66% of new mothers in Rhode Island indicated that they intended to exclusively breastfeed when discharged from the hospital, 23% intended to exclusively formula feed, and 10% intended to use a combination of both.<sup>13</sup>
- ◆ More than three-quarters (86%) of new mothers in Rhode Island who were surveyed about three months after giving birth between 2012-2013 reported having ever breastfed. Fifty-three percent reported continued breastfeeding at the time of the survey.<sup>14</sup>
- ◆ Rhode Island is one of 45 states with legislation that provides mothers with the explicit right to breastfeed in public places.<sup>15</sup> In Rhode Island in 2015, legislation passed that prohibits job discrimination based on pregnancy, childbirth, and related medical conditions. It requires employers to make reasonable accommodations for workers for conditions related to pregnancy and childbirth, including breastfeeding.<sup>16</sup>
- ◆ In 2014, Rhode Island became the first state to establish licensure for International Board Certified Lactation Consultants. State-certified lactation consultants provide comprehensive lactation support and counseling for pregnant and postpartum women.<sup>17</sup>
- ◆ In 2015, Women & Infants Hospital became the second-largest hospital in the U.S. to achieve the “Baby-Friendly” designation, which recognizes facilities that support and promote breastfeeding. Rhode Island ranks number one in the country in the percentage of babies born at Baby-Friendly hospitals.<sup>18</sup>

Table 22.

## Breastfeeding, Rhode Island, 2010-2014

CITY/TOWN	NUMBER OF BIRTHS SCREENED	NUMBER BREAST AND FORMULA FEEDING	NUMBER EXCLUSIVELY BREASTFEEDING	PERCENT WITH ANY BREASTFEEDING	PERCENT EXCLUSIVELY BREASTFEEDING
Barrington	491	11	441	92%	90%
Bristol	741	44	542	79%	73%
Burrillville	590	18	434	77%	74%
Central Falls	1,593	360	841	75%	53%
Charlestown	252	8	206	85%	82%
Coventry	1,394	50	999	75%	72%
Cranston	3,839	340	2,632	77%	69%
Cumberland	1,484	79	1,115	80%	75%
East Greenwich	540	11	447	85%	83%
East Providence	2,395	168	1,638	75%	68%
Exeter	253	22	193	85%	76%
Foster	157	9	127	87%	81%
Glocester	329	13	251	80%	76%
Hopkinton	354	6	291	84%	82%
Jamestown	112	1	107	96%	96%
Johnston	1,267	79	833	72%	66%
Lincoln	872	39	638	78%	73%
Little Compton	61	1	49	82%	80%
Middletown	798	35	649	86%	81%
Narragansett	368	18	294	85%	80%
New Shoreham	54	6	46	96%	85%
Newport	1,236	93	886	79%	72%
North Kingstown	1,013	44	767	80%	76%
North Providence	1,554	99	1,072	75%	69%
North Smithfield	385	11	308	83%	80%
Pawtucket	4,739	699	2,816	74%	59%
Portsmouth	532	11	448	86%	84%
Providence	12,659	2,161	7,184	74%	57%
Richmond	331	11	280	88%	85%
Scituate	328	14	246	79%	75%
Smithfield	582	17	449	80%	77%
South Kingstown	916	57	717	84%	78%
Tiverton	364	13	284	82%	78%
Warren	440	17	324	78%	74%
Warwick	3,773	221	2,614	75%	69%
West Greenwich	238	12	177	79%	74%
West Warwick	1,757	105	1,115	69%	63%
Westerly	892	40	702	83%	79%
Woonsocket	2,780	267	1,563	66%	56%
Four Core Cities	21,771	3,487	12,404	73%	57%
Remainder of State	30,692	1,723	22,321	78%	73%
Rhode Island	52,463	5,210	34,725	76%	66%

### Sources of Data for Table/Methodology

Rhode Island Department of Health, Center for Health Data and Analysis, Newborn Developmental Risk Screening Program Database and Maternal and Child Health Database, 2010-2014.

Breastfeeding is defined as “breastfeeding as intended feeding method at hospital discharge.” “Percent With Any Breastfeeding” includes infants fed breast milk in combination with formula and those exclusively breastfed.

The number of births screened may differ from the total number of births reported elsewhere in the Factbook as not all documented births received a screening. Births to Rhode Island women that occurred outside Rhode Island are not included.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

### References

- <sup>1,3</sup> American Academy of Pediatrics. (2012). Policy statement: Breastfeeding and the use of human milk. *Pediatrics*, 129(3), 827-841.
- <sup>2,15,17</sup> *Breastfeeding: 2015-2020 Rhode Island strategic plan*. (2015). Providence, RI: Rhode Island Department of Health.
- <sup>4,6</sup> James, D. C. S. & Lessen, R. (2009). Position of the American Dietetic Association: Promoting and supporting breastfeeding. *Journal of the American Dietetic Association*, 109(11), 1926-1942.
- <sup>5,9</sup> *Breastfeeding*. (2014). Washington, DC: Child Trends.
- <sup>7,12</sup> *Breastfeeding report card – United States, 2014*. (2014). Atlanta, GA: Centers for Disease Control and Prevention.
- <sup>8</sup> *The Surgeon General's call to action to support breastfeeding*. (2011). Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General.
- <sup>10</sup> *Issue brief: Unintended pregnancy among women in Rhode Island, 2009-2011*. (2015). Providence, RI: Rhode Island Department of Health.

(continued on page 176)

# Children with Lead Poisoning

## DEFINITION

*Children with lead poisoning* is the percentage of three-year-old children with a confirmed elevated blood lead level (EBLL,  $\geq 5$   $\mu\text{g}/\text{dL}$ ) at any time prior to December 31, 2015.<sup>1,2</sup> These data are for children eligible to enter kindergarten in the fall of 2017 (i.e., children born between September 1, 2011 and August 31, 2012).

## SIGNIFICANCE

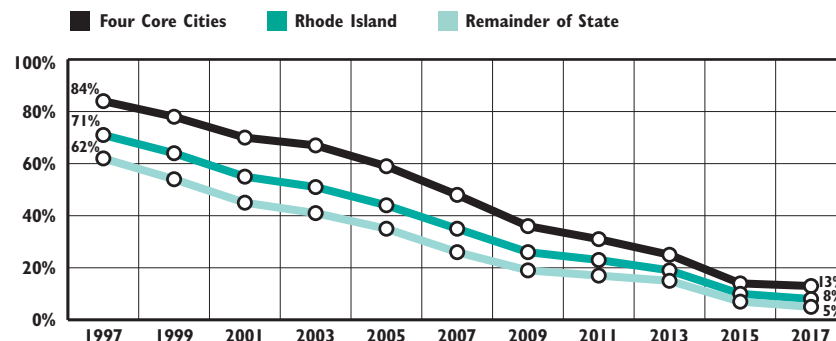
Lead poisoning is a preventable childhood disease. Infants, toddlers, and preschool-age children are most susceptible to the toxic effects of lead because they absorb lead more readily than adults and have inherent vulnerability due to developing central nervous systems.<sup>3</sup> Lead exposure, even at very low levels, can cause irreversible damage including reduced fetal and postnatal growth, decreased hearing, delayed puberty, kidney damage, increased risk for behavioral problems, decreased cognitive abilities, and lower academic performance. Though rare, severe poisoning can result in seizures, comas, and even death.<sup>4,5</sup> The societal costs of childhood lead poisoning include the loss of future earnings due to decreased cognition, and increased medical, special education, and juvenile justice costs.<sup>6,7,8</sup>

The Centers for Disease Control and Prevention (CDC) has renewed its focus on primary prevention of lead exposure in response to research findings indicating there is no safe blood lead level in children. In an effort to better alert health officials and family members to the dangers of any lead exposure in children, in 2012 the CDC lowered the threshold for which a child is deemed to have an elevated blood lead level from 10  $\mu\text{g}/\text{dL}$  to 5  $\mu\text{g}/\text{dL}$ . This new lower reference value will result in more children being identified as having elevated blood lead levels, which will allow parents and health officials to take corrective actions sooner.<sup>9,10</sup>

Although the percentage of children with elevated blood lead levels are declining nationally and locally, low-income and minority children remain the most likely to be lead poisoned.<sup>11,12,13</sup> In Rhode Island, children living in the four core cities (where most poor and minority children reside) are at increased risk for lead exposure because the housing stock tends to be older.<sup>14</sup>

In 2015, 1,342 (5.3%) of the 25,399 Rhode Island children under age six who were screened had confirmed elevated blood lead levels of  $\geq 5$   $\mu\text{g}/\text{dL}$ . Children living in the four core cities (7.7%) were more than twice as likely as children in the remainder of the states (3.3%) to have confirmed EBLLs  $\geq 5$   $\mu\text{g}/\text{dL}$ .<sup>15</sup>

**Children Entering Kindergarten with History of Elevated\* Blood Lead Level Screening ( $\geq 5$   $\mu\text{g}/\text{dL}$ ), Rhode Island, Four Core Cities, and Remainder of State, 1997-2017**



Source: Rhode Island Department of Health, Healthy Homes and Childhood Lead Poisoning Prevention Program, Children entering kindergarten between 1997 and 2017. \*Elevated blood lead level of  $\geq 5$   $\mu\text{g}/\text{dL}$ .

◆ The number of children with elevated blood lead levels has been steadily declining in all areas of Rhode Island over the past two decades. Compared to the remainder of the state, children living in the four core cities are at an increased risk for lead exposure.<sup>16</sup>

## Lead Exposure and Academic Performance

◆ Exposure to lead has been shown to negatively impact academic performance in early childhood.<sup>17</sup> Rhode Island children with a history of lead exposure, even at low levels, have been shown to have decreased reading readiness at kindergarten entry and diminished reading and math proficiency in the third grade. The most significant declines in academic performance occurred among children with the highest blood level levels and those living in the four core cities. Children with lead exposure are also at increased risk for absenteeism, grade repetition, and special education services.<sup>18,19</sup>

◆ In an effort to better inform school administrators about the prevalence of lead exposure, the Rhode Island Department of Health and the Rhode Island Department of Education provide detailed reports to superintendents and heads of private schools on rates of lead exposure and immunization among students within their respective districts. Information regarding screenings, regulations, associated risks, and parent communication are also included.<sup>20,21</sup>

Table 23. Lead Poisoning in Children Entering Kindergarten in the Fall of 2017, Rhode Island

CITY/TOWN	NUMBER TESTED FOR LEAD POISONING	CONFIRMED WITH BLOOD LEAD LEVEL $\geq 5$ $\mu\text{g/dL}$	
		NUMBER	PERCENT
Barrington	121	6	5.0%
Bristol	177	10	5.6%
Burrillville	108	10	9.3%
Central Falls	317	51	16.1%
Charlestown	56	6	10.7%
Coventry	288	18	6.3%
Cranston	743	35	4.7%
Cumberland	334	8	2.4%
East Greenwich	139	2	1.4%
East Providence	474	45	9.5%
Exeter	50	4	8.0%
Foster	33	0	0.0%
Glocester	51	1	2.0%
Hopkinton	60	1	1.7%
Jamestown	32	4	12.5%
Johnston	230	4	1.7%
Lincoln	156	12	7.7%
Little Compton	18	2	11.1%
Middletown	201	9	4.5%
Narragansett	63	3	4.8%
New Shoreham	12	1	8.3%
Newport	292	24	8.2%
North Kingstown	182	6	3.3%
North Providence	245	13	5.3%
North Smithfield	91	2	2.2%
Pawtucket	938	115	12.3%
Portsmouth	136	6	4.4%
Providence	2,706	366	13.5%
Richmond	48	4	8.3%
Scituate	86	2	2.3%
Smithfield	127	1	0.8%
South Kingstown	203	15	7.4%
Tiverton	137	9	6.6%
Warren	80	15	18.8%
Warwick	736	26	3.5%
West Greenwich	48	2	4.2%
West Warwick	314	13	4.1%
Westerly	176	7	4.0%
Woonsocket	597	36	6.0%
Four Core Cities	4,558	568	12.5%
Remainder of State	6,247	326	5.2%
Rhode Island	10,805	894	8.3%

## Significantly Lead Poisoned Children Under Age Six

◆ Starting in 2015, a child is considered to be "significantly lead poisoned" if she or he has a single venous blood test result of  $\geq 15$   $\mu\text{g/dL}$ . The number of children under age six who were significantly lead poisoned has decreased by 76% over the past ten years, from 349 in 2005 to 84 in 2015, but is up from 2014 (70).<sup>22</sup>

◆ Starting in 2015, an environmental inspection of a child's home is offered when a single venous test result is  $\geq 15$   $\mu\text{g/dL}$  (versus  $\geq 20$   $\mu\text{g/dL}$  previously). The Rhode Island Department of Health sends certified lead inspectors to determine whether lead hazards are present and works with owners to make the property lead-safe. In 2015, 68 inspections were offered, of which 41 were performed, 14 were refused, 11 the child moved, and two were pending.<sup>23</sup>

## Lead Poisoning Screening for Children Age Three

◆ All Rhode Island children must have at least two blood lead screening tests by age three and annual screenings through age six. Lead screening is a mandated covered health insurance benefit in Rhode Island. In 2015, 84% of Rhode Island three-year-olds received a blood lead test.<sup>24,25,26</sup>

### Source of Data for Table/Methodology

Rhode Island Department of Health, Healthy Homes and Childhood Lead Poisoning Prevention Program.

Data reported in this year's Factbook is not comparable to editions prior to 2012, due to a change in definition and data improvements within the Healthy Homes and Childhood Lead Poisoning Prevention Program.

Data for children entering kindergarten in the fall of 2017 reflect the number of Rhode Island children eligible to enter school in the fall of 2017 (i.e., born between 9/1/11 and 8/31/12).

Children confirmed positive for lead poisoning (blood lead level  $\geq 5$   $\mu\text{g/dL}$ ) are counted if they screened positive with a venous test and/or had a confirmed capillary test at any time in their lives prior to the end of December 2015. The Rhode Island Healthy Homes and Childhood Lead Poisoning Prevention Program recommends that children under age six with a capillary blood lead level of  $\geq 5$   $\mu\text{g/dL}$  receive a confirmatory venous test.

The denominator for percent confirmed is the number of children entering kindergarten in the fall of 2017 who were tested for lead poisoning. Data include both venous and confirmed capillary tests.

Of the 912 children entering kindergarten in 2017 who had an initial blood lead screen of  $\geq 5$   $\mu\text{g/dL}$ , one did not receive a confirmatory second test. Their lead poisoning status is unknown.

Caution should be used with small numbers in numerators and denominators.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

See Methodology Section for more information.

### References

<sup>19</sup> Centers for Disease Control and Prevention. (n.d.). *Blood lead levels in children*. Retrieved February 22, 2016, from [www.cdc.gov](http://www.cdc.gov)

<sup>224</sup> Rhode Island Department of Health. (2012). *Lead screening and referral guidelines: Universal blood lead screening*. Retrieved February 22, 2016, from [www.health.ri.gov](http://www.health.ri.gov)

(continued on page 176)

# Children with Asthma

## DEFINITION

*Children with asthma* is the rate of hospitalizations for asthma where asthma was the primary diagnosis per 1,000 children under age 18. Data are reported by place of child's residence at the time of hospitalization.

## SIGNIFICANCE

Asthma is a chronic respiratory disease that causes treatable episodes of coughing, wheezing, shortness of breath, and chest tightness, which can be life threatening. Asthma attacks can be triggered by respiratory infections, air pollutants, cigarette smoke, allergens, and exposure to cold air or sudden temperature change. While the exact cause of asthma is unknown, various genetic, environmental, birth, and health status factors have been linked to an increased risk for asthma.<sup>1,2,3</sup>

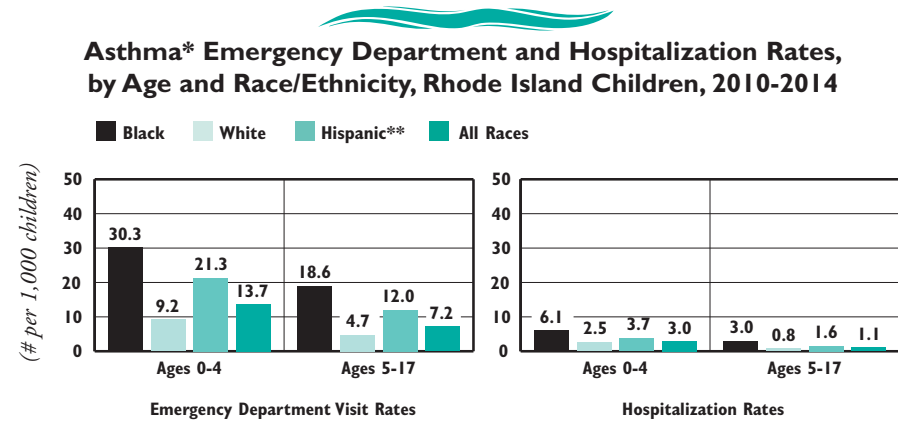
Nationally, asthma is the most common chronic condition among children.<sup>4</sup> After peaking at 9.6% in 2009, asthma prevalence among U.S. children fell to 8.6% in 2014.<sup>5,6</sup> The highest rates of asthma are among males, Black and American Indian/Alaska Native children, and children living in poverty.<sup>7</sup> Racial and ethnic differences in asthma prevalence are believed to be correlated with poverty, exposure to indoor and outdoor

air pollution, stress, acute exposure to violence, lack of access to preventive medical care, and genetic factors.<sup>8,9</sup>

Compared with adults, children have higher rates for primary care and emergency department visits for asthma, similar hospitalization rates, and lower death rates.<sup>10</sup> Asthma remains the third-ranked cause of hospitalization for children under age 15, and one of the leading causes of school absenteeism.<sup>11</sup>

Proper asthma management requires continued assessment and monitoring, patient education, environmental control, and appropriate medication. Health care providers should work with the child and family to create an asthma action plan, which provides instruction on how to avoid asthma triggers and how to use medications properly. An asthma action plan, if adhered to and supported by enhanced care and community-based interventions, can improve health outcomes and reduce costly asthma hospitalizations.<sup>12,13,14,15,16</sup>

In Rhode Island in 2014, the average charge of an asthma emergency department visit for a child was \$1,729 and \$11,365 for a child hospitalization due to asthma.<sup>17</sup>



Source: Rhode Island Department of Health, Hospital Discharge Database, 2010-2014; U.S. Census Bureau, Census 2010. \*Rates are for primary diagnosis of asthma. \*\*Hispanic children can be of any race.

◆ In Rhode Island between 2010 and 2014, non-Hispanic Black children, Hispanic children, and children under age five were the most likely to visit the emergency department or be hospitalized as a result of asthma. Children of all ages were more likely to visit the emergency department than to be hospitalized for asthma; 13% (1,334) of all asthma emergency department visits for children under age 18 resulted in a hospitalization.<sup>18</sup>

◆ In Rhode Island between 2010 and 2014, boys under age 18 had higher asthma emergency department (10.8 per 1,000 boys) and hospitalization (2.0 per 1,000 boys) rates than girls under age 18 (6.9 and 1.3 per 1,000 girls respectively).<sup>19</sup>

◆ Among all children who had an emergency department visit for a primary diagnosis of asthma in Rhode Island between 2010 and 2014, 62% had RIte Care/Medicaid coverage, 32% had private health insurance, and 5% were self-pay (which could mean they were uninsured or that their insurance did not cover the cost of care). Among hospital admissions during that time, 50% had RIte Care/Medicaid coverage, 45% had private health insurance, and 5% were self-pay.<sup>20</sup>

◆ Between the 2009-10 and 2012-13 school years in Rhode Island, 37% (6,744) of children with asthma were chronically absent in at least one of the school years. Chronic absenteeism is defined as missing 10% or more days of school.<sup>21</sup>



Table 24.

## Asthma Emergency Department Visits and Hospitalizations for Children Under Age 18, Rhode Island, 2010-2014

CITY/TOWN	ESTIMATED # OF CHILDREN UNDER AGE 18**	# OF CHILD EMERGENCY DEPT. VISITS WITH PRIMARY ASTHMA DIAGNOSIS	RATE OF CHILD EMERGENCY DEPT. VISITS WITH PRIMARY ASTHMA DIAGNOSIS, PER 1,000 CHILDREN	# OF CHILD HOSPITALIZATIONS WITH PRIMARY ASTHMA DIAGNOSIS	RATE OF CHILD HOSPITALIZATIONS WITH PRIMARY ASTHMA DIAGNOSIS, PER 1,000 CHILDREN
Barrington	4,597	94	4.1	28	1.2
Bristol	3,623	73	4.0	16	0.9
Burrillville	3,576	78	4.4	21	1.2
Central Falls	5,644	364	12.9	58	2.1
Charlestown	1,506	48	6.4	7	0.9
Coventry	7,770	169	4.4	37	1.0
Cranston	16,414	635	7.7	139	1.7
Cumberland	7,535	140	3.7	31	0.8
East Greenwich	3,436	51	3.0	11	0.6
East Providence	9,177	359	7.8	108	2.4
Exeter	1,334	27	4.0	7	1.0
Foster	986	15	3.0	6	1.2
Glocester	2,098	25	2.4	12	1.1
Hopkinton	1,845	55	6.0	12	1.3
Jamestown	1,043	22	4.2	4	NA
Johnston	5,480	212	7.7	58	2.1
Lincoln	4,751	136	5.7	30	1.3
Little Compton	654	8	2.4	0	0.0
Middletown	3,652	149	8.2	24	1.3
Narragansett	2,269	48	4.2	3	NA
New Shoreham	163	1	NA	0	0.0
Newport	4,083	241	11.8	21	1.0
North Kingstown	6,322	146	4.6	31	1.0
North Providence	5,514	211	7.7	42	1.5
North Smithfield	2,456	47	3.8	12	1.0
Pawtucket	16,575	930	11.2	167	2.0
Portsmouth	3,996	82	4.1	15	0.8
Providence	41,634	3,603	17.3	601	2.9
Richmond	1,849	30	3.2	8	0.9
Scituate	2,272	44	3.9	12	1.1
Smithfield	3,625	53	2.9	20	1.1
South Kingstown	5,416	116	4.3	15	0.6
Tiverton	2,998	31	2.1	16	1.1
Warren	1,940	55	5.7	11	1.1
Warwick	15,825	491	6.2	91	1.2
West Greenwich	1,477	25	3.4	2	NA
West Warwick	5,746	272	9.5	43	1.5
Westerly	4,787	192	8.0	26	1.1
Woonsocket	9,888	665	13.5	70	1.4
Four Core Cities	73,741	5,562	15.1	896	2.4
Remainder of State	150,215	4,381	5.8	919	1.2
Rhode Island	223,956	9,943	8.9	1,815	1.6

### Source of Data for Table/Methodology

Rhode Island Department of Health, Center for Health Data and Analysis, Hospital Discharge Database, 2010-2014.

The Centers for Disease Control and Prevention requests that states report asthma hospitalization data only where asthma is the primary diagnosis. Due to this change, data in this indicator are not comparable to data included in Factbooks prior to 2010.

\*\*The denominator used to compute the 2010-2014 rate of hospitalizations is the number of children according to the 2010 U.S. Census, multiplied by five. Census data for rates by age, race, and ethnicity and were provided by the Rhode Island Department of Health.

NA: Rates should not be calculated due to small numbers and the lack of statistical reliability.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

### References

- <sup>14</sup> Child Trends. (2015). *Asthma*. Retrieved January 20, 2016, from [www.childtrendsdatabank.org](http://www.childtrendsdatabank.org)
- <sup>2</sup> *The burden of asthma in Rhode Island*. (2014). Providence, RI: Rhode Island Department of Health, Asthma Control Program.
- <sup>3</sup> Ekerholm, S., Pearlman, D. N., Robinson, D., Sutton, N., & Goldman, D. (2012). *Measuring up: A health surveillance update on Rhode Island children with asthma*. Providence, RI: Rhode Island Department of Health, Division of Community, Family Health and Equity, Asthma Control Program.
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(continued on page 177)

# Housing and Health

## DEFINITION

*Housing and health* is the percentage of children under age 18 who live in low-income families that reside in older housing, defined as housing built before 1980. Low-income families are those with incomes less than 200% of the federal poverty level.

## SIGNIFICANCE

Homes that are dry, clean, pest-free, safe, contaminant-free, well-ventilated, well-maintained, and thermally-controlled can provide a healthy environment for children and residents.<sup>1</sup> Safe, affordable, and stable housing maintains the health and well-being of families and children, supporting mental and emotional health as well as physical safety.<sup>2</sup> Healthy housing also protects families from weather, environmental hazards, and injury and provides a safe place for children to eat, sleep, play, and grow.<sup>3</sup>

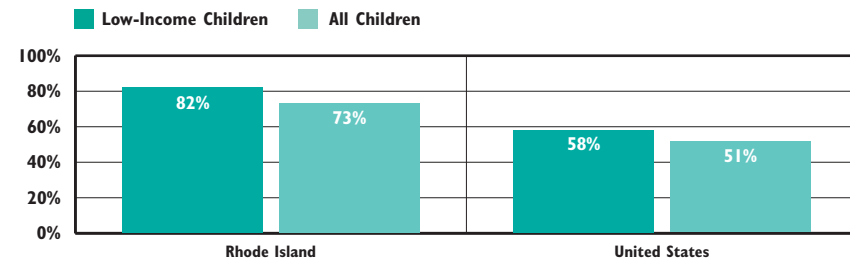
Unhealthy housing can cause or intensify many health conditions. Studies have connected poor quality construction, utility deficiencies, water intrusion, lead paint, radon, and pests to respiratory illnesses, asthma, unintentional injuries, lead poisoning, and cancer. Children under age 14, low-income children, and minority children under age five are at increased risk for fall injuries due to unsafe sleep and home environments, including aging and deteriorating housing.<sup>4,5,6</sup>

Poor quality housing is also a strong predictor of emotional and behavioral problems in low-income children and youth as well as academic achievement. Adolescents living in poorer quality homes have lower reading and math proficiency than their peers.<sup>7</sup>

The quality and stability of children's homes can have long-term effects on children. Lack of adequate and affordable housing puts safe, healthy, well-maintained homes out of reach for many families. Families may be forced to move frequently in search of better, more affordable housing, or to raise their children in overcrowded and unsafe environments that can interfere with their growth, development, health, and academic performance. Overcrowded housing is associated with mental health concerns, stress, sleep problems, injury, and exposure to disease, while multiple moves are associated with behavioral and mental health concerns, academic difficulties, and substance use.<sup>8</sup>

Adopting a comprehensive "healthy homes" approach that addresses multiple housing deficiencies simultaneously can help prevent housing-related injuries and illnesses, reduce health costs, and improve children's quality of life. Because the causes of many health conditions related to the home environment are interconnected, it can be cost-effective to address multiple hazards simultaneously.<sup>9,10</sup>

Children Living in Older Housing\*, 2010-2014, Rhode Island and the United States



Source: Population Reference Bureau analysis of 2010-2014 American Community Survey (ACS) Public Use Microsample (PUMS) data. \*Older housing is defined as built before 1980. The ACS reports housing year built by decade, so this is the best available approximation for housing built before 1978 when interior lead paint was banned. Factbooks prior to 2016 are not comparable due to the discontinuation of 3 year ACS data.

- ◆ In both Rhode Island and the nation as a whole, children in low-income families are more likely to live in older housing than children in general. Between 2010 and 2014, 82% of low-income children in Rhode Island lived in older housing, compared to 58% of low-income children in the U.S. Of all 50 states, Rhode Island has the highest percentage of low-income children living in older housing.<sup>11</sup>
- ◆ Rhode Island children (of all incomes) were more likely to live in older housing (73%) than U.S. children (51%) between 2010 and 2014. Rhode Island has the second highest percentage of children living in older housing in the U.S., after New York.<sup>12</sup>
- ◆ Rhode Island's older housing stock poses health risks for children because lead paint was commonly used in the interior and exterior of homes before 1978. Exposure to lead is associated with numerous health risks. Despite consistent lead poisoning declines, children living in the four core cities have disproportionately higher rates of lead exposure than children living in the remainder of the state.<sup>13,14</sup>
- ◆ Because affordable housing is in short supply, many low-income families must pay more than 30% of their income for housing, which is a cost-burden. Low-income families who are forced to spend more than they can afford on housing can face difficult choices about where to spend their remaining income, and may not have enough money left in their budget to pay for nutritious food, health insurance, and health care.<sup>15,16</sup>

## Health Problems Associated With Housing

### Lead Poisoning

- ◆ Children living in homes built before 1978, when lead paint was banned from interior use in the United States, are at risk for lead poisoning. Even at low levels, lead exposure during early childhood can negatively affect a child's health and development and cause learning disabilities, loss of IQ, and reduced attention span.<sup>17,18</sup>
- ◆ One in twelve (8.3%) Rhode Island children due to start kindergarten in the fall of 2017 has had a confirmed blood lead level of  $\geq 5$   $\mu\text{g}/\text{dL}$ , indicating exposure to an environmental lead hazard.<sup>19</sup> Children living in the four core cities are at an increased risk for lead exposure in part because the housing stock tends to be older and less well-maintained.<sup>20</sup> The prevalence of childhood lead poisoning has steadily decreased over the past decade.<sup>21</sup>

### Asthma

- ◆ Inadequate ventilation, dust, cockroaches, mold, pet dander, and cigarette smoke can all trigger or exacerbate respiratory problems, including asthma. Asthma is a common chronic condition in children, the third leading cause of hospitalization for children under age 15, and a leading cause of school absences in the U.S.<sup>22,23</sup>
- ◆ Between 2010 and 2014, there were 1,806 hospitalizations of children in Rhode Island for which the primary diagnosis was asthma. Asthma hospitalization rates in Rhode Island were highest for Black and Hispanic children.<sup>24,25</sup> In Rhode Island, low-income and minority children residing in the four core cities have higher rates of asthma.<sup>26</sup>

### Unintentional Injuries

- ◆ Falls are the leading cause of non-fatal unintentional injuries among children under age 18 in the U.S.<sup>27</sup> Residential hazards associated with falls among children include a lack of safety devices, such as safety gates and window guards; structural problems, such as uneven floors; and insufficient lighting in stairways and other areas.<sup>28</sup>
- ◆ In 2014, housing-related falls resulted in 4,449 emergency room visits by Rhode Island children. Half (51%) of these visits were for children under age six.<sup>29</sup>

## Community Mitigation of Housing Hazards

### Lead Screening and Abatement

- ◆ The state of Rhode Island has enacted many policies and programs to reduce the causes and prevalence of childhood lead poisoning. All Rhode Island children must have at least two blood lead screening tests by age three and annual screenings through age six.<sup>30</sup> In 2015, 84% of all Rhode Island three-year-olds received a blood lead test.<sup>31</sup>
- ◆ All lead poisoned children ( $\geq 5$   $\mu\text{g}/\text{dL}$ ) are referred for non-medical case management and education and those with a blood lead level of  $\geq 15$   $\mu\text{g}/\text{dL}$  are offered an environmental inspection. In 2015, 68 inspections were offered, of which 41 were performed, 14 were refused, 11 the child moved, and two were pending.<sup>32,33</sup> Funding and services through Rhode Island Housing are also available to make eligible homes lead safe.<sup>34</sup>

### Weatherization Assistance Program

- ◆ Since its inception in 1976, the Weatherization Assistance Program has helped eligible households reduce heating bills by providing whole-house energy efficiency and safety services such as reducing drafts, providing proper ventilation, and installing smoke detectors, insulation, and carbon monoxide detectors. In 2015, 543 children benefited from 848 completed weatherization projects throughout Rhode Island that were administered by seven Community Action Program agencies.<sup>35,36</sup>

### References

- <sup>1,4,9</sup> The Federal Healthy Homes Work Group. (2013). *Advancing healthy housing: A strategy for action*. Retrieved March 4, 2016, from [www.healthyhomes.hud.gov](http://www.healthyhomes.hud.gov)
- <sup>7</sup> Coley, R. L., Leventhal, T., Lynch, A. D., & Kull, M. (2013). *Poor quality housing is tied to children's emotional and behavioral problems: Parents' stress from living in poor quality and unstable housing takes a toll on children's well-being*. Chicago, IL: MacArthur Foundation.
- <sup>2,15</sup> Economic Policy Program Housing Commission. (2013). *Housing America's future: New directions for national policy*. Washington, DC: Bipartisan Policy Center.
- <sup>8</sup> Cutts, D. B., et al. (2011). U.S. housing insecurity and the health of very young children. *American Journal of Public Health, 101*(8), 1508-1514.
- <sup>3</sup> Raymond, J., Wheeler, W., & Brown, M. J. (2011). Inadequate and unhealthy housing, 2007 and 2009. *Morbidity and Mortality Weekly Report, 60*, 21-27.
- <sup>10</sup> *The Surgeon General's call to action to promote healthy homes*. (2009). Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General.
- <sup>5</sup> *Home safety fact sheet*. (2015). Washington, DC: Safe Kids Worldwide.
- <sup>6</sup> Safe Kids USA. (2011). *Safety from falls*. Retrieved March 1, 2013, from [www.safekids.org](http://www.safekids.org)

(continued on page 177)

# Adolescent Obesity

## DEFINITION

*Adolescent obesity* is the percentage of high school students who report having a body mass index (BMI) at or above the 95th percentile for gender and age. Adolescents with a BMI at or above the 95th percentile are considered to be obese. Children and youth with a BMI between the 85th and 95th percentiles are considered to be overweight or at risk for obesity.<sup>1</sup>

## SIGNIFICANCE

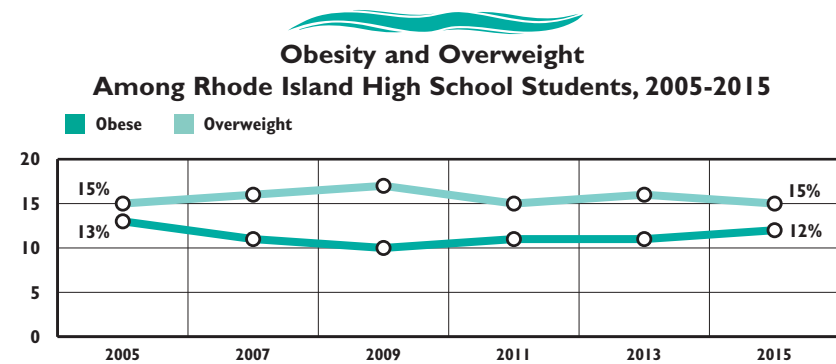
Children and adolescents who are overweight or obese are at immediate and/or long-term risk of many health problems, including type 2 diabetes, cardiovascular disease, asthma, joint pain, sleep apnea, and other acute and chronic health problems. Over time, these conditions may contribute to a shorter lifespan. They may also experience social and psychological problems, including depression, bullying, and social marginalization. Obese children and youth are also more likely to repeat a grade, be absent from school, and have reduced academic performance than their peers.<sup>2,3,4,5</sup>

Over the past four decades, the prevalence of childhood obesity in America has more than tripled, and 17% of U.S. children ages 2-19 were obese in 2013-2014.<sup>6,7</sup> No single factor is driving the increased prevalence of

childhood obesity; rather it is the result of complex interactions among many factors, including excess calorie consumption, genes, metabolism, behavior, environment, and culture.<sup>8</sup> Low consumption of fruits and vegetables, high consumption of sugar-sweetened beverages and energy dense foods, low levels of physical activity, and high levels of sedentary “screen time” are all associated with obesity.<sup>9</sup>

The health risks of being overweight and obese can be long-lasting.<sup>10,11</sup> Overweight kindergartners are four times as likely as their healthy-weight peers to become obese by eighth grade, two-thirds of obese fifth graders remain obese in tenth grade, and teenagers who are obese have a greater than 70% risk of being obese as adults.<sup>12,13,14</sup> Prevention and intervention for at risk, overweight, and obese children should occur early and at all ages.<sup>15</sup>

Reducing overweight and obesity will require a comprehensive, multi-system approach. Policy strategies to reduce obesity include improving access to nutritional and affordable foods and beverages, ensuring healthy food in schools, increasing options for physical activity before, during, and after school as well as in early learning programs, and improving access to safe and walkable neighborhoods and recreational areas.<sup>16</sup>



Source: *Youth Risk Behavior Survey*, Rhode Island, 2005-2015. BMI calculated using self-reported student response.

◆ Rhode Island’s overall high school obesity and overweight prevalence has not significantly improved or worsened since 2005. In Rhode Island in 2015, 12% of high school students self-reported as obese and 15% self-reported being overweight. Hispanic students (19%), males (16%), and Black students (15%) were more likely to report being obese compared to their White (10%) and female (8%) high school peers.<sup>17</sup>

◆ In October 2015, the BMI values of 14,025 electronic medical health records of children under age 18 residing in Providence who are active patients of a Providence Community Health Center site were examined. The analysis found 23% of Providence children were obese and 18% were overweight. Obesity varied by age: 20% of children ages two to five, 26% of children ages six to 11, and 22% of children ages 12 to 17 were obese. Among Hispanic children, who accounted for 73% of all patients served, 24% were obese.<sup>18</sup>

## Nutrition and Eating Habits

◆ The total number of calories a child and adolescent needs varies depending on age, gender, height, weight, and level of physical activity, as well as their need to lose, maintain, or gain weight. Many children and adolescents consume diets with too many calories and not enough nutrients.<sup>19</sup>

◆ Among Rhode Island high school students in 2015, 13% reported consuming one or more cans of soda daily (down from 25% in 2007) and 83% reported eating less than the recommended five servings of fruits/vegetables daily.<sup>20</sup>

## Promoting Increased Physical Activity

◆ **Recess** is an important component in optimizing a child’s social, emotional, physical, and cognitive development.<sup>21</sup> The Institute of Medicine recommends schools offer at least 20 minutes of recess per day for elementary and middle school students and prohibit withholding it.<sup>22</sup> In Rhode Island in 2015, 10 of 39 school districts required 20 minutes or more and 70% of surveyed elementary school principals reported withholding recess for discipline.<sup>23,24</sup>

◆ **Physical Education (PE)** curriculum and instruction are designed to develop age-appropriate motor skills, knowledge and behaviors of physical fitness, sportsmanship, emotional intelligence, self-efficacy, and active living.<sup>25</sup> In Rhode Island, students are required to receive an average of 20 minutes per day of health and PE instruction.<sup>26</sup> Nationally, the daily recommended amount of PE alone is 30 minutes in elementary school and 45 minutes in middle and high school.<sup>27</sup>

◆ **Regular physical activity**, including school-based, has been show to have physical, cognitive and academic benefits, including improved grades and standardized test sores.<sup>28,29</sup> In Rhode Island in 2015, 27% of middle school students and 20% of high school students reported being physically active every day for at least 60 minutes, which is the recommended amount to optimize health and development.<sup>30,31</sup>

**Physical Activity and Sedentary Behavior,  
Rhode Island Middle School and High School Students by Gender, 2015**

	MIDDLE SCHOOL			HIGH SCHOOL		
	MALE	FEMALE	ALL STUDENTS	MALE	FEMALE	ALL STUDENTS
2 or Fewer days of Physical Education Weekly	50%	51%	50%	42%	39%	41%
3 or Fewer Days of Physical Activity* Weekly	30%	39%	34%	40%	54%	47%
3 or More Hours of TV on School Days	29%	30%	30%	23%	22%	22%
3 or More Hours of Computer** Time/Video Games on School Days	46%	50%	48%	40%	40%	40%

Source: 2015 Rhode Island Youth Risk Behavior Survey, Rhode Island Department of Health, Center for Health Data and Analysis. \*Defined as at least 60 minutes per day. \*\*Non-school related.

## Obesity in Young Children in Rhode Island

### Children Enrolled in Head Start

◆ **Head Start** is a federally-funded comprehensive early childhood program for low-income preschool children and their families.<sup>32</sup> In Rhode Island during the 2014-2015 school year, 2,742 children aged three to five were enrolled in a Head Start program. Of those enrolled, 20% were obese and 25% were overweight.<sup>33</sup> Comparable national data show that 16% of children enrolled in Head Start were obese and 13% were overweight during that time.<sup>34</sup>

### Children Participating in WIC

◆ **The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)** is a federally-funded preventive program that provides eligible participants with nutritious food, nutrition education, and access to health care and social services.<sup>35</sup> In Rhode Island in 2015, 12,871 children ages two to four were enrolled in WIC, 17% of whom were obese and 43% of whom were overweight.<sup>36</sup>

◆ Since 2011, there has been a 24% decline in the number of Rhode Island children ages two to four participating in WIC who are obese. This decline is partially attributed to new federally-mandated food standards as well as availability and use of nutrition education and assessments.<sup>37</sup>

◆ **WIC** also tracks the number of children under age five who have a biological parent who is obese (i.e., have a BMI over 30). In 2015, 23% of infants and 13% of children ages one to four had a biological parent who was obese.<sup>38</sup>

### References

- <sup>1</sup> Centers for Disease Control and Prevention. (2015). *About child and teen BMI*. Retrieved March 2, 2016, from www.cdc.gov
- <sup>210</sup> *Overweight children and youth*. (2014). Washington, DC: Child Trends.
- <sup>311</sup> Centers for Disease Control and Prevention. (2015). *Childhood obesity causes and consequences*. Retrieved March 2, 2016, from www.cdc.gov
- <sup>416</sup> *Accelerating progress in obesity prevention: Solving the weight of the nation*. (2012). Washington, DC: Institute of Medicine of the National Academies.
- <sup>5</sup> Halfon, N., Larson, K., & Slusser, W. (2013). Associations between obesity and comorbid mental health, developmental, and physical health conditions in a nationally representative sample of US children aged 10 to 17. *Academic Pediatrics*, 13(1), 6-13.

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# Births to Teens

## DEFINITION

*Births to teens* is the number of births to teen girls ages 15 to 19 per 1,000 teen girls. Data are reported by the mother's place of residence, not the place of the infant's birth.

## SIGNIFICANCE

Teen pregnancy and parenting threaten the development of teen parents as well as their children. Teen mothers, particularly younger teen mothers, have difficulty finishing high school and continuing on to college. Only 38% of mothers who give birth before age 18 have a high school diploma by age 22, compared with 89% of young women who had not given birth as a teen. Less than 2% of teen mothers who give birth before age 18 finish college by age 30.<sup>1</sup>

Two-thirds of families headed by teen mothers live in poverty. About one-quarter of teen mothers have a second child within 24 months of the first baby, creating even greater challenges for the mothers to finish school, find and keep a job, and escape poverty.<sup>2</sup> Teen girls in foster care are more likely than their peers to get pregnant by age 19.<sup>3</sup>

Children of teen parents are at increased risk for low birthweight, preterm delivery, infant mortality, child maltreatment, and placement in foster care.<sup>4,5</sup> They score lower on measures of school readiness and on standardized

tests, are more likely to repeat a grade, and are less likely to complete high school compared with children of older mothers. Sons of teen mothers are twice as likely to spend time in prison and daughters of teen mothers are three times more likely to become teen mothers themselves.<sup>6,7</sup>

Despite improvements in recent years, the U.S. teen birth rate remains higher than many other developed countries.<sup>8</sup> After peaking in 1991, the U.S. teen birth rate reached a historic low in 2014, with decreases among all racial and ethnic backgrounds. Rhode Island's teen birth rate mirrors national trends, peaking in 1993 and reaching a historic low in 2014.<sup>9,10</sup> Nationally and in Rhode Island, fewer teens are having sex and those that are sexually active are more likely to use contraception.<sup>11,12</sup>

In 2014 in Rhode Island, 579 babies were born to mothers under age 20, accounting for 6% of all babies born.<sup>13</sup>

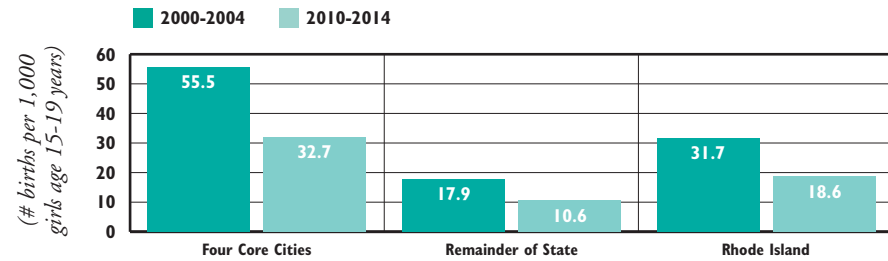
Teen Birth Rates (rate per 1,000 girls ages 15-19)		
	1991	2014
<b>RI</b>	44.7	15.8
<b>US</b>	61.8	24.2
<b>National Rank*</b>		7th
<b>New England Rank**</b>		5th

\*1st is best; 50th is worst

\*\*1st is best; 6th is worst

Sources: For 2014: Martin, J. A., et al. (2015). Births: Final data for 2014. *NVSR*, 64(13), 1-63. For 1991: Ventura, S. J., et al. (2014). National and state patterns of teen births in the United States. *NVSR*, 63(4), 1-33.

## Teen Birth Rates, Rhode Island, Five-Year Averages Comparisons, 2000-2004 and 2010-2014



Source: Rhode Island Department of Health, Center for Health Data and Analysis, 2000-2014. Data for births in 2014 are provisional.

- ◆ The statewide five year average teen birth rate declined 41% between 2000-2004 and 2010-2014, from 31.7 births per 1,000 teen girls to 18.6. The teen birth rate in the four core cities also declined by 41% during that time.<sup>14</sup>
- ◆ In 2014, the birth rate for U.S. teens (24.2 births per 1,000 teen girls) and Rhode Island teens (15.8 births per 1,000 teen girls) were the lowest ever recorded.<sup>15,16</sup>
- ◆ Despite declines among all racial and ethnic groups, disparities still exist in teen birth rates.<sup>17</sup> In Rhode Island between 2010 and 2014, the teen birth rates for Hispanic (45.9) and Black (33.2) teens were higher than the rates of their White (11.6) and Asian (11.5) peers.<sup>18</sup>

## Repeat Births to Teens, Rhode Island, 2010-2014

AGE	TOTAL NUMBER OF BIRTHS	NUMBER OF REPEAT BIRTHS	PERCENT REPEAT BIRTHS
15-17	1,061	69	6.5%
18-19	2,648	492	18.6%
<b>TOTAL</b>	<b>3,709</b>	<b>561</b>	<b>15.1%</b>

Source: Rhode Island Department of Health, Center for Health Data and Analysis, 2010-2014.

- ◆ Nationally, 17% of all births to teens ages 15-19 in 2013 were repeat births. Since 1991, repeat teen births have declined 23% nationwide.<sup>19</sup> To continue to reduce repeat teen births, pregnant and parenting teens should be connected with evidence-based home visiting programs that address a broad range of needs and routinely offer effective postpartum contraception.<sup>20</sup>

## Teen Birth Rates by Age and Location

◆ In Rhode Island between 2010 and 2014, the rate of births to teens ages 15-17 in the core cities (22.8 per 1,000 teen girls) was more than four times higher than in the remainder of state (4.8 per 1,000 teen girls). The birth rate for teens ages 15-17 in Central Falls was 32.7, compared to Woonsocket at 26.8, Providence at 23.6, and Pawtucket at 15.7.<sup>21</sup>

◆ The rate of births to Rhode Island teens ages 18-19 was more than twice as high in the core cities (40.3 per 1,000 teen girls) than in the remainder of state (18.1 per 1,000 teen girls) between 2010 and 2014. The birth rate for teens ages 18-19 in Central Falls was 124.1, compared to Woonsocket at 101.2, Pawtucket at 59.0, and Providence at 29.3.<sup>22</sup>

Table 25. Births to Teens, Ages 15-19, Rhode Island, 2010-2014

CITY/TOWN	# OF BIRTHS TO GIRLS AGES 15-17	# OF BIRTHS TO GIRLS AGES 18-19	# OF BIRTHS TO GIRLS AGES 15-19	BIRTH RATE PER 1,000 GIRLS AGES 15-19
Barrington	1	6	7	2.3
Bristol	8	19	27	4.8
Burrillville	4	24	28	11.6
Central Falls	72	180	252	69.0
Charlestown	4	17	21	18.3
Coventry	8	46	54	9.4
Cranston	50	132	182	14.3
Cumberland	12	32	44	8.3
East Greenwich	0	13	13	5.4
East Providence	34	83	117	17.5
Exeter	7	12	19	13.5
Foster	2	5	7	9.1
Glocester	3	10	13	7.6
Hopkinton	6	8	14	11.5
Jamestown	0	2	2	2.8
Johnston	11	47	58	14.3
Lincoln	7	20	27	7.7
Little Compton	0	1	1	NA
Middletown	9	21	30	13.5
Narragansett	4	5	9	3.5
New Shoreham	0	1	1	NA
Newport	25	60	85	16.5
North Kingstown	8	29	37	8.4
North Providence	14	51	65	14.7
North Smithfield	7	8	15	8.1
Pawtucket	112	267	379	32.5
Portsmouth	7	9	16	5.3
Providence	430	946	1,376	27.2
Richmond	1	8	9	8.4
Scituate	1	7	8	4.6
Smithfield	3	12	15	2.9
South Kingstown	4	24	28	2.0
Tiverton	6	12	18	8.4
Warren	4	17	21	15.5
Warwick	42	94	136	12.2
West Greenwich	2	8	10	9.0
West Warwick	37	113	150	38.8
Westerly	14	44	58	18.9
Woonsocket	102	253	355	56.3
Unknown	0	2	2	NA
Four Core Cities	716	1,646	2,362	32.7
Remainder of State	345	1,000	1,345	10.6
Rhode Island	1,061	2,648	3,709	18.6

### Source of Data for Table/Methodology

Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2010-2014. Data for births in 2014 are provisional and do not include births among Rhode Island residents that occurred out-of-state.

The denominators for girls ages 15-19 are from the Census 2010 Summary File 1, which are then multiplied by five.

NA: Rates should not be calculated due to small numbers and the lack of statistical reliability.

In the 2012 Factbook, the denominators for the city/town table were updated with population data from Census 2010. Factbooks prior to 2012 used population data from Census 2000. Changes in rates are affected by the updated population data.

Factbooks published before 2007 reported only births to girls ages 15-17. The definition of teen childbearing was expanded to include teens ages 15-19 to align with reports from the U.S. Centers for Disease Control and Prevention's National Center for Health Statistics.

NA: Rates should not be calculated due to small numbers and the lack of statistical reliability.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

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# Alcohol, Drug, and Tobacco Use by Teens

## DEFINITION

*Alcohol, drug, and tobacco use by teens* is the percentage of middle school and high school students who report having used alcohol, illegal drugs, or tobacco products.

## SIGNIFICANCE

The use and/or abuse of substances such as alcohol, tobacco, and other drugs by youth poses health and safety risks to them, their families, their schools, and their communities.<sup>1,2,3</sup> Rhode Island ranks among the states with the highest percentages of adolescents reporting use of alcohol and many types of illicit drugs.<sup>4</sup>

Key risk periods for alcohol, tobacco, and other drug abuse occur during major life transitions, including the shifts to middle school and high school, when young people experience new academic, social, and emotional challenges.<sup>5</sup> Adolescents are especially vulnerable to developing substance abuse disorders because their brains are still developing; the prefrontal cortex, responsible for decision-making and risk-assessment, is not mature until the mid-20s.<sup>6</sup>

Pathways for becoming a substance user involve the relationship between risk and protective factors, which vary in their effect on different people. Risk factors are associated with increased drug use and include early aggressive behavior,

poor school achievement, peer and parental substance abuse, chaotic home environment, and poverty. Protective factors lessen the risk of drug use, and include a strong parent-child bond, healthy school environment, academic competence, and neighborhood pride.<sup>7,8</sup> For over three decades, Hispanic and Black high school seniors in the U.S. have generally had lower rates of substance use than their White peers, but recently these differences have narrowed due to an increased use of marijuana among Black students.<sup>9,10</sup>

Teen substance abuse can be prevented or reduced by enacting policies that support prevention, screening, early intervention, treatment, and recovery. Policy examples include preventing the sale of substances to minors, improving school climate and academic achievement, enacting sentencing reform, and sustaining adequate funding for multi-sector youth development, treatment, and recovery services.<sup>11</sup>

In Rhode Island in 2013-2014, 3% of youth ages 12-17 needed but did not receive specialty treatment for their alcohol use problem, which is the 15th highest rate among all states. Four percent of Rhode Island youth ages 12-17 needed but did not receive any specialty treatment for their illicit drug use. Rhode Island has the seventh highest state percentage on this measure.<sup>12</sup>



## Tobacco Use Among Rhode Island Youth

- ◆ **Cigarettes:** Cigarette use has reached record low levels among U.S. middle and high school students.<sup>13</sup> In 2015, 5% of Rhode Island high school students reported smoking cigarettes in the past 30 days, which is a statistically significant decrease from 2013, when 8% reported current cigarette smoking. Nearly half (46%) of Rhode Island high school students who reported current cigarette use in 2015 also reported trying to quit smoking in the past year.<sup>14</sup>
- ◆ **Electronic Vapor Products:** Among U.S. adolescents in 2015, e-cigarette use was higher than use of traditional tobacco cigarettes or any other tobacco product.<sup>15</sup> In Rhode Island in 2015, 41% of high school students reported ever using an electronic vapor product and 19% reported using an electronic vapor product in the past 30 days. Current use was highest among Rhode Island high school seniors (25%), White students (21%), and males (20%).<sup>16</sup> In 2014, Rhode Island became one of 48 states to prohibit the sale of electronic nicotine delivery systems to minors.<sup>17</sup>
- ◆ **Hookah:** The prevalence of smoking tobacco using a hookah has been rising among adolescents nationally since 2010, with most use being less than two occasions.<sup>18</sup> In 2015, 12% of Rhode Island high school students reported using a hookah to smoke tobacco in the past 30 days. Rates of current use were highest among Rhode Island Hispanic students (16%), seniors (15%), and females (13%).<sup>19</sup>
- ◆ **Cigars:** Use of small cigars (cigarillos) among U.S. adolescents has declined significantly since 2010.<sup>20</sup> In Rhode Island in 2015, 8% of high school students reported smoking cigars in the past 30 days. Current cigar use was highest among Rhode Island high school seniors (13%) and males (12%), as well as among Hispanic (9%), Black (8%), and White (8%) students.<sup>21</sup>
- ◆ **Smokeless Tobacco:** After rising in the mid-2000s, use of smokeless tobacco by U.S. adolescents has been in decline since 2010.<sup>22</sup> In 2015, 5% of Rhode Island high school students reported using smokeless tobacco, with males (8%), seniors (8%), and Black (7%) youth reporting the highest levels of use.<sup>23</sup>

## Current Substance Use, Rhode Island High School Students by Select Subgroups, 2015

	ALCOHOL USE	BINGE DRINKING*	TOBACCO USE**	MARIJUANA USE	PRESCRIPTION DRUG MISUSE***
Female Students	30%	14%	21%	23%	6%
Male Students	22%	12%	28%	24%	7%
Black Students	20%	11%	21%	24%	5%
White Students	28%	13%	26%	24%	5%
Multiple Race Students	28%	13%	28%	26%	12%
Hispanic Students	27%	14%	23%	23%	8%
9th Grade Students	15%	6%	20%	13%	6%
10th Grade Students	22%	10%	24%	19%	5%
11th Grade Students	30%	15%	21%	28%	5%
12th Grade Students	37%	21%	34%	33%	7%
<b>ALL STUDENTS</b>	<b>26%</b>	<b>13%</b>	<b>25%</b>	<b>24%</b>	<b>6%</b>

Source: 2015 Rhode Island Youth Risk Behavior Survey, Rhode Island Department of Health, Center for Health Data and Analysis. Current use is defined as students who answered yes to using respective substances in the 30 days prior to the survey. \*Binge drinking is defined as drinking five or more drinks within a couple of hours. \*\*Tobacco includes cigarettes, smokeless tobacco, cigars, or electronic vapor products. \*\*\*Prescription drug misuse is defined as those without a doctor's prescription.

◆ Among Rhode Island high school students in 2015, 26% reported current (i.e., in the past 30 days) alcohol consumption, 25% reported current tobacco use, 24% reported current marijuana use, 13% reported current binge drinking, 6% reported current prescription drug misuse, and 5% reported using over-the-counter drugs to get high during the past 30 days.<sup>24</sup>

◆ In Rhode Island In 2015, 9% of high school students reported ever (i.e., in their lifetime) using synthetic marijuana, 6% reported ever using inhalants, 5% reported ever using ecstasy, 5% reported ever using cocaine, 4% reported ever using heroin, and 4% reported ever taking steroids without a doctor's prescription.<sup>25</sup>

◆ In 2015, a majority of Rhode Island high school students reported that they have never taken a prescription drug without a doctor's prescription (88%), tried cigarette smoking (78%), used marijuana (61%), nor used an electronic vapor product (59%). Nearly half (48%) of Rhode Island high school students also reported never having consumed alcohol.<sup>26</sup>

## Family and Community Risk Factors

◆ Having parents or friends who use tobacco, alcohol, and other drugs, as well as living in communities in which there is drug dealing and use are risk factors for teen substance use.<sup>27</sup> In Rhode Island in 2015, 32% of Rhode Island high school students reported living with someone who smokes cigarettes. One in five (22%) Rhode Island high school students under age 18 who used an electronic vapor product during the past 30 days reported buying them in a store (despite laws prohibiting such purchases). One in ten (10%) high school students who had ever taken a prescription drug without a doctor's prescription reported buying it at school.<sup>28</sup>

## Babies Born with Exposure to Substances

◆ Babies born with exposure to opioids (pain medication) face immediate and long-term negative outcomes. Neonatal Abstinence Syndrome (NAS) refers to the withdrawal and negative effects experienced by newborns born to mothers who use opioids and/or other drugs during pregnancy.<sup>29</sup>

◆ In Rhode Island in 2014, 97 babies were diagnosed with NAS, a rate of 92 per 10,000 births, up from 76 babies (for a rate of 72 per 10,000 births) in 2013 and more than double the rate of 37.2 in 2006. Eighty-eight percent of babies born with NAS between 2010 and 2014 in Rhode Island were born to White mothers, 85% had Medicaid coverage, and 34% lived in the four core cities and 66% lived in the remainder of the state.<sup>30</sup>

◆ Mothers' smoking during pregnancy is associated with adverse outcomes for children, including preterm births, low birthweight, and infant mortality.<sup>31</sup> Nationally, one in ten women who gave birth in 2014 smoked during the three months before they became pregnant and nearly one-quarter of those women quit smoking before pregnancy.<sup>32</sup>

◆ In Rhode Island between 2010 and 2014, 8% (4,130) of all births were to women who smoked during their pregnancy. During that time, Rhode Island mothers who smoked had higher percentages of low birthweight (12.3%) and preterm births (12.0%) compared to mothers who did not smoke (6.9% and 8.7% respectively).<sup>33</sup>

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