Rhode Island State Health Improvement Plan

Component A: Health Assessment Report

Version 3 — July 28, 2017

Rhode Island State Health Improvement Plan

Section One: Health Assessment Report

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- **SIM Integrated Population Health Planning Team**, including staff and consultants from DataSpark, the SIM Core Staff Team, the Technical Assistance Collaborative, and the University of Massachusetts Medical School;
- **SIM Integrated Population Health Public Workgroup,** made up of stakeholders from a variety of organizations representing the health system, all of which are committed to improving health in Rhode Island;
- **Health Focus Area Subject-Matter Experts**, including both programmatic and analytical staff from the Rhode Island Department of Behavioral Healthcare, Developmental Disabilities, and Hospitals (BHDDH) and the Rhode Island Department of Health (RIDOH);
- **Partner Data Providers**, comprised of various programs and organizations that operate the many surveillance or data systems and generate the key reports leveraged for this report;
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- **SIM Steering Committee and Interested Parties**, who are the community and state decision-makers who guide and advise SIM's work.

Lastly, a special thanks to the state agency leadership from the Rhode Island Executive Office of Health and Human Services (EOHHS), including the Division of Medicaid; BHDDH; the Rhode Island Department of Children, Youth, and Families (DCYF); RIDOH; the Rhode Island Office of the Health Insurance Commissioner (OHIC); and HealthSource RI.

Preface

Rhode Island's first iteration of the *Integrated Population Health Plan* (IPHP) was initially created to meet the needs of the Rhode Island State Innovation Model (SIM) Test Grant. An early version of the IPHP was included in the SIM Operational Plan that was submitted in June 2016 to the Centers for Medicare and Medicaid Services (CMS). As the SIM Operational Plan is compiled from a range of relevant information about the State's health needs and priorities, SIM's leadership believes that the *State Health Improvement Plan* should also be a useful "living document" designed to inform ongoing state population health planning efforts. Moving forward, this plan will be referred to as the *Rhode Island State Health Improvement Plan*—a statewide centralized repository of source documents for population health planning.

Living documents can be updated and expanded on an ongoing basis, and indeed, the State expects this report to meet a wide range of requirements of the varied stakeholders engaging in population health planning. This approach will allow Rhode Island to revise this document iteratively to reflect changes in assessment data, policy environment, emerging priorities, funded activities supporting population health (including those of SIM), ongoing surveillance recommendations, and agency-specific activities aligned with improving population health in Rhode Island. This approach furthers Rhode Island's culture of collaboration and enhances the State's ability to have a cross-sector impact on population health.

To reiterate, conceptualizing the *Rhode Island State Health Improvement Plan* as a living document is ideal because it can be updated and referenced, as needed, for multiple needs across State and local agencies. For example, this section of the *Rhode Island State Health Improvement Plan* (i.e., Health Assessment Report) will serve as the Community Health Assessment requirements for the Public Health Accreditation Board and as components of Rhode Island's legislatively mandated State Health Plan.

Organization of the Plan

The plan is made up of four distinct, stand-alone components that can easily be updated, printed, and referenced over time. The four components are:

- **Component A: Health Assessment Report**
  What Are Some of Our Health Problems?

  This component (represented by this document) provides an initial profile of eight aligned health focus areas across the State's and community partners' assessments. This component serves as a community health assessment of Rhode Islanders, within which more health focus areas can be added. Profiles include historic trends, existing disparities, co-occurrences and co-morbidities between physical and behavioral health conditions, considerations across the life span, and, where applicable, attributed costs. These profiles inform Rhode Island's population health planning efforts.

- **Component B: Population Health Strategy**
  What Are Our Goals and How Are We Organizing?

  This component will encompass the State's leading priorities, core strategies, and integrated population health goals (inclusive of key metrics) for improving population health. Specifically, this component will articulate a commitment to developing the culture of collaboration across agencies and ensuring the collective impact required to improve population health outcomes for Rhode Islanders. Emphasizing the current and future states of Rhode Island's approach to improving population health, this component will delineate the roles that health system transformation, social and environmental determinants of health, and integrated physical and behavioral health have in improving health and addressing disparities.

- **Component C: Health Improvement Plan**
  What Are We Doing to Achieve Our Goals?

  This component will provide specific details on the State's integrated population health goals, organizing and delineating agency-specific key investments, activities (including SIM interventions and others) that are essential to making health improvements a reality in Rhode Island. This component will also include a robust set of intermediate measures used to set targets for and assess progress toward implementation of key investments. This component is essentially a multi-agency, cross-sector action plan for improving population health.

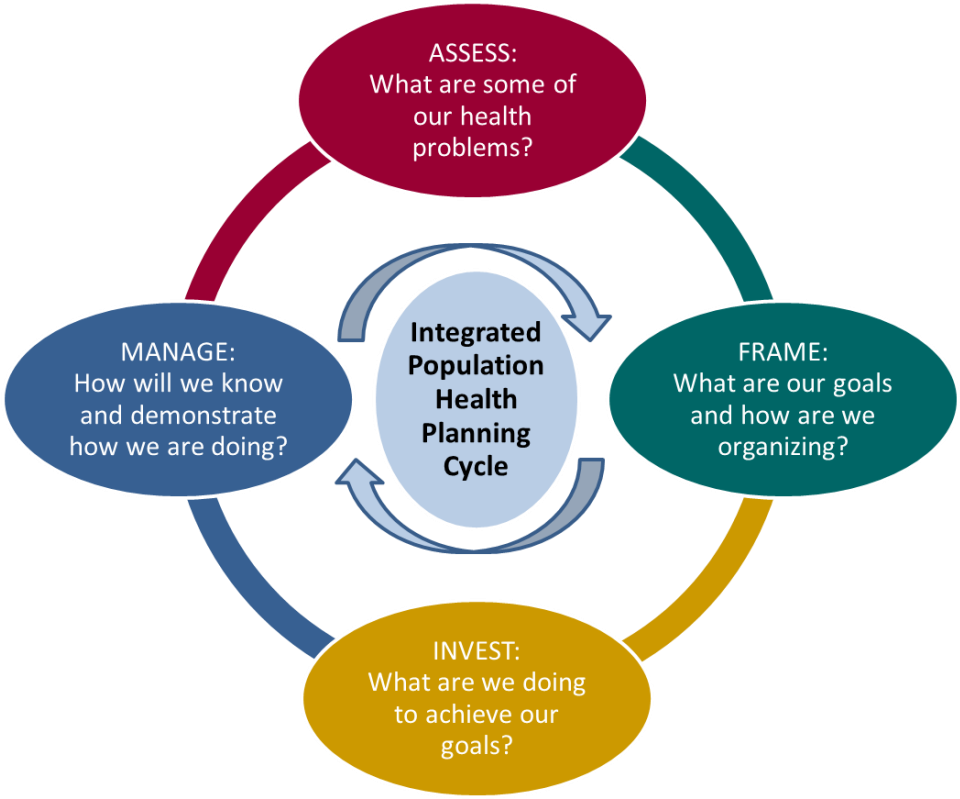
- **Component D: Performance Monitoring Updates**
  How Will We Know and Demonstrate How We Are Doing?

  This component will provide a variety of annual progress updates and reports reflecting the performance of key investments toward reaching the State's population health goals. Using the key metrics, intermediate measures, and other quantitative/qualitative reports, this evaluation of Rhode Island's approach toward improving population health will provide a continual

opportunity for quality improvement. Every five years (or other designated period of time), this component will also inform future iterations of the *Rhode Island State Health Improvement Plan*.

Together, these four components represent the essential elements necessary for coordinated population health management in Rhode Island. By describing the health status of Rhode Islanders, outlining the State's strategic priorities, depicting the vast landscape of current health improvement efforts, and maintaining accountability for implementation of improvement efforts, the *Rhode Island State Health Improvement Plan* can further the State's ability to have a positive impact on population health. This plan is the integration of population health planning within healthcare transformation and will ensure alignment and sustainability of current and planned efforts across Rhode Island's institutions and with the broadest diversity of stakeholders.

Figure 0: Integrated Population Health Planning Cycle



Health Assessment Report Introduction

Overview

This report contains the information and data that have been collected, analyzed, and reported to inform Rhode Island's population health priorities, referred to as "health focus areas." Originally issued in the spring of 2016, two subsequent iterations of the original Integrated Population Health Plan (IPHP) have since been published. This newest publication includes only the Health Assessment Report portion of the original IPHP and has been expanded to include several new features:

- Addition of a new health focus area entitled Maternal and Child Health;
- Expansion of the health focus area entitled Tobacco to include data beyond smoking;
- Inclusion of data for health focus areas that represent various age ranges across the life span, where available;
- Alignment of findings with those from other key reports and past assessments; and
- Representation of co-occurrence and co-morbidity, where applicable, across health focus areas.

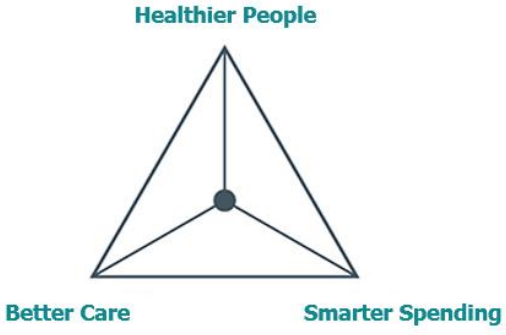
Report Purpose

This *Health Assessment Report* identifies and describes Rhode Island's health needs and priorities, as identified by State officials and Rhode Island's many stakeholders. The Report includes information collected by various population health efforts underway in Rhode Island, such as the State Innovation Model (SIM) Test Grant, Health Equity Zone initiative, Accountable Care Organizations and Accountable Entities, and other local activities. The eight specific health focus areas represent only part of a larger effort to create and instill a culture of collaboration for improving population health.

Background

Rhode Island's goal is to achieve the Triple Aim of improving the quality of care and patient satisfaction, enhancing the overall health of Rhode Island's population, and spending healthcare dollars more wisely (See Figure 1[1]).

Figure 1: Rhode Island's Triple Aim.



Source: Adapted from The Institute for Healthcare Improvement

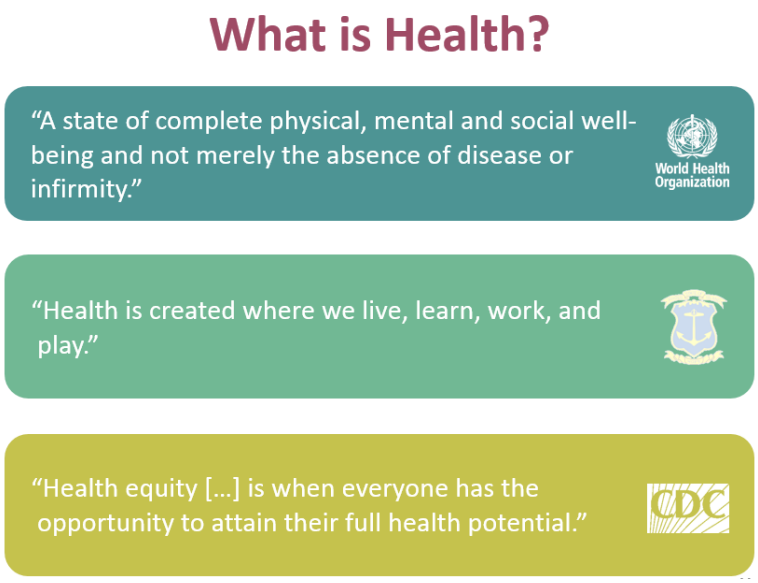
Thus, the State is assessing and addressing the opportunities that can make measurable improvements in the health and productivity of all Rhode Islanders.

In order to achieve the State's goal, the healthcare delivery, public health, behavioral health, community development, and social service sectors must work together and collaborate with the State's many academic, public, and private institutions to ensure that all Rhode Islanders reach their highest health potential, regardless of who they are or where they live. To remove the systemic and structural barriers within the healthcare delivery system that can inhibit population health improvement, the State needs a multi-sector and multi-agency approach to help Rhode Island transition from an uncoordinated, provider- and payer-centric care environment to a well-coordinated and integrated health system. In this new approach, public health, behavioral health, social service, and healthcare delivery systems are efficiently coordinating person-centric care while continuously providing higher quality services, reducing the cost of care, and improving population health outcomes.

Defining Population Health

The term population health encompasses both physical and behavioral health. The term physical health refers to the health of the various body systems, including oral health, and behavioral health refers to the inclusion of both mental health and substance use. Rhode Island's approach to improving population health addresses health needs across a population's lifecourse, from pre-conception to death. This approach views health from the perspective of the whole person, including a focus on both the mind and the body, as behavioral health and well-being are instrumental in creating healthy, resilient, and productive communities. Figure 2[2] below provides examples of how various agencies define health.

Figure 2: Various Definitions of Health.



Sources: World Health Organization; Rhode Island Department of Health; Centers for Disease Control and Prevention

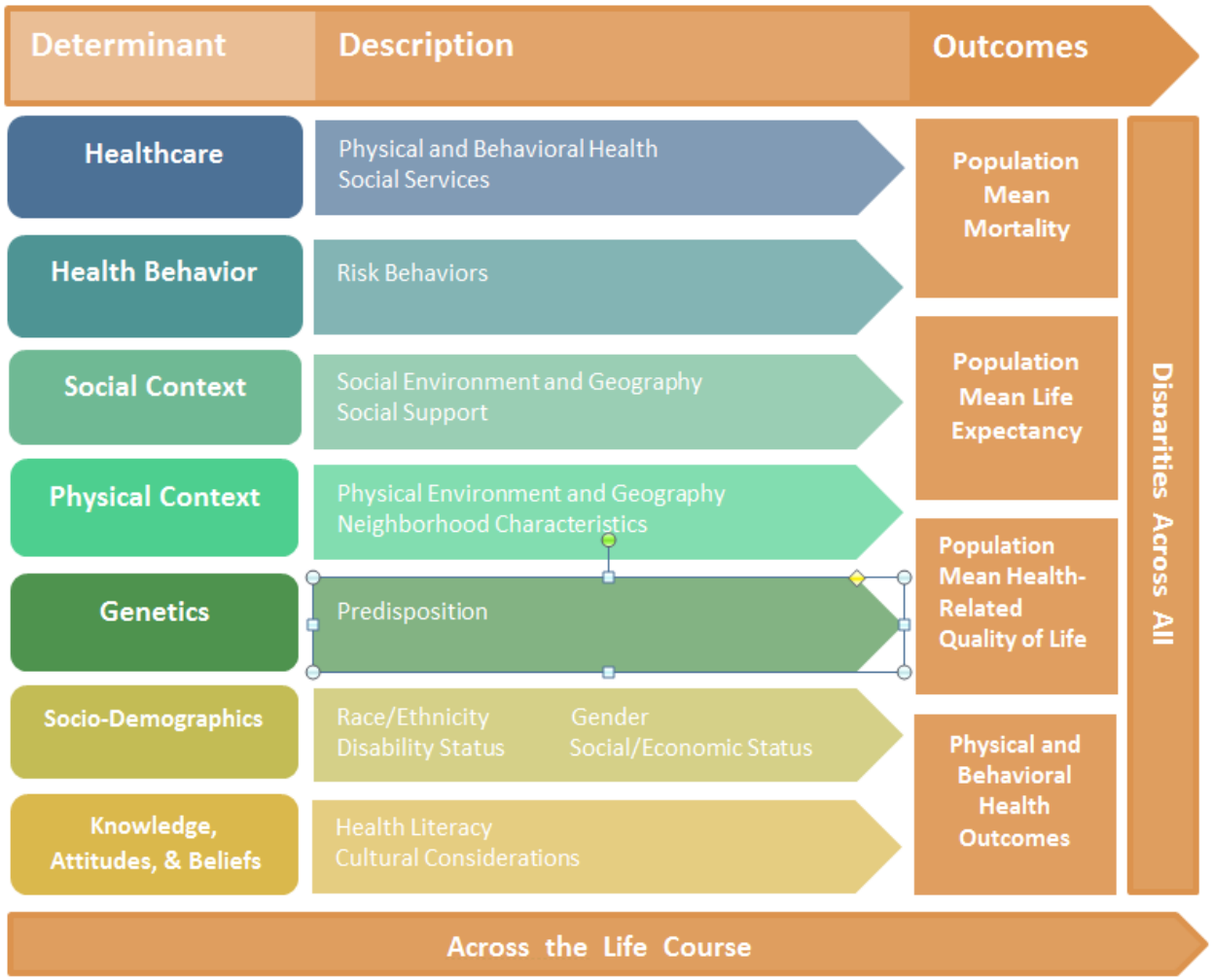
There are many definitions for, and perspectives on, health. Health is not merely the absence of disease, but the state of complete physical, mental, and social well-being, including the "ability to adapt and to self-manage in the face of social, physical, and emotional challenges."[3] Health is considered a resource for everyday life and is created where we live, learn, work, and play. Population health, specifically, refers to the aggregation of health outcomes for a group of individuals selected on specific characteristics (such as geography, care setting, and health status) and includes the distribution of such outcomes within and across groups to address racial, ethnic, socioeconomic, and other disparities.[4,5]

Many factors impede an individual's ability to achieve optimal health or to obtain the healthcare he or she needs. Throughout the lifecourse, these factors may gradually accumulate through exposures to adverse environmental and social conditions, behaviors that increase disease risk, or episodes of illness.[6] Due to inequitable distribution of these factors, Rhode Island's ability to monitor and ensure health equity is essential to improving population health.

Measuring Population Health

When defining population health, it is essential to focus on the role played by various health determinants across the lifecourse. Population health planning must consider multi-factor, developmental, and lifecourse perspectives that recognize the critical importance of early life and childhood experiences, the accumulation of exposures across the lifetime, and person-context interactions. The figure below depicts the conceptual model of population health using a determinant and life course framework.

Figure 3: Model of Population Health.

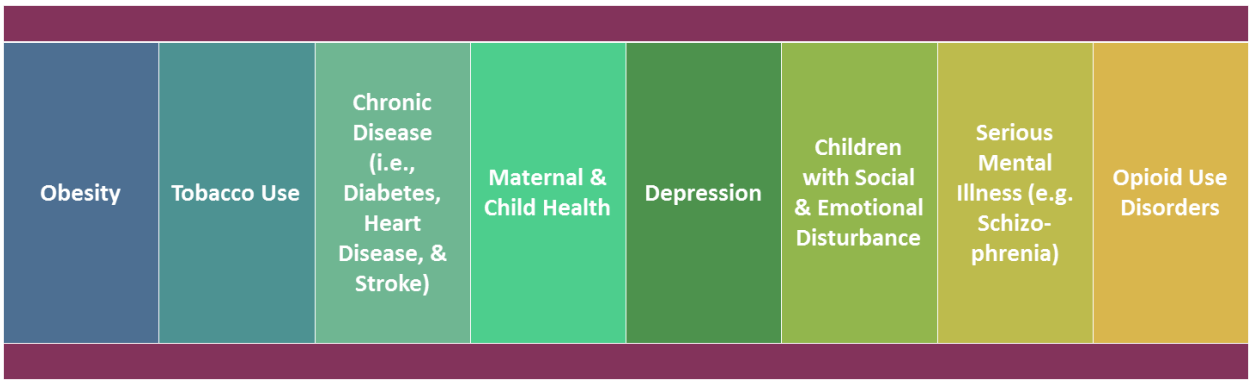


Source: Adapted from Bharmal, N. et al. (2015)[7]

State Innovation Model (SIM) Health Focus Areas

The State has identified eight health focus areas across sectors, geographies, programs, and assessments that align with the SIM Test Grant's population health and system transformation activities. This *Health Assessment Report* includes an in-depth look into each focus area, with the intent of creating an evolving profile of the health of Rhode Islanders. This information will inform Rhode Island's population health planning activities in these health focus areas by providing data about the focus area as well as data that are reflective of disparities, co-occurrence and co-morbidity, prevalence across the life span, and attributed costs. Figure 4 illustrates the State's health focus areas presented in this Report.

Figure 4: SIM Health Focus Areas.



Source: SIM Operational Plan[8]

Health Focus Areas Defined

As the eight health focus areas vary in size and scope, the data and information presented in this Report also varies. For the purposes of the SIM, several health focus areas have either been pared down (such as maternal and child health) to target select issues or expanded (such as children with social and emotional disturbance) to include a broader definition that incorporate both physical and behavioral health aspects. The report defines the state's eight health focus areas as follows:

- **Obesity: Health Focus Area 1** - Obesity is defined by Body Mass Index (BMI), which is the ratio of an individual's weight to his/her height. An individual is considered obese if he/she has a BMI equal to or greater than 30 kg/m^2.

- **Chronic Disease: Health Focus Area 2** - This report focuses on the chronic conditions of cardiovascular diseases and diabetes. Cardiovascular diseases include diseases of the heart and hypertension (high blood pressure), as well as cerebrovascular diseases, such as stroke. Diabetes is a chronic disease marked by high levels of blood sugar, also called blood glucose, and occurs when the body has problems either making (type 1) or using insulin (type 2).

- **Tobacco Use: Health Focus Area 3** - Tobacco use encompasses the use of a range of tobacco products such as cigarettes, pipes, dipping tobacco, and electronic nicotine delivery systems.

- **Opioid Use Disorders: Health Focus Area 4** - Opioid addiction (also called dependence) is a chronic brain disease that can develop with repeated daily exposure to opioids that is characterized by the development of tolerance and withdrawal. The natural progression of this disease leads to using greater amounts of drugs over time.

- **Maternal and Child Health: Health Focus Area 5** - Maternal and child health is an umbrella term that covers a range of topics concerning the well-being of mothers and their children. This Report focused on the following selected measures: unintended pregnancy, prenatal dental care, preterm births, breastfeeding, and childhood lead poisoning, which are organized by the subcategories of pregnant mothers, infants, and children. Maternal and child health measures related to other health focus areas appear within those respective health focus areas.

- **Children with Social and Emotional Disturbance: Health Focus Area 6** - For the purposes of this Report children with social and emotional disturbance are individuals younger than 21 who have one or more emotional, behavioral, or developmental conditions (such as autism, developmental delay, depression, anxiety, attention deficit disorder/attention deficit with hyperactivity disorder, and behavioral/conduct disorders).

- **Depression: Health Focus Area 7** - Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest. Major depression is characterized by a depressed mood or loss of interest or pleasure in daily activities that represents a significant change from an individual's normal mood; that has persisted for the same two-week period; and has a negative impact on social, occupational, educational or other important life functions. [9] Major depression can lead to a complete sense of hopelessness as well.

- **Serious Mental Illness**: **Health Focus Area 8** - Serious mental illness is a severe and/or persistent mental or emotional disorder in a person age 18 or older that seriously impairs his/her functioning relative to primary aspects of daily living such as personal relations, living arrangements, or employment.

Focus Area Alignment with State Priorities

The health focus areas reflect the convergence of trends and needs identified in a range of state reports, assessments, and guidance documents (e.g., Community Hospital Needs Assessments). The findings from these reports are summarized in the Convergence of Trends and Local Assessments appendix of this Report. The SIM compiled a crosswalk of priorities to generate the health focus areas included in this Report. An example of the linkages between priorities is included in Table 1 below.

Table 1: Health Focus Area Alignment with Community Health Needs Assessments and Regional Health Equity Zone (HEZ) Needs Assessments

Health Focus Area	SIM Health Focus Area	HARI* Community Health Needs Assessment	Lifespan Community Health Needs Assessment	HEZ* Regional Health Needs Assessments
Chronic Disease	✓	✓	✓	✓
Obesity	✓		✓	✓
Tobacco Use	✓			✓
Maternal and Child Health	✓	✓		✓
Depression	✓	✓	✓	✓
Children with Social & Emotional Disturbance	✓	✓	✓	✓
Serious Mental Illness	✓	✓	✓	✓
Opioid Use Disorders	✓	✓	✓	✓

**Source: Hospital Association Rhode Island (HARI) and Health Equity Zones (HEZ)*

Integrating Physical and Behavioral Health within Focus Areas

Providing high-quality healthcare is the primary goal for the healthcare delivery system. Rhode Island has identified many ways to reach this goal, including the following objectives:[10]

- Help individuals connect to disease prevention resources;
- Increase early intervention and referral to reduce late-stage presentation of disease;
- Improve physical and behavioral outcomes through patient navigation; and
- Coordinate physical and behavioral healthcare.

Integrating physical and behavioral health across the care continuum and throughout the lifecourse will be an area of focus in pursuing each of these objectives. Rhode Island will progress toward meeting these objectives by creating a common framework for this type of integration, coupled with the use of evidence-based practices.

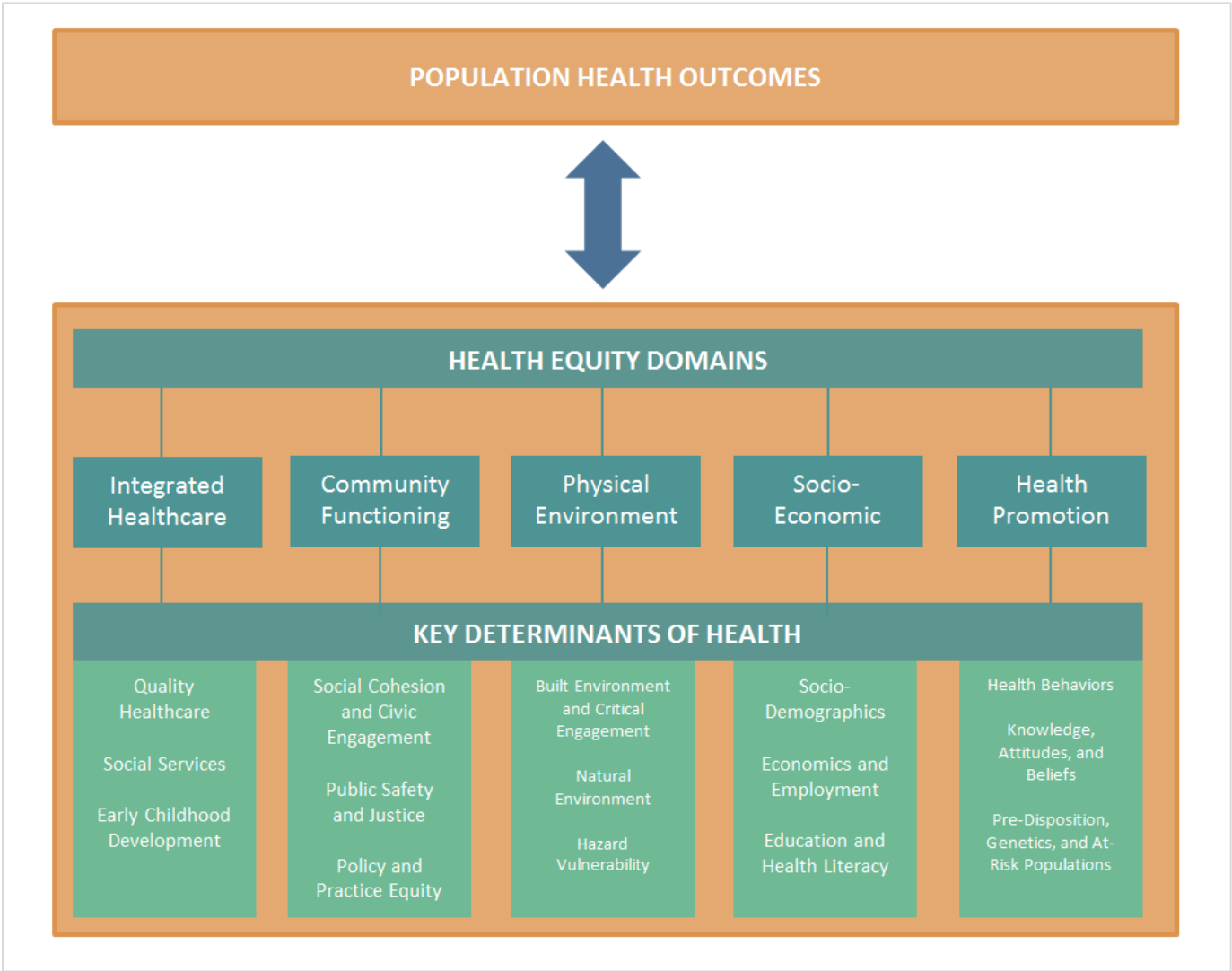
A final note about SIM's Health Focus Areas is that the process of defining the areas necessitated making choices based on available resources and the State's ability to have an impact in the health focus area in a short period of time. There are certainly additional health focus areas central to improving population health that SIM was not able to prioritize at this time. In the future, the State may choose to add additional health focus areas to provide a closer look at other important health issues such as cancer, healthcare associated infections, and sexually transmitted infections.

Statewide Health Equity Indicators

The State recognizes that differences in health opportunities and resources exist across Rhode Island's diverse population and is committed to documenting and addressing these health disparities or disadvantages through its Statewide Health Equity Indicators. The Community Health Assessment Group, convened by the Rhode Island Department of Health (RIDOH) has been working in the past year to develop a health equity model to identify, assess, and monitor equity indicators over time in conjunction with population health measurements.

While the indicators for each of the "health equity domains" and "key determinants" listed in Figure 5 have not been finalized, it is RIDOH's intention to establish and begin data collection and monitoring of selected measures in the near future. These measures will be reflected in future iterations of this Report.

Figure 5: Health Equity Indicators Draft Model.



Source: Rhode Island Department of Health—Community Health Assessment Group (2017)

Defining Rhode Island's Health Equity Domains and Key Determinants

As seen in Figure 5, health equity has been categorized into five domains, each of which is comprised of three key determinants of health that influence that domain. Each of these domains should be optimized in each and every community throughout the State to improve the root causes of health and other inequities.

To reach the Triple Aim and improve population health outcomes, Rhode Island must improve the critical indicators within each of these key determinants of health. The list below provides a brief overview of the health equity domains and related key determinants of health that will be measured and monitored moving forward:

1. **Integrated Healthcare Domain:** Focuses on the presence of quality systems for healthcare and social services, as well as healthy development. Possible measures include affordability, utilization, and the integration of physical, oral, and behavioral health.

2. **Community Functioning Domain:** Focuses on factors that influence the operations of a community that affect the overall health of all individuals. Possible measures include of social capital and cohesion, public engagement, neighborhood safety, criminal justice, and fair policies.

3. **Physical Environment Domain:** Focuses on the physical conditions of the environment in which people are born, live, learn, play, work, and age. This includes the natural environment, built environment, critical infrastructure, physical hazards, and risks.

4. **Socio-Economic Domain:** Focuses on the social and economic vitality of a community and its members in relation to a combination of education, income, and occupational attainment. Possible measures include key demographics contributing to issues such as homelessness, oppression, and inequalities.

5. **Health Promotion Domain:** Focuses on individual behaviors, including risk-behaviors, knowledge, and attitudes, as well as related disparities associated with groups pre-disposed to disease. This includes the role of other factors such as coping mechanisms and wellness behaviors.

Health Equity Spotlight: Rhode Island's Homeless Community

Health equity plays a role in all of the health focus areas described in this report. Rhode Island cannot successfully address these health issues without acknowledging the basic needs of its residents such as access to food and shelter. Access to housing is a key determinant of health. One-third of individuals seeking services at an emergency shelter or transitional housing setting in 2014 reported having a mental health issue, more than half were assessed as having problems with alcohol, and one-quarter as having problems with illicit drugs. In addition to behavioral health disorders, individuals who are homeless often have untreated chronic medical conditions.

More than one third of the people who are homeless in Rhode Island spend a majority of nights sleeping on streets, in parks, in vehicles, and in other places not meant for habitation instead of sleeping in a shelter. Since these individuals have clear, existing vulnerabilities, living outside poses additional threats to safety, health, and well-being. Not only are these individuals disproportionately at risk of being physically attacked, they are also exposed to harsh weather conditions that pose very real threats to life and health.[10]

The cost of homelessness in Rhode Island goes beyond the health and well-being of individuals - the utilization of expensive emergency medical and mental health services in this population is vastly higher than that of the general population. A study between June and November 2014 of the rates of service utilization reported by 885 individuals who were homeless (1,808 emergency department visits, 864 ambulance rides, and 698 inpatient hospitalizations) over the most-recent six-month period yielded an estimated cost for medical treatment exceeding $6.5 million.

There is opportunity to significantly reduce medical expenses and improve healthcare outcomes for this population. Providing permanent housing and supports to assist people in stabilizing their health and accessing preventive treatment has been shown to be considerably less costly, as individuals' utilization of emergency services decreases significantly once housed. The Special State Commission to Study Emergency Department Diversion cited the average annual savings per person to be $8,839 if people were placed in a Housing First program with a high level of support. Though none of the SIM interventions specifically address homelessness, the creation of a social determinants of health (SDOH) measure set could include financial resource strain (that includes financial/housing hardship) which would uncover risk factors for homelessness.

Assessment of Population Health Burden

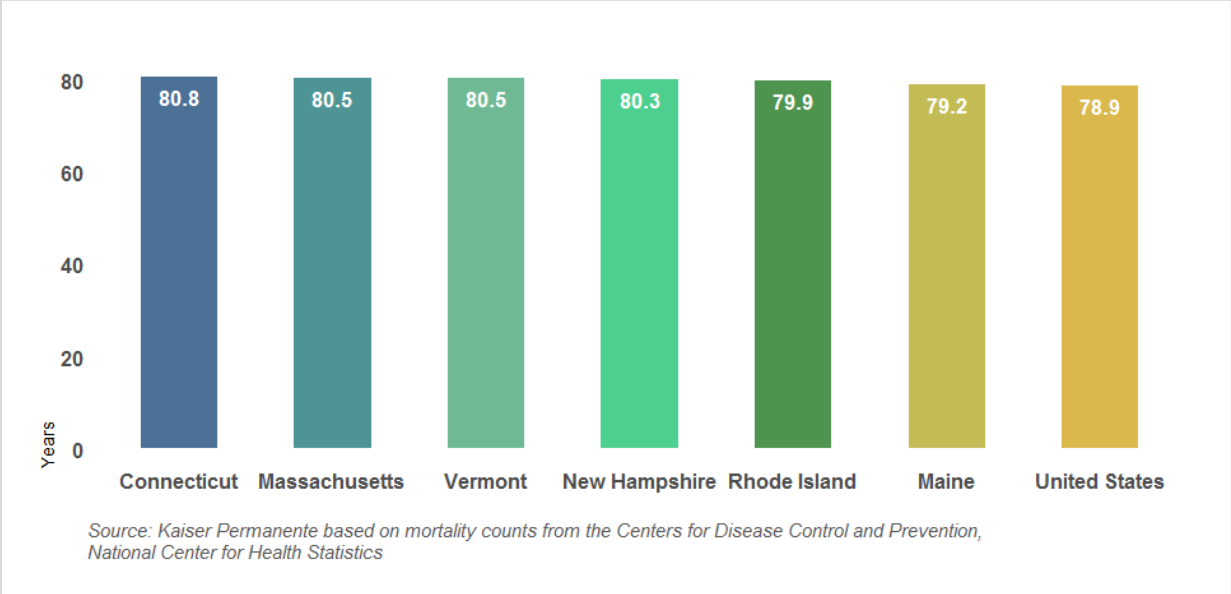
This section uses a variety of data sources to describe the current overall health of Rhode Islanders and the State's overarching physical and behavioral health burdens.

A Snapshot of Rhode Island's Health

Life Expectancy and Potential Years Lost

Ensuring better health at a lower cost for all residents continues to be the focus of Rhode Island's population health efforts, although Rhode Island performs well across many health outcomes. For example, in 2010, Rhode Island ranked 13th in the United States for life expectancy at birth (79.9 years). Figure 6 below shows how Rhode Island's life expectancy at birth compared to New England states and the United States overall in 2010.[11]

Figure 6: Life Expectancy at Birth (in Years) in New England and the United States, 2010.

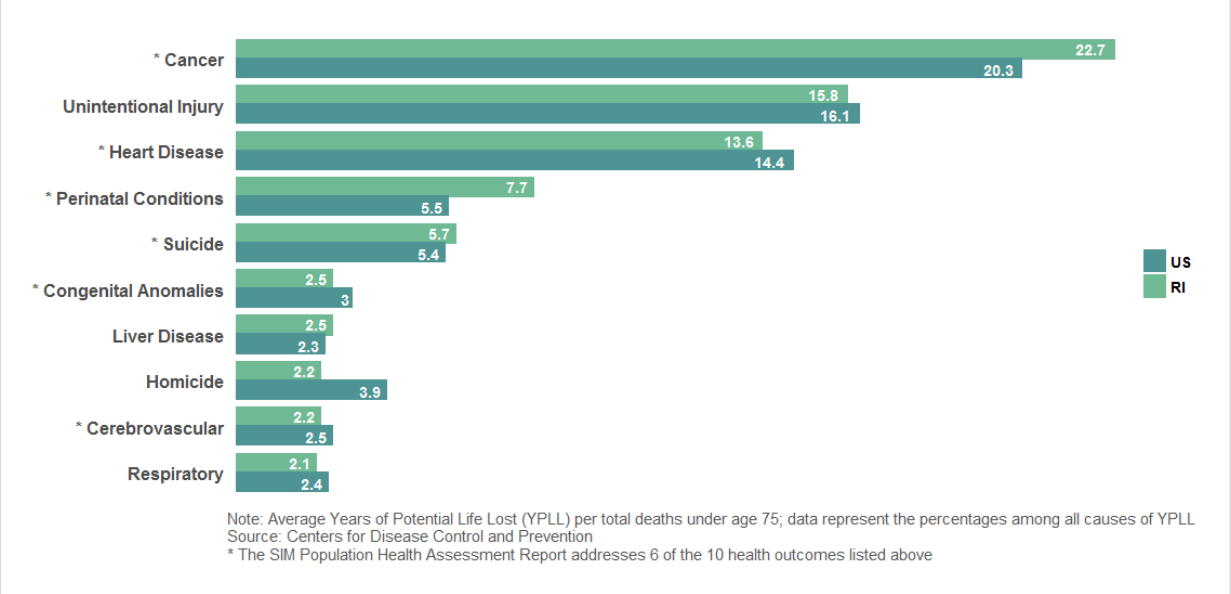


Data from 2014 suggest that 85% of Rhode Islanders generally rate their health as good, very good, or excellent. Due to effective tobacco-control efforts, Rhode Island has the lowest youth smoking rate in the United States (4.8% in 2015).[12] In 2014, the state ranked number one for immunization rates among children and teens.

There are, however, areas in need of improvement. In Rhode Island, cancer is the leading cause of death that reduces life expectancy. Based on 2010 data from the Centers for Disease Control and Prevention

(CDC), on average, cancer reduces years of potential life by 22.7 years in Rhode Island. This is two years more than the national average. Furthermore, in Rhode Island, the average for years of life lost due to adverse perinatal conditions is two years higher than the national average. In all of the other major leading causes of death, Rhode Island is close to or below the national average for years of potential life lost. Figure 7 illustrates the leading causes of death in Rhode Island and years of potential life lost compared to United States averages.

Figure 7: Years of Potential Life Lost in Rhode Island and the United States, by Leading Cause of Death, 2010.



The health focus areas in this Report touch on six of the top 10 leading causes of death in Rhode Island: cancer (tobacco use), heart disease (chronic disease), perinatal conditions (maternal and child health), suicide (depression and serious mental illness), congenital abnormalities (maternal and child health), and cerebrovascular disease (chronic disease).

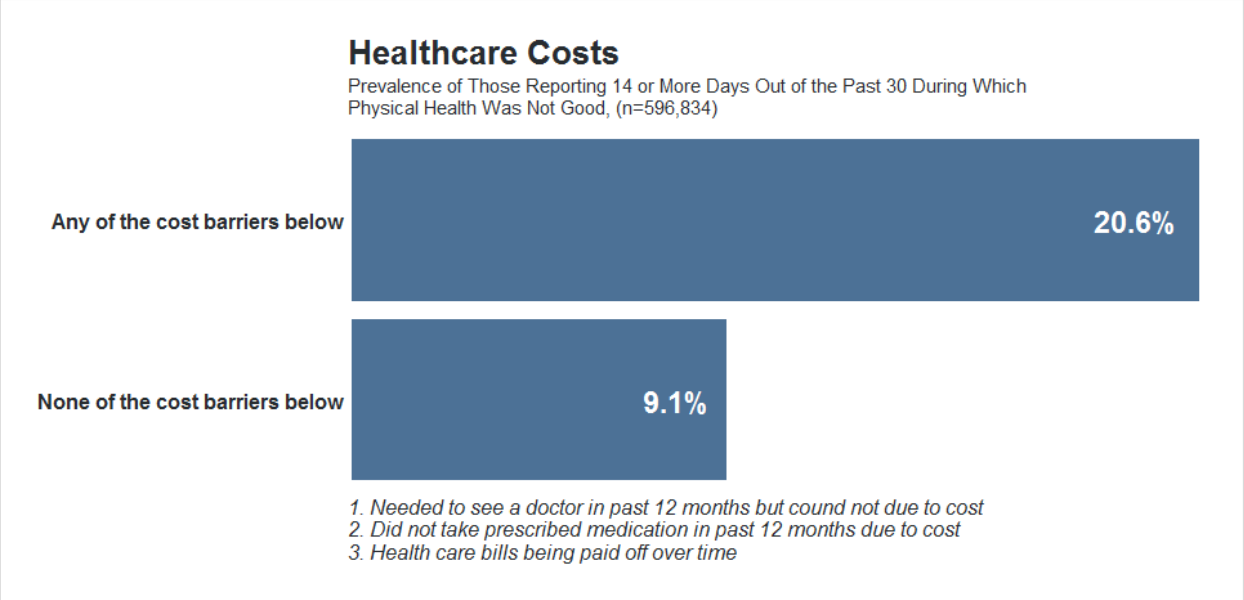
Health-Related Quality of Life

While measures of chronic conditions, health behaviors, and life expectancy are useful for population health planning, such measures are limited in their ability to describe the quality of the physical, mental, and social domains of life.[13] Health-related quality of life (HRQoL) is a measure that considers these domains in the context of health and disease. Well-being, which refers to the "state where one maximizes his or her physical, mental, and social functioning in the context of supportive environments to live a full, satisfying, and productive life"[14] is a related concept.

To highlight the importance of HRQoL and well-being, the federal Office of Disease Prevention and Health Promotion's *Healthy People 2020* initiative includes a goal to "improve health-related quality of life and well-being for all individuals."[15] Data from the 2014 Rhode Island Behavior Risk Factor Surveillance System (RI

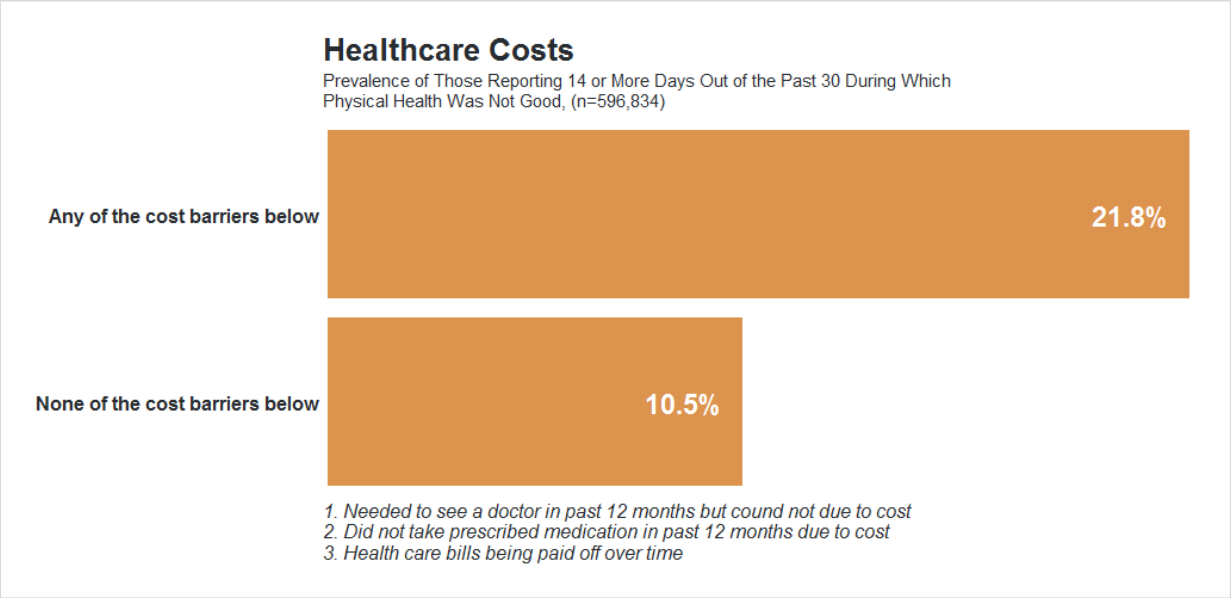
BRFSS) indicate that 12% of Rhode Islanders report 14 or more days out of the past 30 during which physical health was not good, and 13.3% of Rhode Islanders report 14 or more days out of the past 30 during which mental health was not good. In addition, those experiencing financial barriers to care are more likely to report 14 or more days when their physical and/or mental health was not good, compared to those not reporting these barriers. (See Figures 8 and 9.)

Figure 8: Self-Reported Experience of Poor Physical Health, by the Presence of Cost Barriers, 2014.



Source: Rhode Island Behavior Risk Factor Surveillance System

Figure 9: Self-Reported Experience of Poor Mental Health, by the Presence of Cost Barriers.



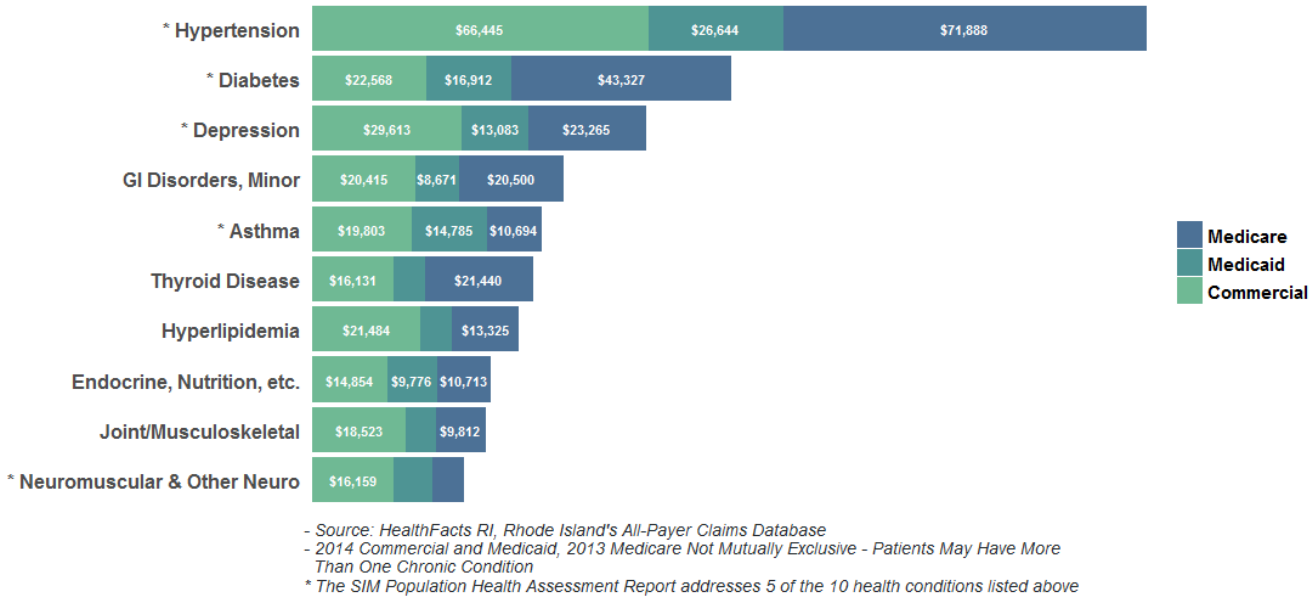
Source: Rhode Island Behavior Risk Factor Surveillance System

Summary of Physical and Behavioral Health Burdens

Physical Health Morbidity

Chronic conditions affect a substantial number of Rhode Islanders. Hypertension, diabetes, and depression are the most common chronic conditions in Rhode Island, affecting roughly 165,000, 83,000, and 66,000 insured Rhode Islanders, respectively. Furthermore, 27% of insured Rhode Islanders are obese, 20.6% have depression, and 6.4% have cardiovascular disease. Rates are all below the national averages for these conditions. Figure 10 provides cost information for the most expensive chronic conditions in Rhode Island based on insurance claims data analyzed by Rhode Island's All-Payer Claims Database, also known as HealthFacts RI.

Figure 10: Ten Most Expensive Chronic Conditions among Insured Rhode Islanders, 2014.



- Source: HealthFacts RI, Rhode Island's All-Payer Claims Database
- 2014 Commercial and Medicaid, 2013 Medicare Not Mutually Exclusive - Patients May Have More Than One Chronic Condition
** The SIM Population Health Assessment Report addresses 5 of the 10 health conditions listed above*

Chronic conditions are the leading cause of death and disability. Although Rhode Island is doing well overall when compared to national rates for many chronic conditions, some groups are faring worse than others. In 2010, 15% of adults age 18-64 who were on Medicaid or Medicare had diabetes, compared to only 5% in the privately insured population. Individuals enrolled in Medicaid also had higher obesity rates (36%) compared to those who were privately insured.[16] The prevalence of diagnosed diabetes is highest among Black/African American adults (15.7%) and Hispanic adults (13.0%) in Rhode Island (compared to Non-Hispanic, White adults; 6.7%).[17]

Table 2 presents the prevalence of these chronic conditions and health behaviors in Rhode Island and the United States.

Table 2: Rhode Island and US Chronic Condition/Health Behavior Prevalence Rates, 2014.[18]

Condition/Health Behavior	RI Prevalence Rate	US Prevalence Rate
Obesity[19]	27.0%	28.9%
Cardiovascular disease	4.2%	4.4%
Diabetes	9.4%	10.5%
Adult smoking rate	16.3%	16.4%

National research indicates that behavioral health issues impact an individual's lifecourse and overall health. The seminal 2006 study commissioned by the National Association of State Mental Health Program Directors (NASMHPD) found that, on average, individuals with severe mental illnesses have a reduced life expectancy of 25 years.[20] According to a study reported by the National Center for Biotechnology Information, adults with serious mental health disorders had a significantly higher rate of mortality than similar populations without mental health disorders. Sixty seven percent of all deaths among study participants with serious mental health disorders were due to medical causes.[21]

Behavioral Health Morbidity

Behavioral health disorders among children in Rhode Island is a serious concern. More than one in five children had one or more emotional/behavioral conditions.[22] Childhood exposure to a number of risk factors can lead to behavioral health disorders, including living in poverty, living with mothers and/or fathers with behavioral health disorders, living in less positive home environments, and being exposed to trauma. Between 2011 and 2012, 9.3% of children in Rhode Island age 6-11 were living with mothers with poor mental health, higher than any other New England state and higher than the national average (7.9%).[23]

The rates of Rhode Island children younger than age 18 suffering from child abuse and neglect, 13.8/1,000, [24]exceed the national average, 9.4/1,000.[25] In addition, protective factors such as being enrolled in nursery school or preschool, are less prevalent among young children in Rhode Island than in the rest of the country. Children and adolescents in Rhode Island have high rates of depression, and the rates of attention-deficit/hyperactivity disorder (ADHD) diagnosis and use of marijuana and other illicit drugs exceeds the national average.[26] The need for substance use disorder treatment among children and adolescents in facility placement almost tripled from 2009 to 2011.[27]

Behavioral health disorders are a concern for adult Rhode Islanders as well. Eight percent (8.2%) of adults living in Rhode Island (age 25-64) have been diagnosed with depression while 4.9% have experienced a serious mental illness in the past year.[28] Both rates are higher than national averages.

Rates of alcohol and substance use in Rhode Island are concerning. The rate of binge drinking among Rhode Islanders age 18-24 also exceeds the national average (48.8% vs. 38.7%). More than one in five young adults, age 18 to 24, reported alcohol and/or drug abuse/dependence; this rate increased for Rhode Islanders during the same time that the national rate decreased. Reported drug use in the last 30 days among Rhode

Islanders age 25-64 is almost double the national average (12.8% vs. 7.2%).[29] Table 3 compares Rhode Island prevalence rates for these disorders/indicators with national rates.[30]

Table 3: Rhode Island and United States Behavioral Health Disorder/Indicators Prevalence Rates, 2012-2013.

Behavioral Health Disorder/Indicators	RI Prevalence Rate	US Prevalence Rate
Young Adults (age 18-24)		
Binge drinking*	48.8%	38.7%
Alcohol and/or drug abuse/dependence	22.6%	18.1%
Adults (age 25-64)		
Depression	8.2%	6.4%
Serious mental illness	5.0%	4.1%
Drug use in past month	12.8%	7.2%

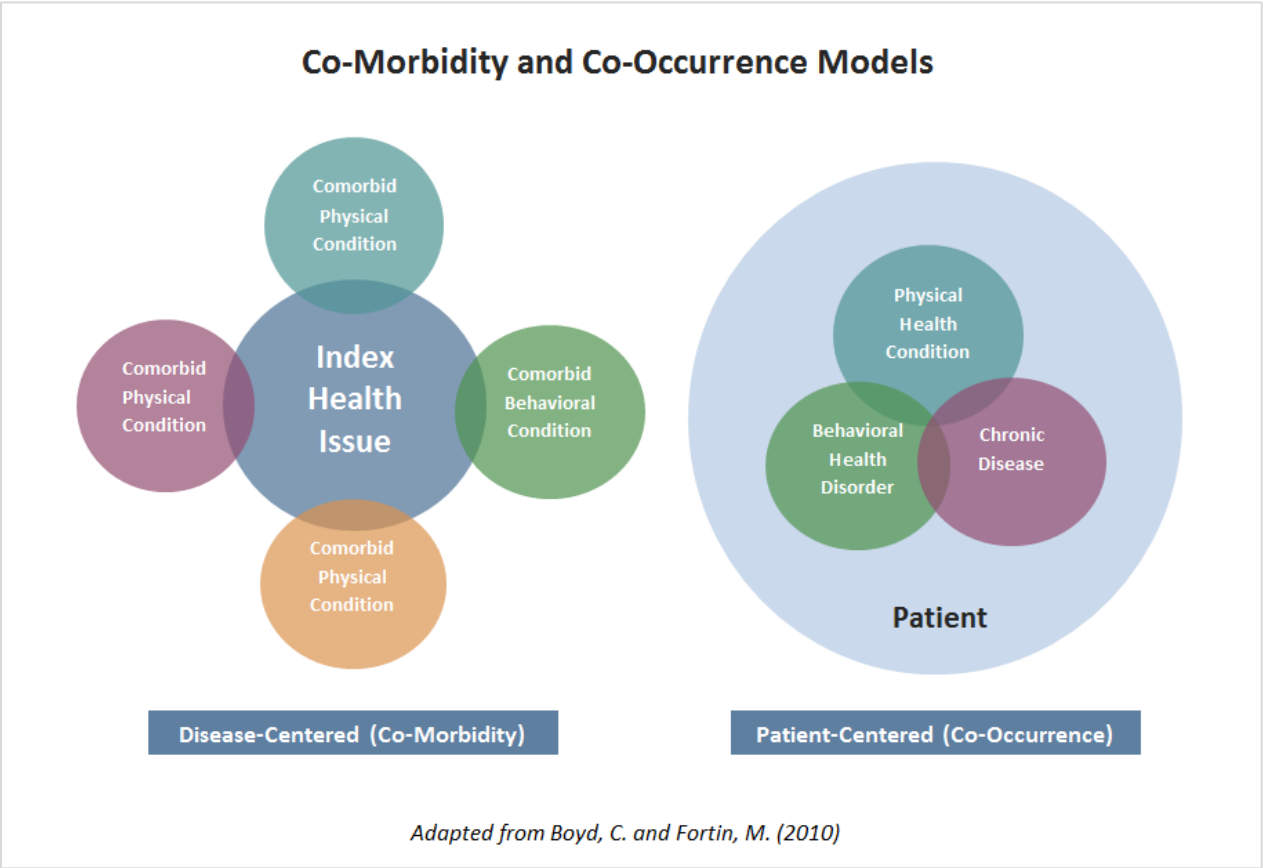
Source: National Survey on Drug Use and Health, 2012/2013.

**Five or more alcoholic drinks for males or 4 or more alcoholic drinks for females on the same occasion.*

Co-morbidity and Co-occurrence

In addition to data in each individual health focus area, data related to the presence of multiple chronic conditions are presented in the Report. The terms co-morbidity and co-occurrence are used to describe patients having more than one chronic condition. Although there is still some discrepancy in the use of these terms, co-morbidity is disease centered and is usually concerned with the order certain diseases emerge. It describes patients with a primary condition, also known as an "index health issue" who develop additional or "co-morbid" health issues.[31] The term co-occurrence is centered around a patient's experience, and does not assign causation or order. It just describes the presence of more than one chronic condition. In behavioral health, this is often referred to as dual diagnosis where patients may be diagnosed with mental health issues as well as substance use disorders. Figure 11 illustrates the difference between co-morbidity and co-occurrence.

Figure 11: Co-Morbidity versus Co-Occurrence.[32]

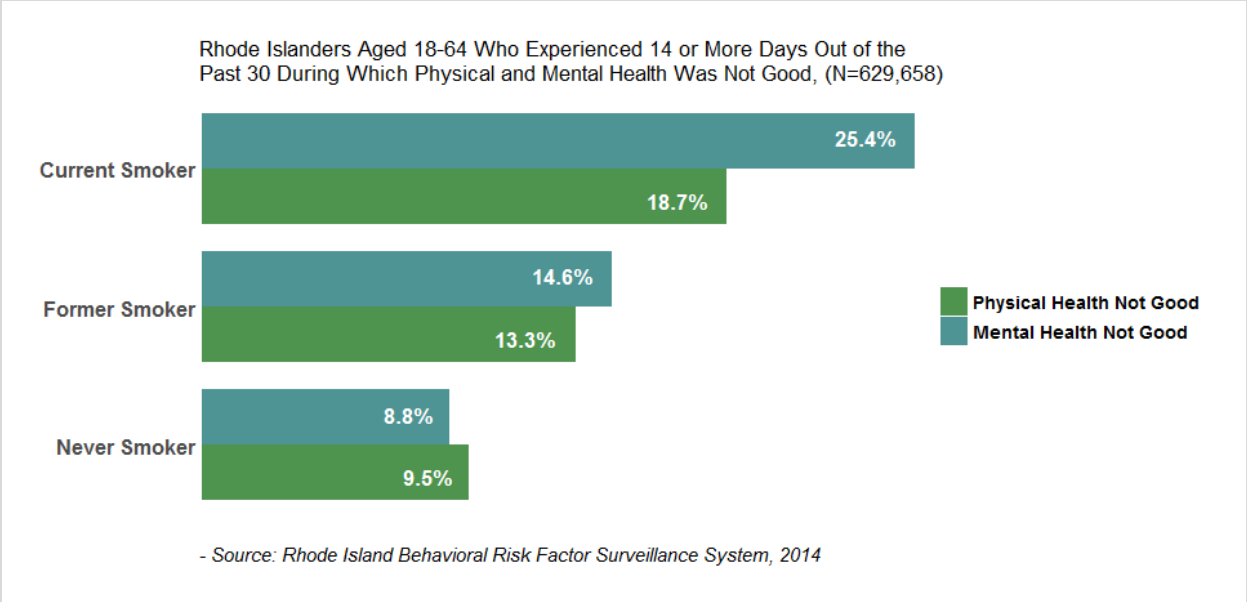


Whether one uses the terms co-morbidity, co-occurrence, or multi-morbidity (also used in the literature), patients with more than one chronic disease are more likely to use healthcare services, leading to higher costs. According to the CDC, 21% of adults in the United States age 45-64 have two or more chronic conditions. This percentage increases to 45% for those aged 65 and older.[33] Co-occurrence is also negatively associated with adult socioeconomic status and socioeconomic status in childhood.[34,35,36]

Co-Occurrence and the Health Planning Process

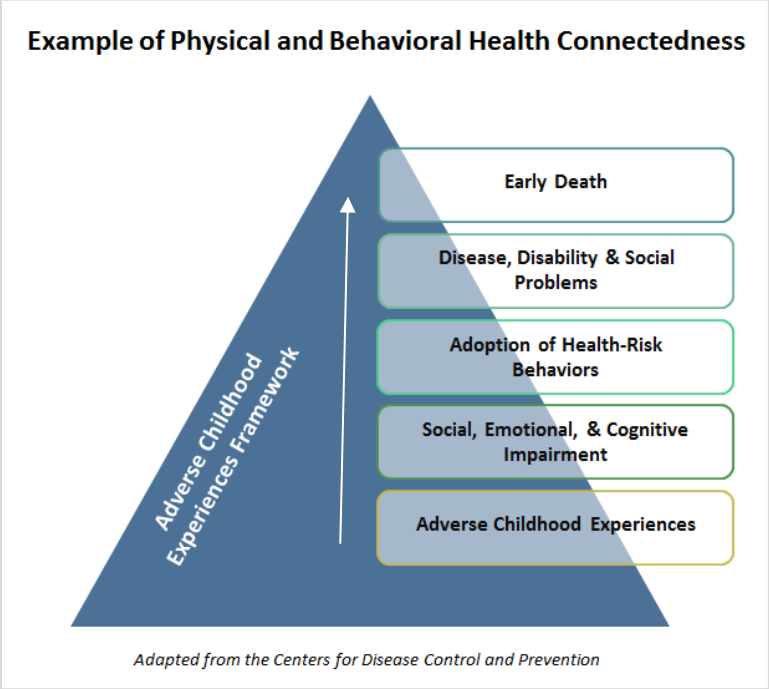
None of the specific diseases, conditions, or behaviors outlined in this Report exist in isolation. In many cases, it is the combined effect of the state's eight health focus areas that have an especially detrimental effect on the well-being of Rhode Islanders. For example, smoking is frequently associated with physical health problems and also is associated with mental health issues as well. Rhode Island's 2014 BRFSS indicates that being a current smoker is associated with poorer physical and mental health (See Figure 12). These data further make the case for integrated care for multiple health issues.

Figure 12: Mental and Physical Health Issues, by Smoking Status, 2014.



Co-occurrence data provide important information for health planning and are included in this *Health Assessment Report*, where applicable. To illustrate the interconnectedness of the physical and behavioral health spheres, the CDC developed a framework for the Life Course Effects of Adverse Childhood Experiences. In this framework, as seen in Figure 13 the progression of potential care needs throughout the care continuum as impairments can lead to behaviors which can lead to disease (both physical and behavioral). For example, a serious emotional disturbance during childhood can carry throughout the lifecourse and lead to early death[37].

Figure 13: Framework for Adverse Childhood Experiences.

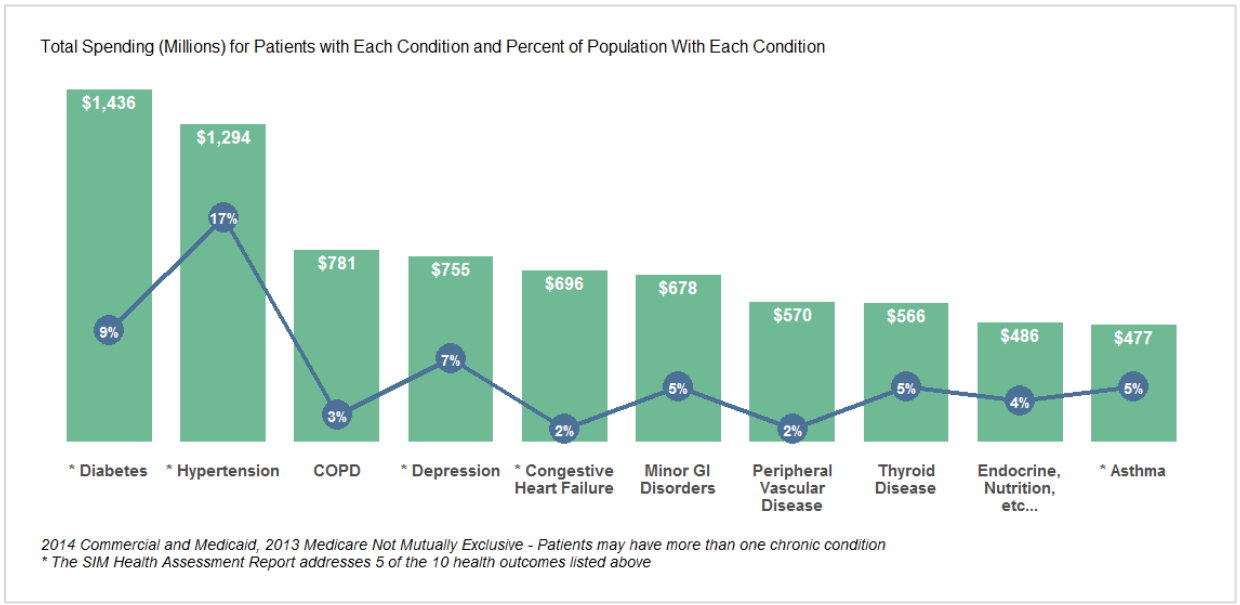


Costs of Healthcare in Rhode Island

Navigating healthcare and managing one's health can be costly to an individual, one's family, and to the healthcare delivery system. In 2013, Rhode Island spent $853 million on direct costs for behavioral health treatment; 1.6% of the gross domestic product. This expenditure is greater than the national average of 1.2%. Furthermore, the average medical cost per person with a behavioral health disorder in Rhode Island was higher than any other state in New England.[38] Managing chronic diseases is costly as well. People with diabetes accounted for $1.4 billion in healthcare spending annually, while people with hypertension accounted for nearly $1.3 billion

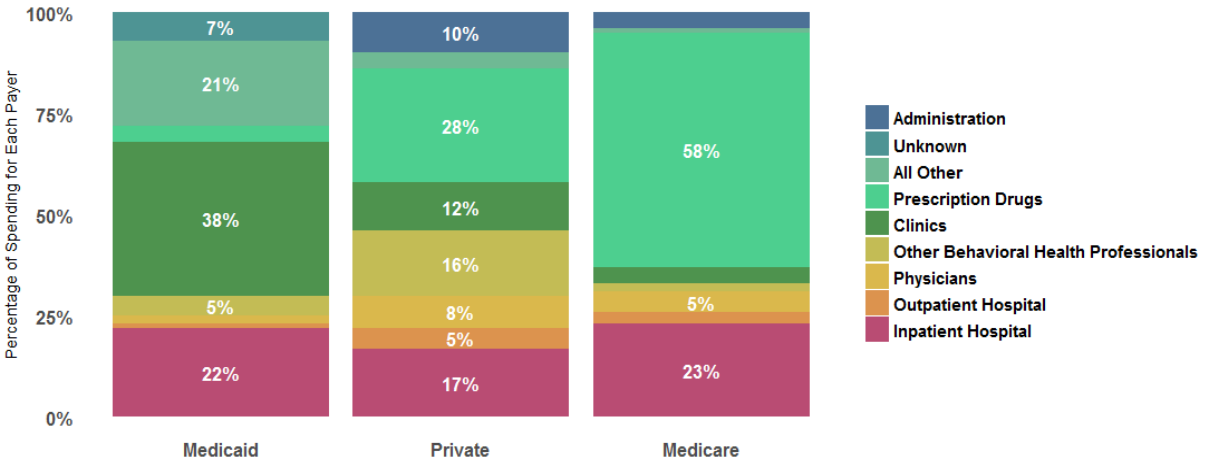
In the community sample who responded to the Rhode Island Department of Health's (RIDOH) *2015 Statewide Health Inventory*, 31% reported delaying or putting off medical care due to cost, and almost half (47%) of those who delayed care reported that they became sicker before they received care. Reported cost barriers to care included high deductibles and co-pays. Figure 14 illustrates the 10 most expensive chronic conditions in the state.

Figure 14: Ten Most Expensive Chronic Conditions in Rhode Island, 2014.



Spending per enrollee or per population on behavioral health treatment among Rhode Island residents with Medicaid, private insurance, and Medicare coverage generally exceeds that of other New England states[39]. The high utilization rate of inpatient hospitalizations and greater spending on prescription drugs is consistent across payer types and likely contributes to the higher spending levels in Rhode Island. The figure below illustrates where private insurers, Medicaid, and Medicare spend money related to behavioral healthcare.

Figure 15: Distribution of Behavioral Health Spending in Rhode Island, by Insurer, 2013.



- *Sources: Rhode Island Medicaid Management Information System claims, three major private insurance plans, and Medicare Standard Analytic Files, 2013*
- *Note: Due to anomalies in the Medicaid data, the percentage of spending on prescription drugs may be inaccurate and should not be cited*

In addition to the direct costs, an estimated $789 million, or 9.5% of the state's 2015 budget, was attributed to indirect costs associated with behavioral health disorders.[40] These estimates include criminal justice, child welfare, disability, and public safety costs attributed to the Department of Children, Youth, and Families (DCYF), the Department of Human Services (DHS), and the Department of Corrections (DOC).[41]

Assessment of Selected Health Focus Areas

This *Health Assessment Report* used Rhode Island's existing data from extensive examination of the state's health needs and priorities to identify eight health focus areas to monitor, assess, and improve over time. These health focus areas, briefly described earlier in this Report, form a starting point for coordinated efforts across state agencies and will grow and evolve over time. This Report offers a snapshot of each focus area, defines terms, profiles existing data, examines historic trends, and identifies significant disparities. Where possible, this assessment describes the presence of each health focus area across age ranges representing one's life span.

Sources and Methodology

When this Report references data from the Rhode Island Behavior Risk Surveillance System (RI BRFSS), it should be noted that this survey data is based on responses from non-institutionalized Rhode Islanders age 18 or older and that all data are self-reported. To determine the statistical differences among groups, chi-square tests were used to calculate p-values. Group comparisons where p-values are less than 0.05 are considered statistically significant. Survey response categories of "don't know" or "refused" are excluded from analyses. Longitudinal trend data are examined using logistic regression analyses and linear trend tests. In a few instances, t-tests were performed to determine the statistical significance of individual elements within subgroups, iteratively testing each element of the subgroup against every other element within the same subgroup. Similar to chi-square tests, we considered t-test analyses yielding p-values less than 0.05 as statistically significant. All population survey data sources used in this Report are weighted in order to provide estimates that reflect the general, non-institutionalized (i.e., community-dwelling), adult population in Rhode Island. Unless otherwise noted, crude estimates are provided without age adjustments. All data preparation, analyses, and data visualizations were performed using the application known as R (version 3.2.1).

Data related to maternal and child health comes from two main sources:

- **Pregnancy Risk Assessment Monitoring System (PRAMS)**
  PRAMS captures numerous indicators, including unintended pregnancies and smoking during pregnancy. PRAMS data are collected annually using mail questionaires and telephone surveys with a sample of Rhode Island women who have recently had a live birth.[42] The most recent PRAMS data available for this report were collected in 2014.

- **Rhode Island's Center for Health Data and Analysis, Maternal and Child Health Database**
  These data stem from vital records and captures all births in Rhode Island and out-of-state births to Rhode Island residents. The birth records data are submitted by all of Rhode Island's birthing hospitals, mothers who deliver at home, and "any of the 57 jurisdictions within the country" where a Rhode Islander might have given birth. The most recent data available for this report was collected in 2015.[43]

Data related to depression, opioid use disorders, and serious mental illness among adults were obtained using RI BRFSS, as well as from the National Survey on Drug Use and Health (NSDUH), an annual nationwide survey involving interviews with approximately 70,000 randomly selected individuals age 12 and older. Data from the NSDUH provide national and state-level estimates on the use of tobacco products, alcohol, illicit drugs (including non-medical use of prescription drugs) and mental health.

Data related to depression, social and emotional disturbance, opioid use disorder and serious mental illness among children and adolescents are derived from the Youth Risk Behavior Survey (YRBS). These survey data are based on responses from school students, grades 6 through 12, and all data are self-reported. The most recent data available for this report were collected in 2015.

Although this *Health Assessment Report* aims to eventually capture life course data for each health focus area, the text uses the term "life span" data to reflect age ranges only, given that the current available information and analysis does not necessarily account for the structural, social, and cultural contexts of individual lives.

Obesity: Health Focus Area 1

Definition

Obesity among adults is determined using the ratio of an individual's weight to his or her height. This ratio is called the Body Mass Index (BMI). To determine the prevalence of Rhode Islanders with obesity, BMI was calculated from two questions from the Rhode Island Behavioral Risk Factor Surveillance Survey (RI BRFSS): "About how much do you weigh without shoes?" and "About how tall are you without shoes?" All Rhode Islanders with a resulting BMI score of 30 kg/m^2 or higher are classified as obese, while those with a BMI in the range of 25 to 29.9 kg/m^2 are considered overweight.

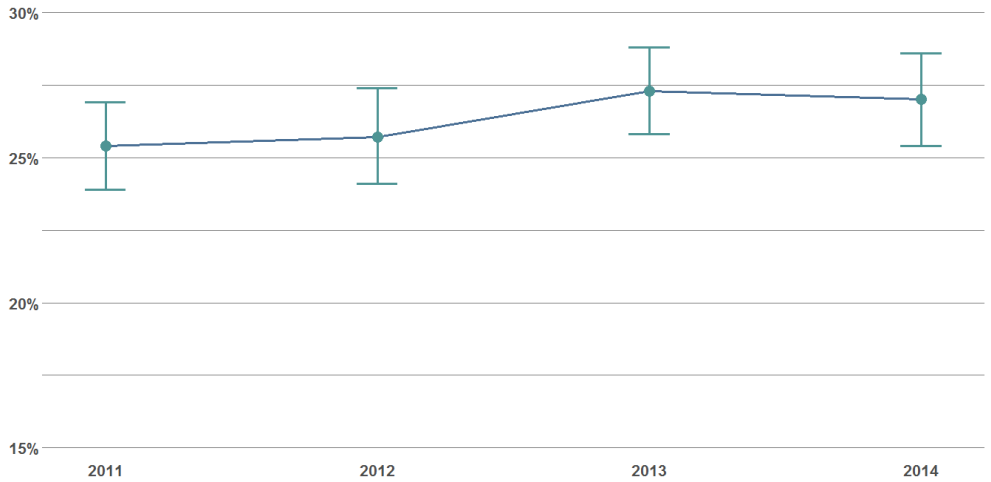
Children and teens (age 2-19) are identified as having obesity or being overweight by comparing their BMIs to those of the same age and sex to account for variations in body composition. A child is defined as being obese if he or she has a BMI at or above the 95th percentile and overweight if he or she has a BMI between the 85th and 95th precentile for children of the same age and sex.[44]

Prevalence across the Life Span

Rates of obesity have been increasing at alarming rates in the United States. In 2015, every state had an adult obesity prevalence rate higher than 20%.[45] Research suggests that overweight and obesity increase the risk for chronic conditions such as diabetes, heart disease, stroke, and specific cancers across the lifecourse.[46]

According to the RI BRFSS, 27.0% of adult Rhode Islanders were obese in 2014. This is a 1.6% increase from 2011, although this increase is not statistically significant.[47] (See Figure 16.)

Figure 16: Obesity Prevalence among Rhode Islanders Age 18 or Older, 2011-2014.

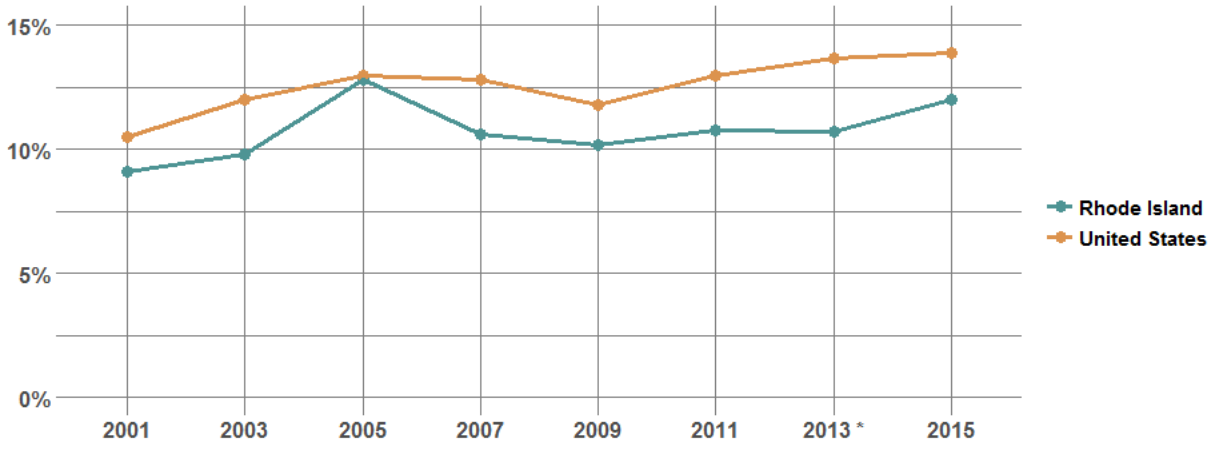


- Source: Rhode Island Behavioral Risk Factor Surveillance System, 2011-2014
- Error bars denote 95% confidence interval for each point estimate. While prevalence estimates of obesity have increased across the years, these changes are not statistically significant

Children and Adolescents

According to results of the Rhode Island Youth Risk Behavior Survey (YRBS), the rate of obesity among high school students in Rhode Island has increased slightly between 2001 - 2015, although year to year, the increases were not statistically significant. Figure 17 presents changes in obesity rates among Rhode Island high school students compared to the rate of obesity among United States high school students from 2001-2015.

Figure 17: Obesity among High School Students in Rhode Island and the United States, 2001-2015.



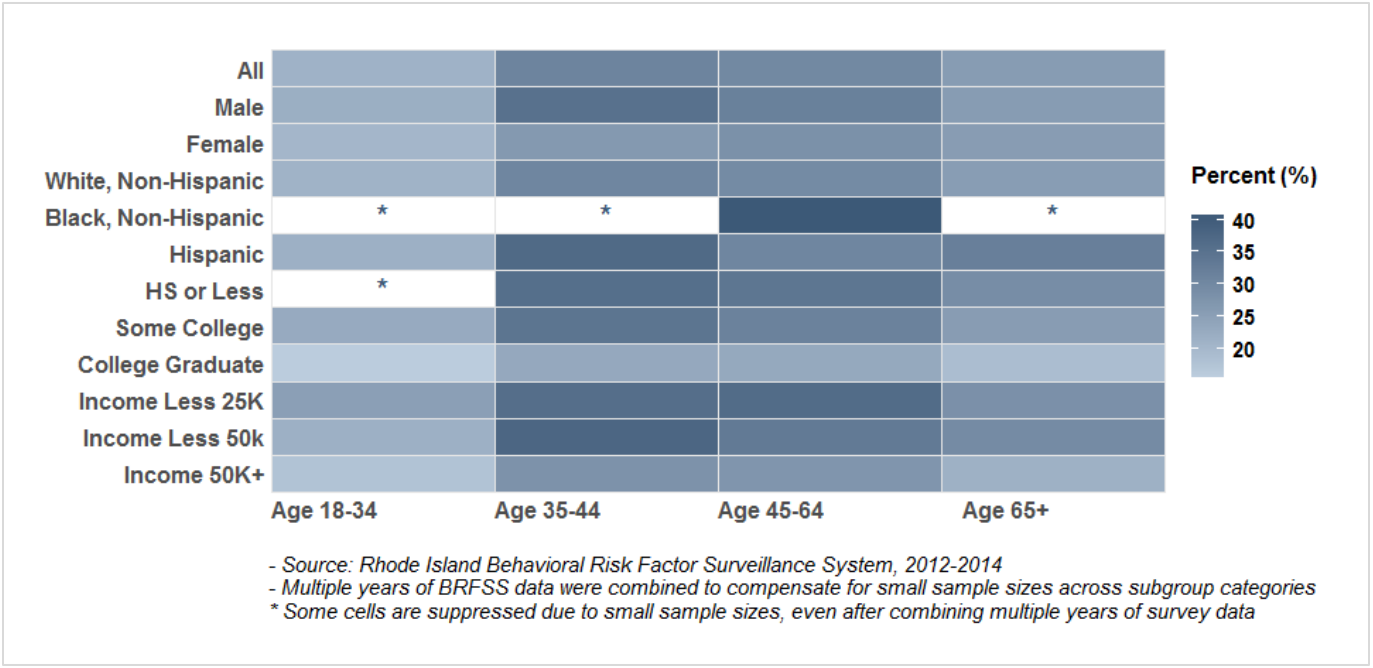
- Source: Youth Risk Behavior Survey, Rhode Island and National, 2001-2015
** In 2013, Rhode Island High School students were significantly less likely to be obese than US High School students.*
- While the prevalence of obesity in High School students in Rhode Island and the US has increased since 2001, individual yearly increases are not statistically significant

There is a lack of comprehensive data regarding the actual BMI values of Rhode Island children. Future iterations of this *Health Assessment Report* should attempt to paint a more comprehensive picture of obesity among this population.

Adults

The rate of obesity among adults in Rhode Island increases as adults reach middle age, with the highest prevalence among adults 35-44. Figure 18 presents obesity rates by age groups, using RI BRFSS population estimates.

Figure 18: Obesity Prevalence across the Life Span, by Sex, Race/Ethnicity, Education, and Income, 2012 – 2014.



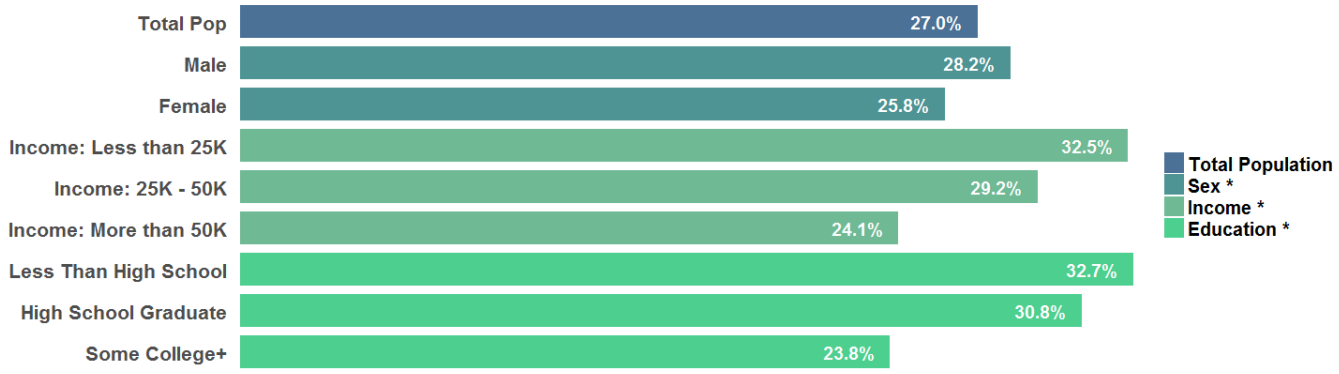
Older Adults

According to 2012-2014 RI BRFSS data, obesity rates among adults age 65 and older are not dramatically different from obesity rates among adults (age 18-64) in general (21.2 to 31.0% vs. 25.8%)

At-Risk Populations and Disparities

Analysis of 2014 RI BRFSS data determined that compared to other racial/ethnic groups Black, non-Hispanic Rhode Islanders have the highest rate of obesity at 34.7%, but this difference was not statistically significant possibly due to sample size. In addition, analysis determined that men are significantly more likely than women to be obese (28.2% vs. 25.8%, respectively),[48] Furthermore, education and income levels also are associated with obesity: as educational levels and incomes increase, obesity rates decrease. Figure 19 illustrates these differences among subgroups.

Figure 19: Obesity Prevalence among Adults, by Sex, Race/Ethnicity, Education, and Income, 2014.



- Source: Rhode Island Behavioral Risk Factor Surveillance System, 2014
- Estimates above demonstrate crude prevalence and have not been adjusted for age
** Statistical (chi-square) tests were performed to determine statistically significant differences within subgroups. Groups with asterisks indicate a statistically significant difference within the group.*

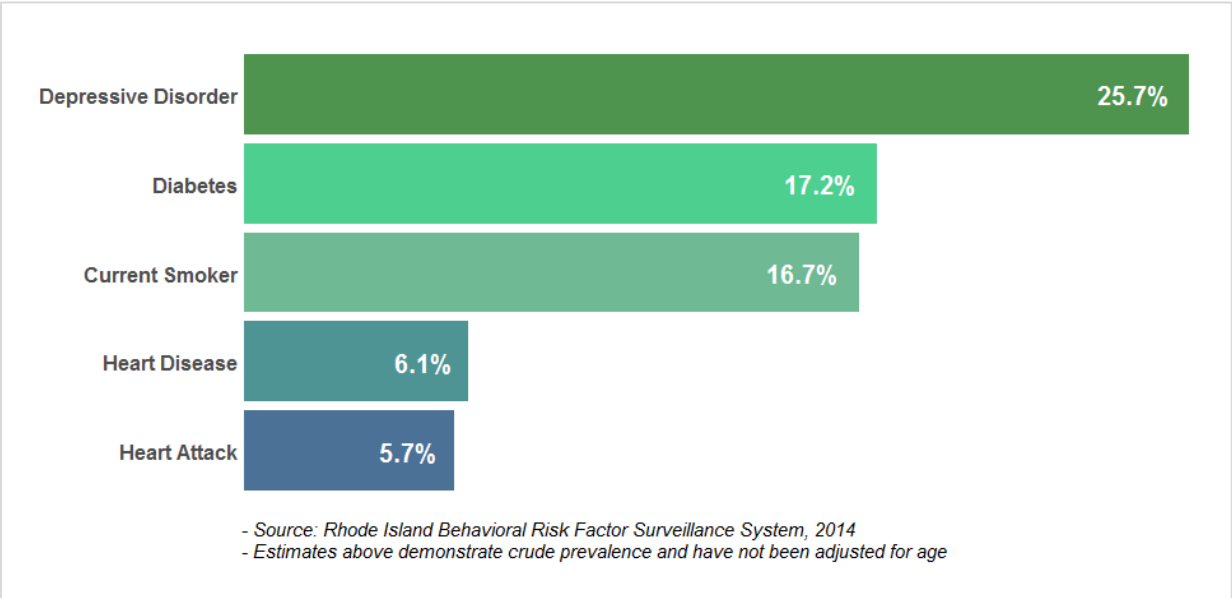
Co-Morbidities

Analysis of RI BRFSS data collected between 2012 and 2014 reveal that a variety of conditions and behaviors co-occur with obesity:

- Approximately 17.2% of respondents with obesity report being told by a physician that they have diabetes.
- Around 6.1% of those with obesity have been told they have heart disease.
- Approximately 5.7% have been told they had a heart attack.
- About 16.7% of respondents with obesity also identified as 'current smokers'.
- Approximately 25.7% of respondents with obesity have been told they have a depressive disorder.

Figure 20 illustrates the co-occurrence of some of the health focus areas in this report with obesity.

Figure 20: Prevalence of Conditions Co-Occurring with Obesity, Rhode Island Adults, 2014



National data show that people with behavioral health issues are also more likely to be overweight or obese.[49] According to Mental Health America:

- Adults with depression are 1.2 to 1.8 times more likely than the general public to be obese.
- Adults with bipolar disorder are 1.5 to 2.3 times more likely than the general public to be obese.
- Adults with schizophrenia are 3.5 times more likely than the general public to be obese.

Chronic Diseases: Health Focus Area 2

Definition

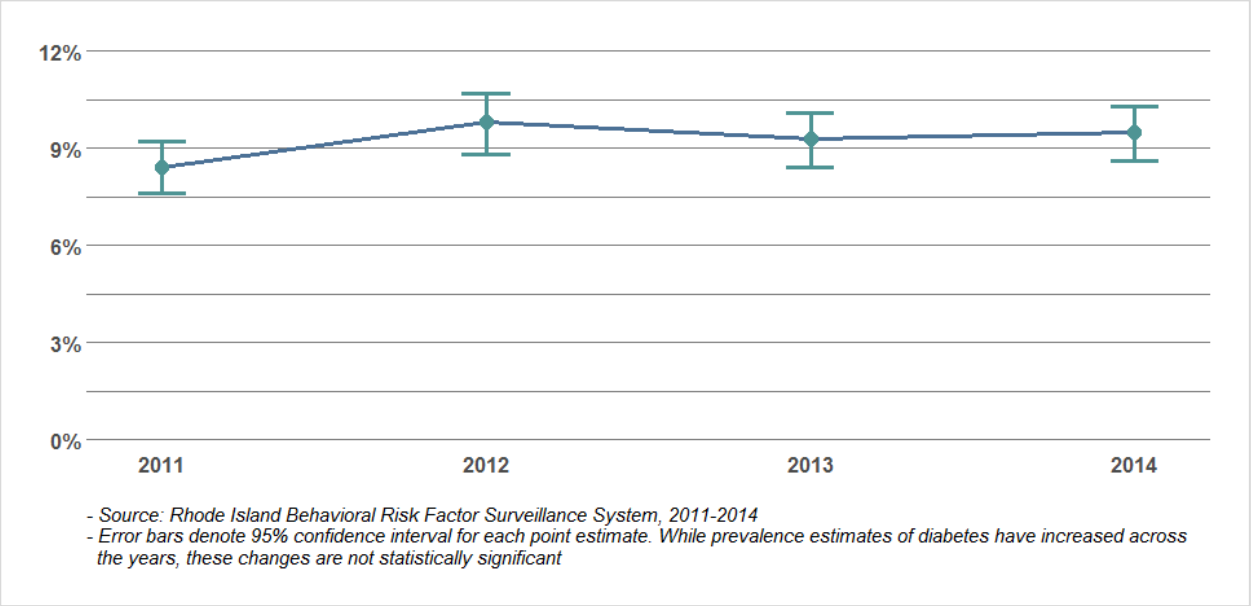
While there is no universally agreed upon definition for chronic disease, the United States National Center for Health Statistics defines a chronic disease as a condition that is either "not cured once acquired" or a condition that has "been present for three months or longer."[50] Chronic diseases such as heart disease, stroke, and diabetes are among the most common, costly, and preventable of all health problems.[51] These chronic diseases, which are responsible for much of the illness and premature deaths, are associated with four modifiable risk factors: smoking, high blood pressure, overweight/obesity, and the lack of physical activity.[52]

Diabetes

Diabetes is a chronic disease marked by high levels of blood sugar (also called blood glucose). Diabetes occurs when the body has problems either making insulin (type 1) or using insulin (type 2). This Report used 2014 RI BRFSS data to calculate the prevalence of diabetes. Rhode Islanders were classified as having diabetes if they answered yes to the question: "Have you ever been told by a doctor that you have diabetes?" RI BRFSS does not distinguish between the types of diabetes. Overall, 9.5% of Rhode Islanders reported that they had been diagnosed with diabetes.[53] Given that approximately one third of people with diabetes remain undiagnosed, the actual prevalence of diabetes in Rhode Island could be much higher.[54]

In the past five decades, the United States prevalence of diagnosed diabetes increased four-fold, and is projected to continue increasing.[55] However, in Rhode Island between 2011 and 2014, the overall prevalence of diabetes stayed fairly constant, ranging from a low of 8.4% to a high of 9.8%. As seen in Figure 21, there have been slight variations in the rate of diabetes over time, but none of these changes are statistically significant. Appropriate interventions can prevent and/or delay the onset of type 2 diabetes.

Figure 21: Prevalence of Diabetes among Adults in Rhode Island, 2011-2014.



Prevalence across the Life Span

Pregnant Women—Gestational Diabetes

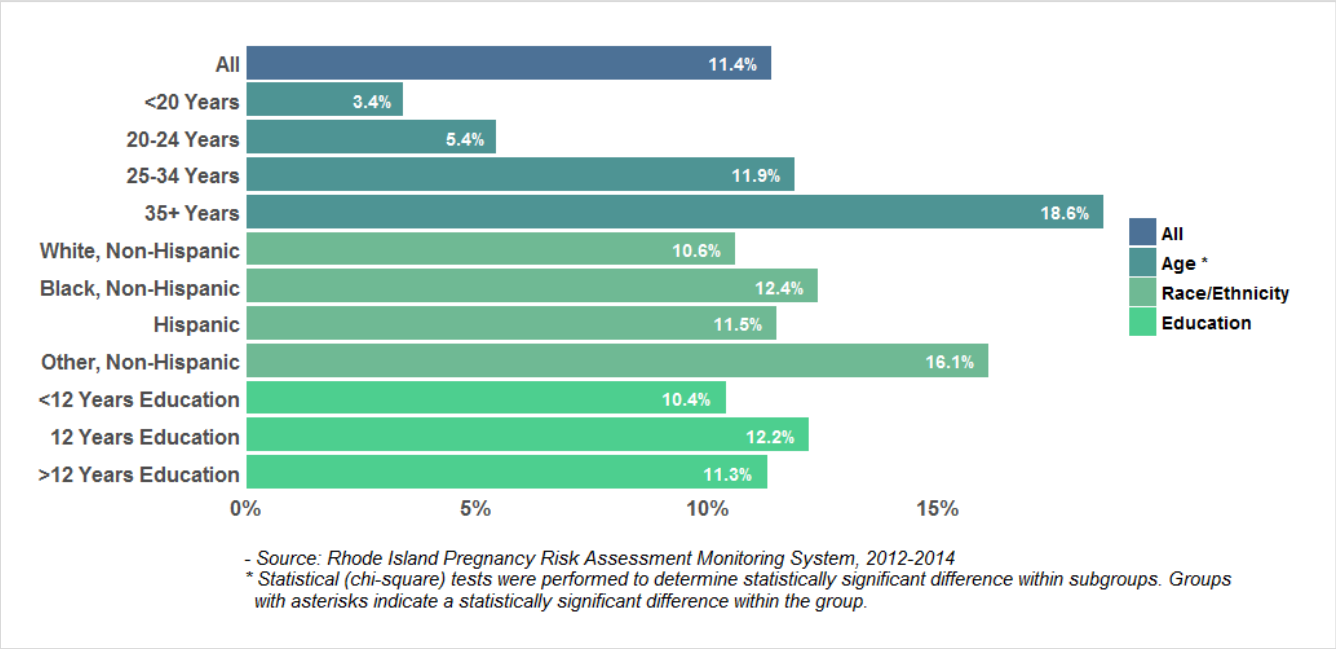
Gestational diabetes is diabetes that is first seen or diagnosed while a woman is pregnant. Although many women with gestational diabetes are overweight or obese before getting pregnant, women with healthy weights also can develop gestational diabetes. Other known risk factors for gestational diabetes include having a family history of gestational diabetes, being pregnant with twins, and being older than 25.[56] Women with gestational diabetes are at higher risk of having high blood pressure, having cesarean delivery, and giving birth to babies that are large for their gestational age.[57] Babies born to women with gestational diabetes are at higher risk for stillbirth, injury during birth, low blood sugar, and Type 2 diabetes later in life.[58]

According to data from the Pregnancy Risk Assessment Monitoring System (PRAMS) survey conducted between 2012 and 2014, 11.4% of pregnant mothers in Rhode Island were diagnosed with gestational diabetes, which exceeds the most recent national estimates of 9.2%.[59] However, researchers from the Rhode Island Department of Health (RIDOH) note that the state might have a "more complete assessment of gestational diabetes compared to other states", which may contribute to a higher rate of diagnosis. It is also difficult to determine whether mothers have gestational diabetes, or undiagnosed Type 2 diabetes, especially because women of childbearing age are not usually screened for diabetes before they become pregnant.[60]

Figure 22 presents the rates of gestational diabetes by maternal age, race/ethnicity, and educational attainment. Analysis determined that maternal age was significantly associated with the presence of gestational diabetes, with increasing age being associated with an increased risk of developing gestational

diabetes. Between 2012 and 2014, pregnant women older than 35 had an 18.6% rate of gestational diabetes compared to a rate of 5.4% for pregnant women between age 20-24. Neither maternal race/ethnicity or education was associated with the presence of gestational diabetes; however, it is possible the lack of significance between gestational diabetes and other factors may be due to small sample sizes.

Figure 22: Rates of Gestational Diabetes in Rhode Island by Mother's Age, Race/Ethnicity and Education, 2012 - 2014.



Children and Adolescents

Children with diabetes are not examined in this *Health Assessment Report*. Although type 2 diabetes is the most common form of diabetes, it is fairly uncommon in children. Also, there is a scarcity of data on children with either type of diabetes, making it difficult to accurately represent or analyze this population. Future versions of this Report may be better able to capture and examine the presence of diabetes among Rhode Islanders younger than 18.

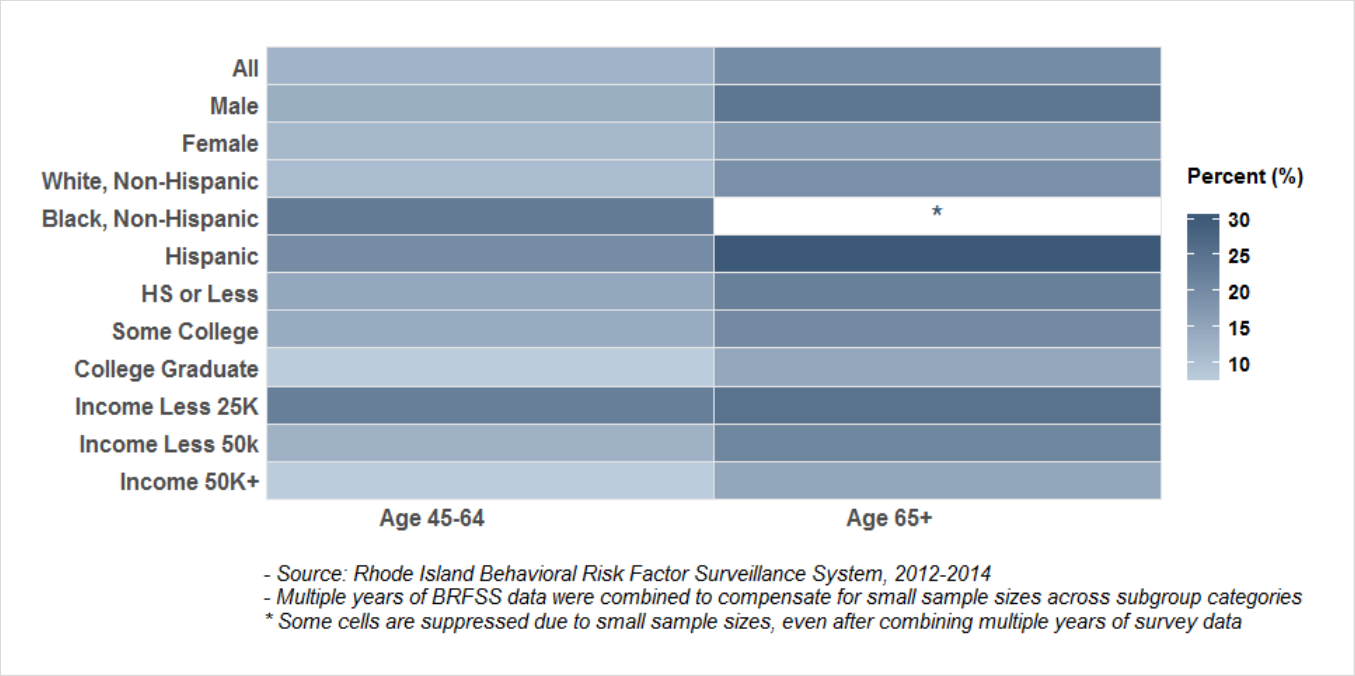
Adults

Among Rhode Island adults, the prevalence of diabetes increases with age. BRFSS data from 2012 and 2014 estimates that 5% of adults age 35-44 have been diagnosed with diabetes compared to 12.3% of adults age 45-64.

Older Adults

Diabetes rates are even higher among older adults. Across all Rhode Island adults age 65 or older, 19.9% of adults reported being told they had diabetes. Figure 23 illustrates higher reported rates of diabetes among Rhode Islanders who are 65 or older and among some subgroups of Rhode Islanders age 45-64.

Figure 23: Diabetes Prevalence, by Age, Sex, Race/Ethnicity, Education, and Income, 2012 - 2014.

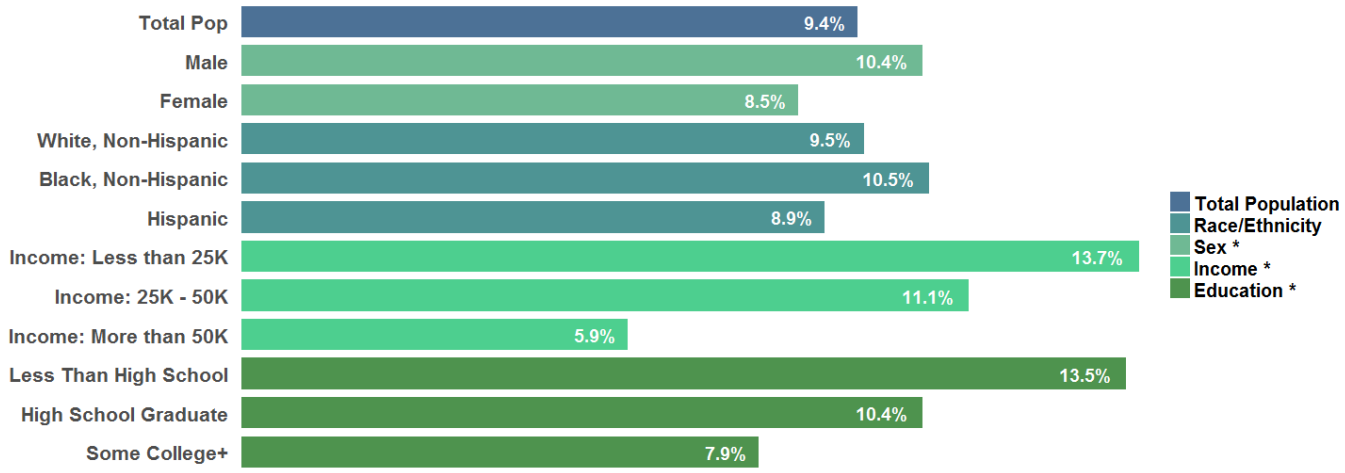


- Source: Rhode Island Behavioral Risk Factor Surveillance System, 2012-2014
- Multiple years of BRFSS data were combined to compensate for small sample sizes across subgroup categories
** Some cells are suppressed due to small sample sizes, even after combining multiple years of survey data*

At-Risk Populations and Disparities

Data on diabetes among racial and ethnic subgroups are unreliable due to small sample sizes. However, there is statistically significant difference in diabetes prevalence among Rhode Islanders by gender, income, and education. Figure 24 illustrates that as income and educational levels increase, rates of diabetes decrease. Males also have higher rates of diabetes than females.[61]

Figure 24: Diabetes Prevalence among Rhode Island Adults by Sex, Race/Ethnicity and Education, 2014.



- Source: Rhode Island Behavioral Risk Factor Surveillance System, 2014
- Estimates above demonstrate crude prevalence and have not been adjusted for age
** Statistical (chi-square) tests were performed to determine statistically significant differences within subgroups. Groups with asterisks indicate a statistically significant difference within the group.*

Co-Morbidities

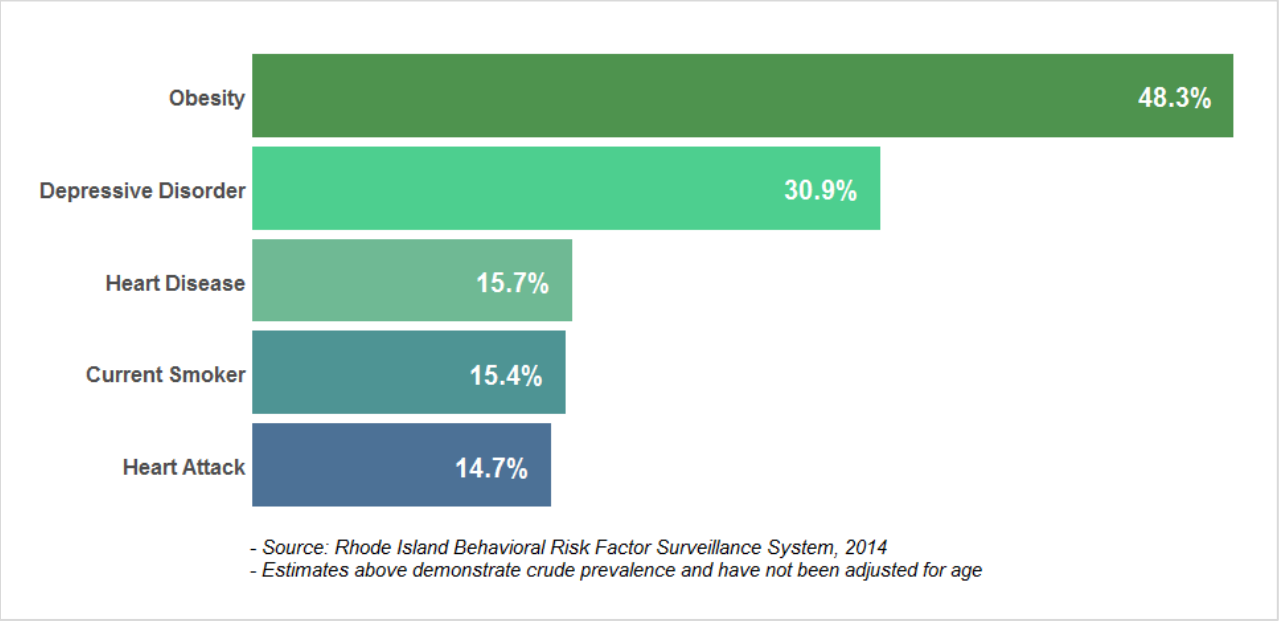
Analysis of RI BRFSS data collected in 2012- 2014 reveal that a variety of conditions and behaviors co-occur with diabetes:

- Approximately 48.3% of respondents with diabetes are obese.
- Around 15.7% of those with diabetes have been told they have heart disease.
- Approximately 14.7% have been told they had a heart attack.
- About 15.4% of respondents with diabetes also identified as 'current smokers'.
- Approximately 30.9% of respondents with diabetes have been told they have a depressive disorder.

Furthermore, the cost of treating diabetes is as much as four times higher for individuals with an untreated co-occurring condition such as depression or alcohol addiction.[62]

Figure 25 illustrates the co-occurrence of some of the health focus areas in this report with diabetes.

Figure 25: Prevalence of Conditions Co-Occurring with Diabetes, Rhode Island Adults, 2014.

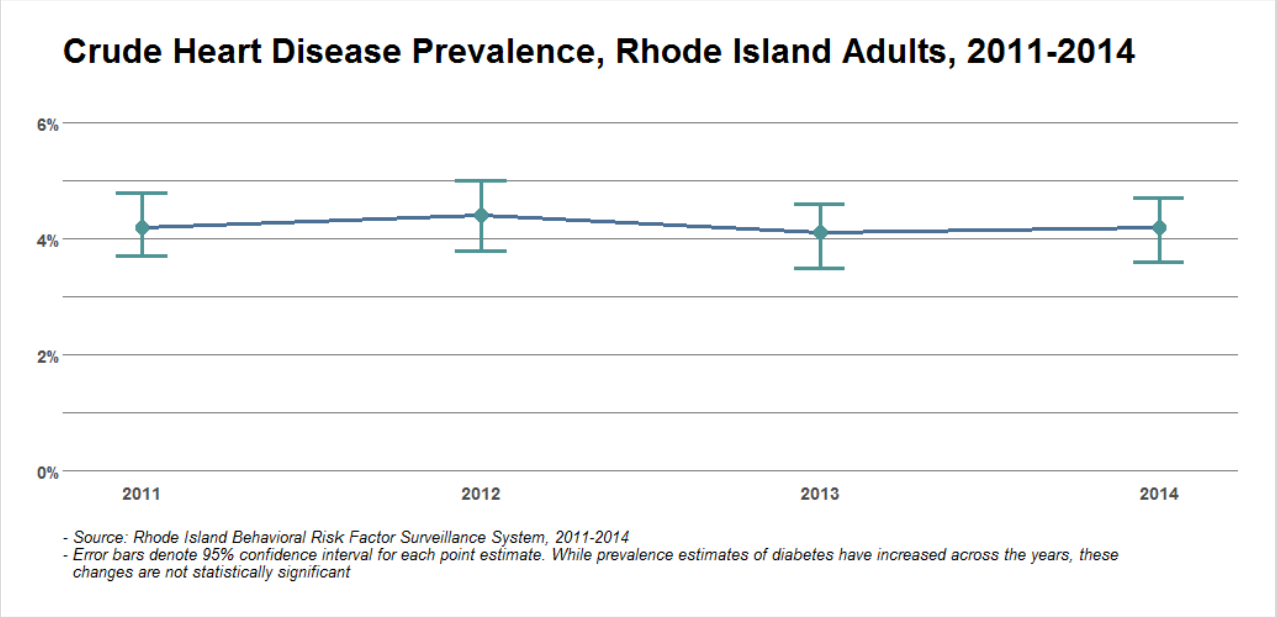


Heart Disease and Stroke (Cardiovascular Diseases)

Cardiovascular diseases include diseases of the heart and hypertension (high blood pressure), as well as cerebrovascular diseases, such as stroke. Modifiable risk factors that increase the risk of developing and dying from cardiovascular diseases include tobacco use, physical inactivity, an unhealthy diet, high blood pressure, high cholesterol, overweight or obesity, and type 2 diabetes.[63]

Heart disease and stroke are major causes of disability and cardiovascular diseases remain the leading cause of death in the United States.[64] This Report measures the prevalence of heart disease and stroke using self-reported data from the RI BRFSS which asks, "Has a nurse, doctor, or other healthcare professional ever told you that you had the following…" and allows respondents to select among a series of health conditions. Three of those conditions are heart disease/angina, heart attack/myocardial infarction, and stroke. In 2014, 4.2% of Rhode Islanders reported being told they had heart disease/angina, 4.3% reported being told they have had a heart attack/myocardial infarction, and 2.5% reported being told they had a stroke[65]. As seen in Figure 26, the rates of heart disease, heart attacks, and stroke have remained fairly stable in Rhode Island between 2011 and 2014.

Figure 26: Heart Disease/Angina Prevalence among Rhode Island Adults, 2011-2104.



Prevalence across the Life Span

Rates of heart disease vary across the life span in Rhode Island, with higher rates being observed among individuals age 65 or older. The number of individuals who report having been told they had a stroke is too few to accurately estimate prevalence among different age categories.

Children and Adolescents

Data on heart disease among children in Rhode Island were not available for this Report.

Older Adults

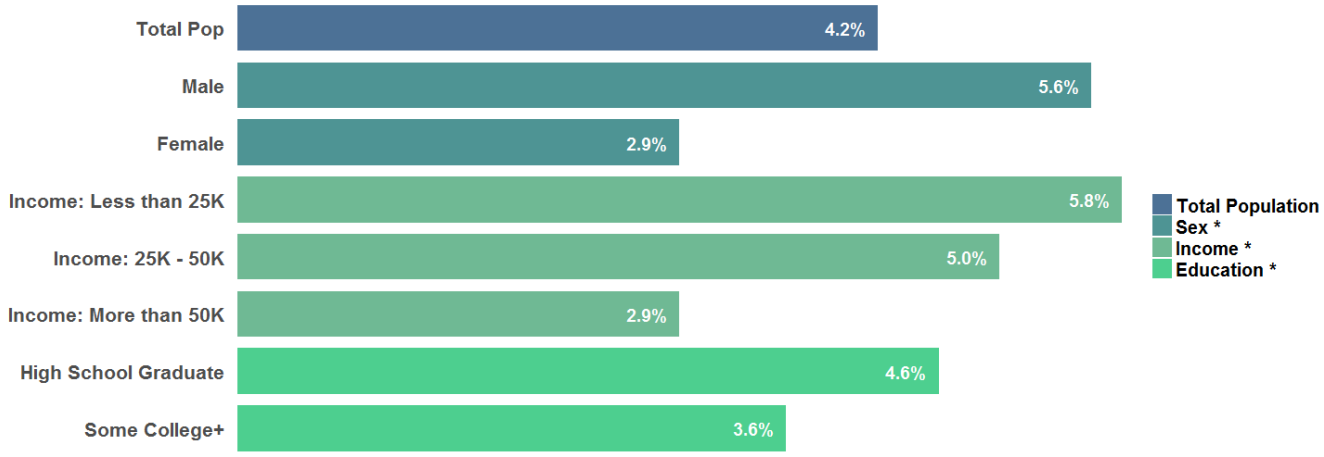
Between 2012 and 2014, 12.2% of Rhode Islanders age 65 years or older reported being told they had heart disease/angina, 12.1% reported being told they have had a heart attack, and nearly 7% reported being told they have had a stroke. In the 65+ age group, males reported statistically significant higher rates of heart attack (17.4% vs. 8.5%) and heart disease (17.7% vs. 8.2%) than their female counterparts. Across income groups in adults age 65 or older, the prevalence of all three heart disease conditions decreases as income increases.

At-Risk Populations and Disparities

Data on stroke occurrence in Rhode Island are too few to produce reliable prevalence estimates among any subgroups, as are data on heart disease among race and ethnic subgroups. However, there is a statistically

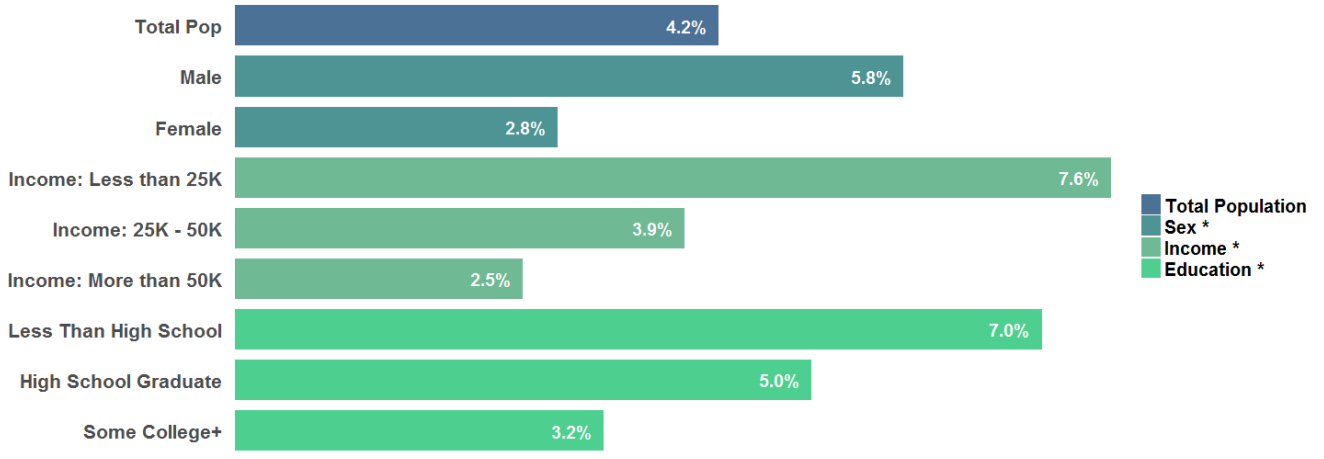
significant difference between males and females, with males having higher rates of stroke and heart disease. Rates of heart attack also decrease as income and educational levels increase. Figure 27 shows the presence of heart disease and heart attacks among various subgroups.

Figure 27: Coronary Heart Disease Prevalence among Rhode Island Adults, by Sex, Income, and Education, 2014.



- Source: Rhode Island Behavioral Risk Factor Surveillance System, 2014
- Estimates above demonstrate crude prevalence and have not been adjusted for age
** Statistical (chi-square) tests were performed to determine statistically significant differences within subgroups. Groups with asterisks indicate a statistically significant difference within the group.*

Figure 28: Heart Attack Prevalence among Rhode Island Adults, by Sex, Income, and Education, 2014.



- Source: Rhode Island Behavioral Risk Factor Surveillance System, 2014
- Estimates above demonstrate crude prevalence and have not been adjusted for age
** Statistical (chi-square) tests were performed to determine statistically significant differences within subgroups. Groups with asterisks indicate a statistically significant difference within the group.*

Co-Morbidities

Analysis of RI BRFSS data collected in 2012- 2014 reveal that a variety of conditions and behaviors co-occur with heart disease and stroke.

Of those who have been told they have heart disease:

- Approximately 38.0% are obese;
- Around 35.7% have been told they have diabetes;
- Approximately 49.3% have been told they had a heart attack; and
- Approximately 33.1% have been told they have a depressive disorder.

Of those who have been told they had a heart attack:

- Approximately 34.7% are obese;
- Around 32.7% have been told they have diabetes;
- Approximately 48.5% have been told they have heart disease;
- Around 21.0% identified as 'current smokers'; and
- Approximately 28.3% have been told they have a depressive disorder.

Of those who have been told they had a stroke:

- Approximately 34.3% have been told they have a depressive disorder.

In addition, chronic medical conditions, including heart disease and stroke, can result from persistent, long-term heavy drinking.[66] Figures 29 and 30 illustrate the co-occurrence of some of the health focus areas in this report with heart disease and heart attacks.

Figure 29: Prevalence of Conditions Co-Occurring with Heart Disease, Rhode Island Adults, 2014

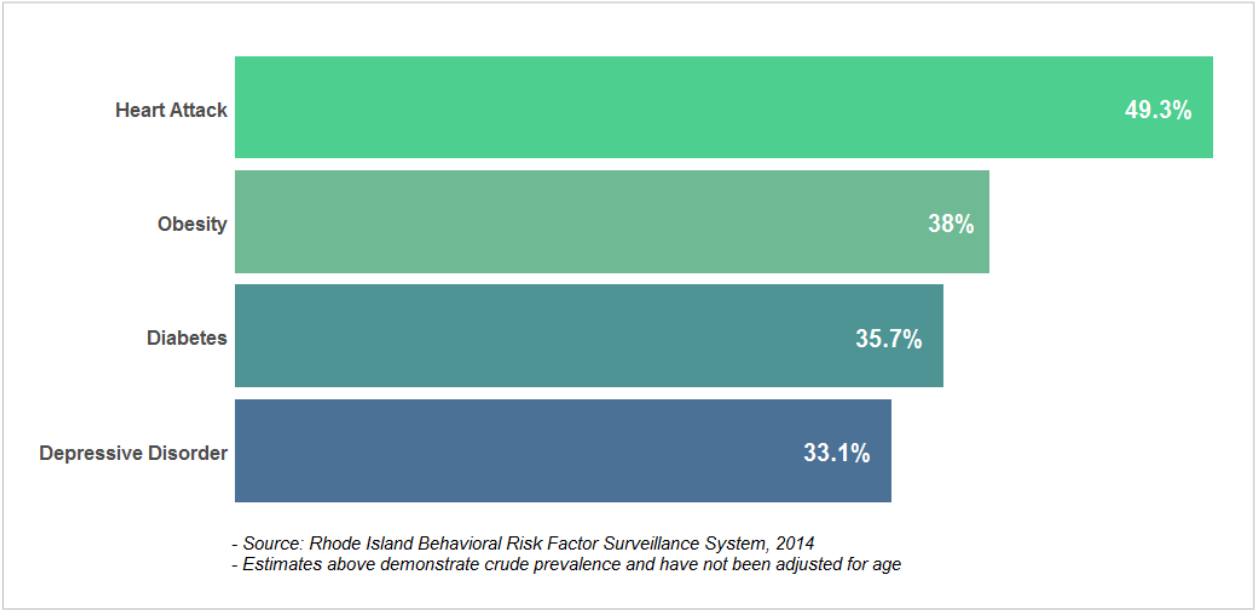
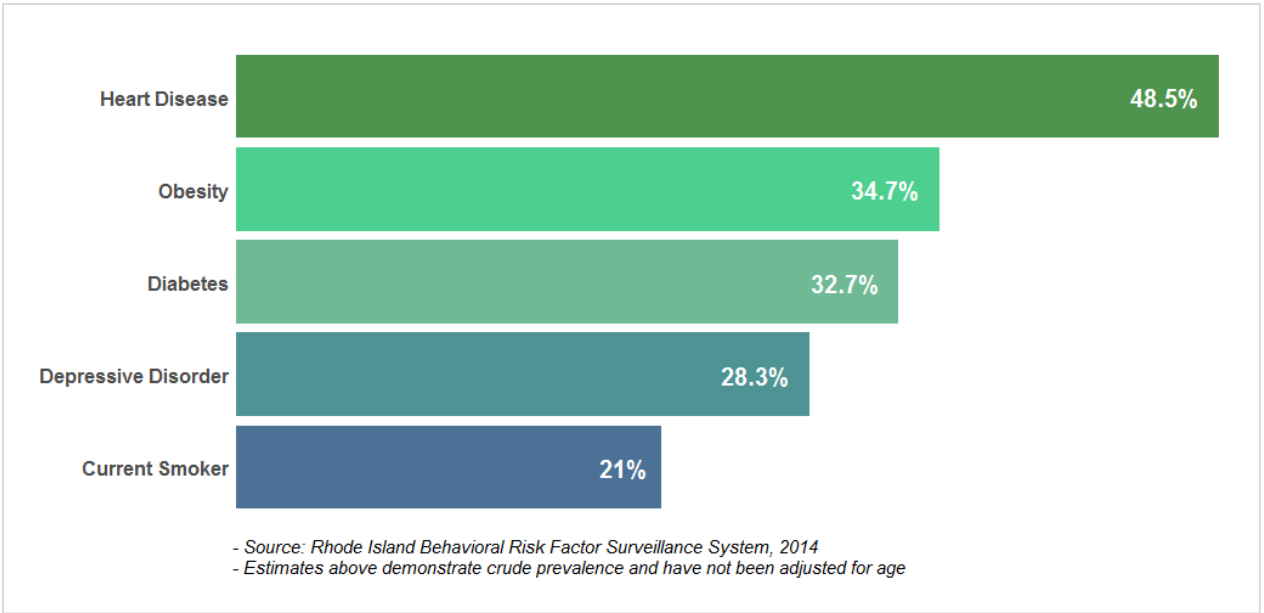


Figure 30: Prevalence of Conditions Co-Occurring with Heart Attack, Rhode Island Adults, 2014.



Tobacco Use: Health Focus Area 3

Definition

Tobacco use encompasses the use of a range of products, including cigarettes, pipes, dipping tobacco, and to electronic nicotine delivery systems. However, for Rhode Island adults, this Report focuses on cigarettes. Smoking status determined from self-reported data from the Rhode Island Behavioral Risk Factor Surveillance System (RI BRFSS). Respondents are considered current smokers if they have smoked 100 or more cigarettes during their lifetime and answer "every day" or "some days" to the question: "Do you now smoke cigarettes every day, some days, or not at all?".

For pregnant women, this report uses responses from the Pregnancy Risk Assessment Monitoring System (PRAMS) survey, which asks new mothers several questions about smoking. The rate of smoking during pregnancy reflects the percentage of mothers who indicated that they smoked in response to the question "In the last three months of your pregnancy, how many cigarettes did you smoke on an average day?".[67]

To examine tobacco use among Rhode Island high school students, this Report examines the use of a wide range of tobacco products, including cigarettes, cigars, hookahs, as well as, smokeless tobacco, and "electronic vapor products" (i.e., e-cigarettes, e-cigars, e-pipes, vape pipes, vaping pens, e-hookahs, and hookah pens) using self-reported data from the Rhode Island Youth Risk Behavior Survey (RI YRBS). High school students are considered current users of these tobacco products if they indicate they used them at least once during the 30 days before the survey was conducted.

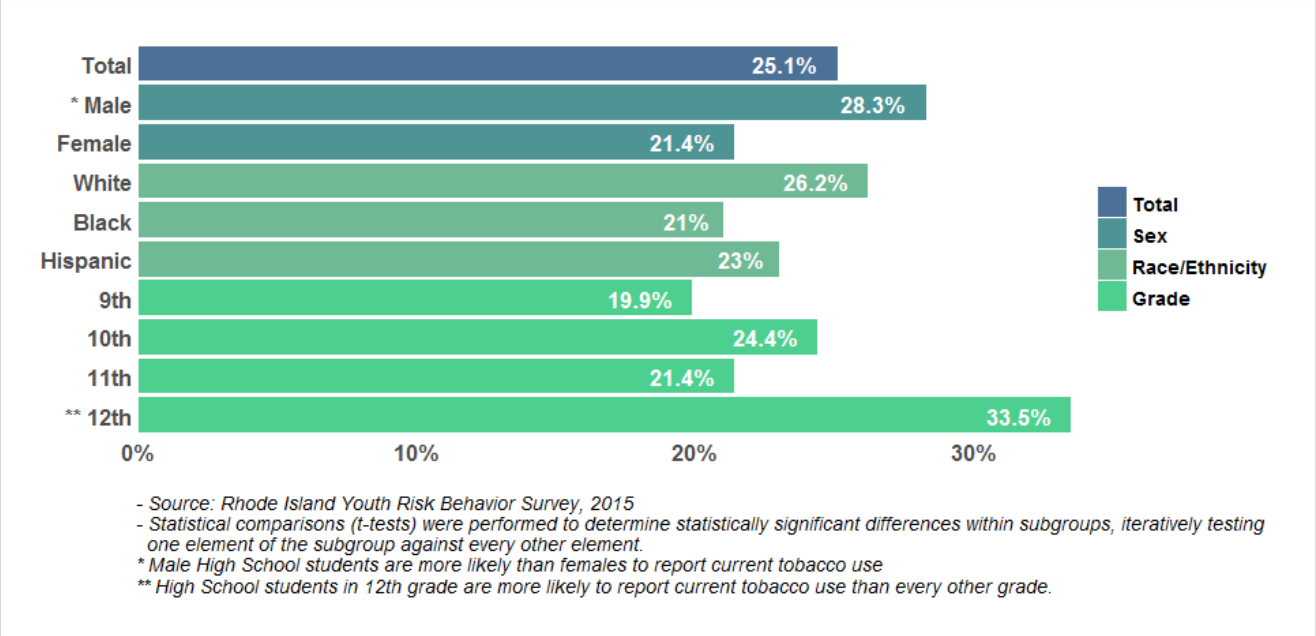
Prevalence across the Life Span

Children and Adolescents

In keeping with the national trend, cigarette use among Rhode Island high school students is down dramatically. In 2015, only 4.8% of students reported using at least one cigarette in the 30 days before the survey (down from 15.9% in 2005). However, the overall use of tobacco is much higher. In the 2015 survey, 25.1% of students reported using a tobacco product in the 30 days before the survey and more than 40% of students reported trying electronic vapor products at least once.

Figures 31 and 32 show high school tobacco use and high school electronic vapor use, and there is a statistically significant difference in use between male and female students and 12th graders versus other high school grades. Differences in electronic vapor use are only statistically significant between 12th graders and lower high school grades.

Figure 31: Cigarette Smoking Prevalence in Past 30 days among High School Students in Rhode Island, by Sex, Race/Ethnicity, and Grade. 2015.

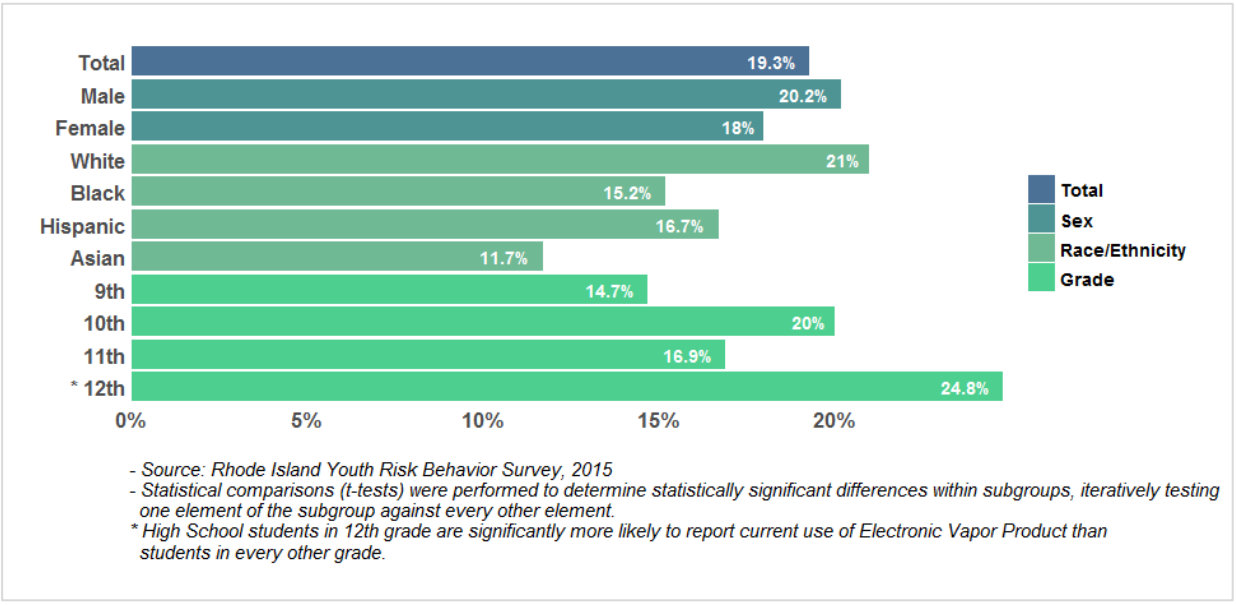


- *Source: Rhode Island Youth Risk Behavior Survey, 2015*
- *Statistical comparisons (t-tests) were performed to determine statistically significant differences within subgroups, iteratively testing one element of the subgroup against every other element.*

** Male High School students are more likely than females to report current tobacco use*

*** High School students in 12th grade are more likely to report current tobacco use than every other grade.*

Figure 32: Electronic Vapor Product Use in Past 30 days among High School Students in Rhode Island, by Sex, Race/Ethnicity, and Grade. 2015.



- *Source: Rhode Island Youth Risk Behavior Survey, 2015*
- *Statistical comparisons (t-tests) were performed to determine statistically significant differences within subgroups, iteratively testing one element of the subgroup against every other element.*

** High School students in 12th grade are significantly more likely to report current use of Electronic Vapor Product than students in every other grade.*

High school students report smoking electronic vapor products, cigars, and hookahs at a higher rate than they smoke cigarettes. In 2015, 19.3% of high school students reported using electronic vapor products at

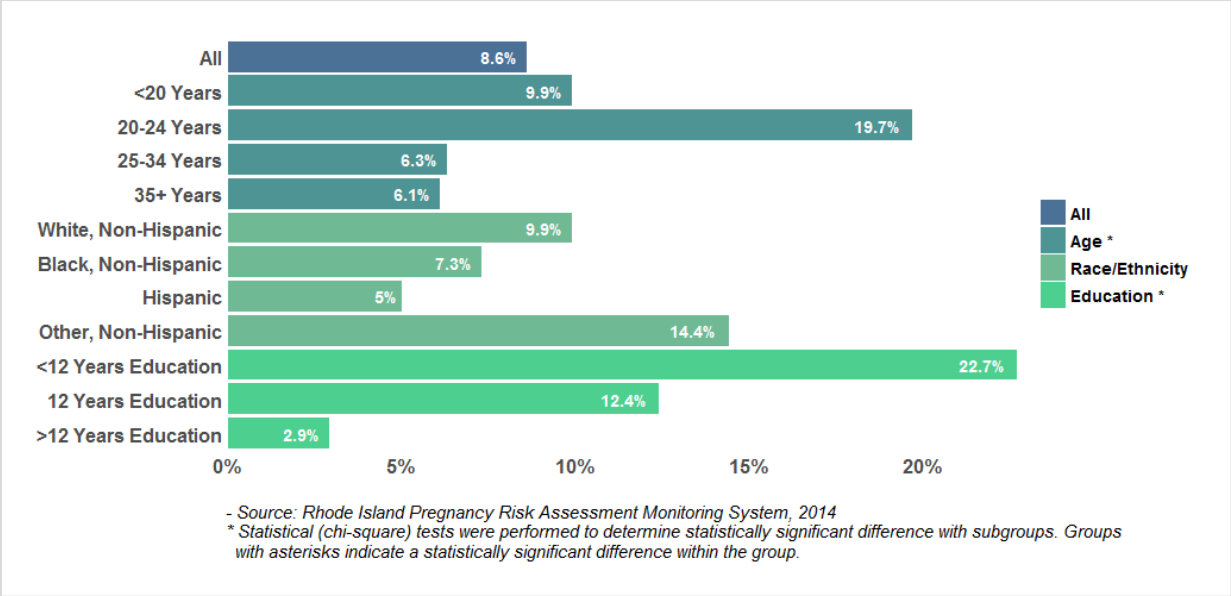
least once during the past month, more than 8% smoked a cigar and 9.2% reported using a hookah. Smokeless tobacco is also more popular than cigarettes, but only slightly. Just more than 5% of high school students reported using "chewing tobacco, snuff, or dip" in the past month.

As previously noted, cigarette use among high school students has dramatically declined in the past 10 years. Cigar use follows a similar downward trend, while use of smokeless tobacco products has varied year by year, perhaps due to a low sample size of users. The YRBS has no historic data regarding e-cigarettes (the 2015 survey asked about these products for the first time) so subsequent surveys will provide important trending data about the use of these products.

Pregnant Women

The rate of Rhode Island mothers who smoked in their last trimester decreased from 13.4% in 2006 to 8.3% in 2014.[68] However, this rate is higher than the *Healthy People 2020* goal of 1.4% of women smoking during pregnancy (or conversely, 98.6% of females reporting that they abstained from cigarettes while pregnant).[69] Figure 33 below shows differences in smoking rates among subgroups of pregnant women. Age and education were associated with tobacco use during pregnancy. The small sample size may limit the ability to determine if race/ethnicity was associated with tobacco use during pregnancy.

Figure 33: Women Smoking During Pregnancy in Rhode Island, by Sex, Income, and Education, 2014.



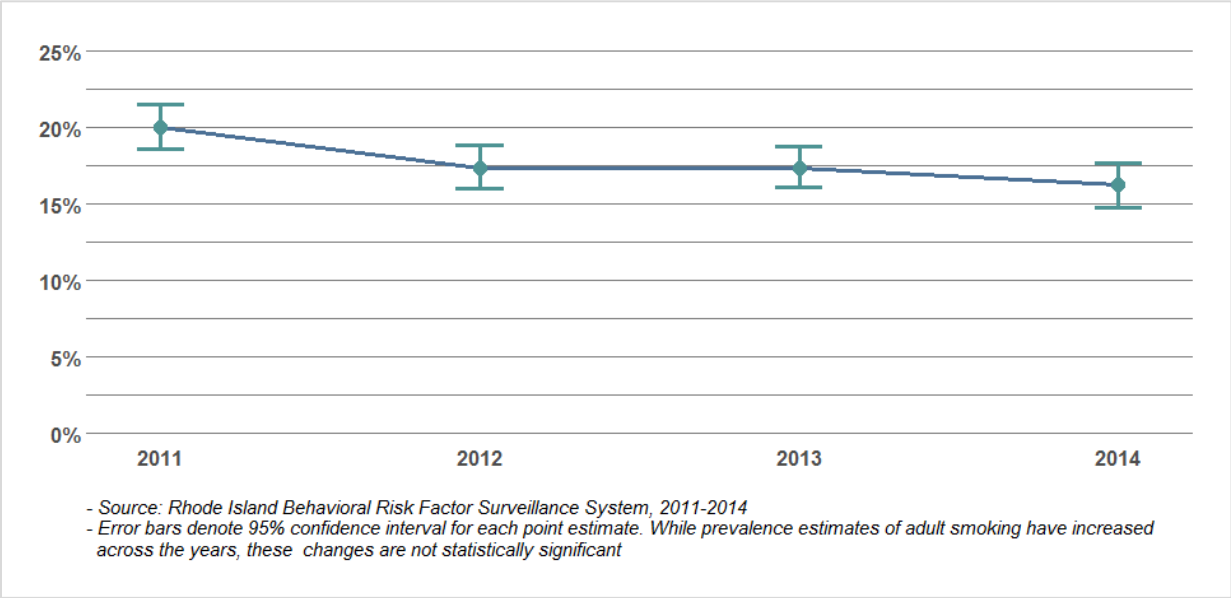
- Source: Rhode Island Pregnancy Risk Assessment Monitoring System, 2014
** Statistical (chi-square) tests were performed to determine statistically significant difference with subgroups. Groups with asterisks indicate a statistically significant difference within the group.*

Adults

According to the 2014 RI BRFSS, 16.3% of Rhode Island adults are self-reported current smokers. Although smoking rates vary among Rhode Island's sub-populations, all experienced a decline in smoking in the past

10 years.[70] Between 2011 and 2014, smoking prevalence in Rhode Island dropped significantly from 20% to 16.3%.[71] Figure 34 illustrates the percent of adults who are current smokers.

Figure 34: Percent of Rhode Island Adults that are Current smokers, 2011-2104.



Future versions of this *Health Assessment Report* will feature data on electronic tobacco use once these data are available.

Older Adults

The prevalence of smoking trends downward as Rhode Island adults age. Between 2012 and 2014, Rhode Islanders age 65 or older had the lowest prevalence of current cigarette use among all adult age groups, with only 7.7% reporting that they are current smokers. In 2014, 7.3% of Rhode Islanders older than age 65 reported being a current smoker. This age group is statistically less likely to be a current smoker than Rhode Islanders younger than 65.

At-Risk Populations and Disparities

Children and Adolescents

Regardless of the type of product, male high school students are significantly more likely to be users of tobacco than female students. As students age, they are more likely to report using tobacco. Rates for all types of tobacco products are significantly higher among high school seniors than students in other grades.

Analysis of tobacco use among ethnic/racial groups is limited by small sample sizes, although existing data indicate that differences in use vary by type of tobacco product. White, non-Hispanic students have higher

rates of e-cigarette use (21%) than Hispanic (16.7%) and Black non-Hispanic (15.2%) students, but this difference is not statistically significant. Cigar use is fairly uniform across ethnic/racial groups, ranging from 8.0% to 8.4%.

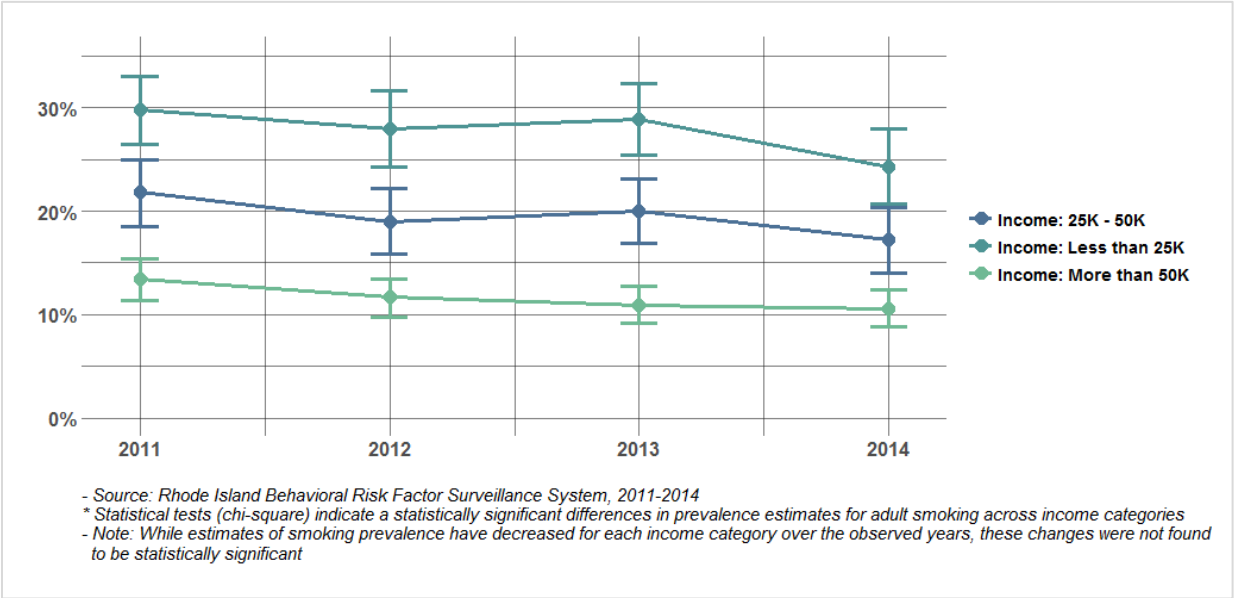
Pregnant Women

Rhode Island Department of Health (RIDOH) analysis of data collected between 2012 and 2014 found that Rhode Island women age 20-24, non-Hispanic, White women, and those with less than 12 years of education had the highest rates of smoking during pregnancy.[72]

Adults

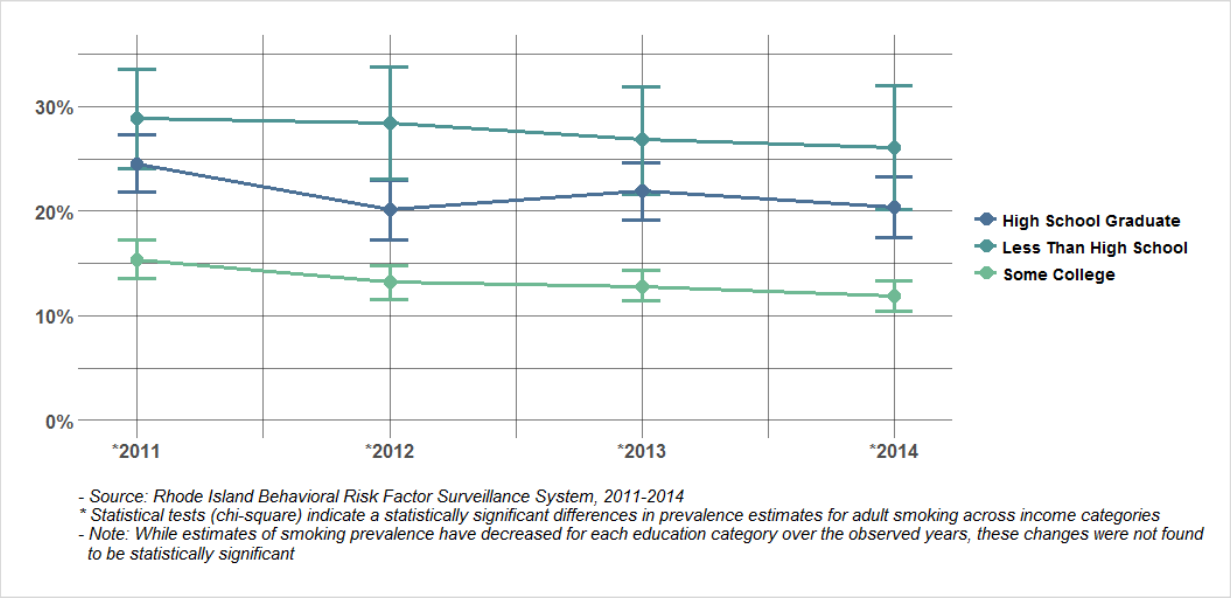
There are statistically significant differences in current smoking status by income and educational levels. Among Rhode Islanders with an annual household income of less than $25,000, the current smoking rate (24.3%) is more than double the rate among Rhode Islanders with an annual household income of more than $50,000. In general, Rhode Island smoking rates decrease as income increases. (See Figure 35.)

Figure 35: Smoking Prevalence by Income among Rhode Islanders Adults, 2011-2014.



Rates of smoking among adults decrease as educational levels increase. Rhode Islanders without a high school diploma have the highest rate of smoking, at 26.1%. This rate drops to 11.8% among Rhode Islanders with at least some college education. (See Figure 36.)

Figure 36: Smoking Prevalence by Education among Rhode Island Adults, 2011-2014.



Small sample sizes do not allow for conclusions to be drawn about racial/ethnic differences in current smoking status. Black, non-Hispanic Rhode Islanders have the highest smoking rate at 21.9%, but this percentage is based on a very small sample size and is not statistically different from other racial/ethnic groups.

Co-Morbidities

Analysis of RI BRFSS data collected between 2012 and 2014 reveal that a variety of conditions and behaviors co-occur with tobacco use.

Of those who were identified as 'current smokers':

- Approximately 27.2% are obese;
- Around 9.0% have been told they have diabetes;
- Approximately 5.5% have been told they had a heart attack; and
- About 37.2% have been told they have a depressive disorder.

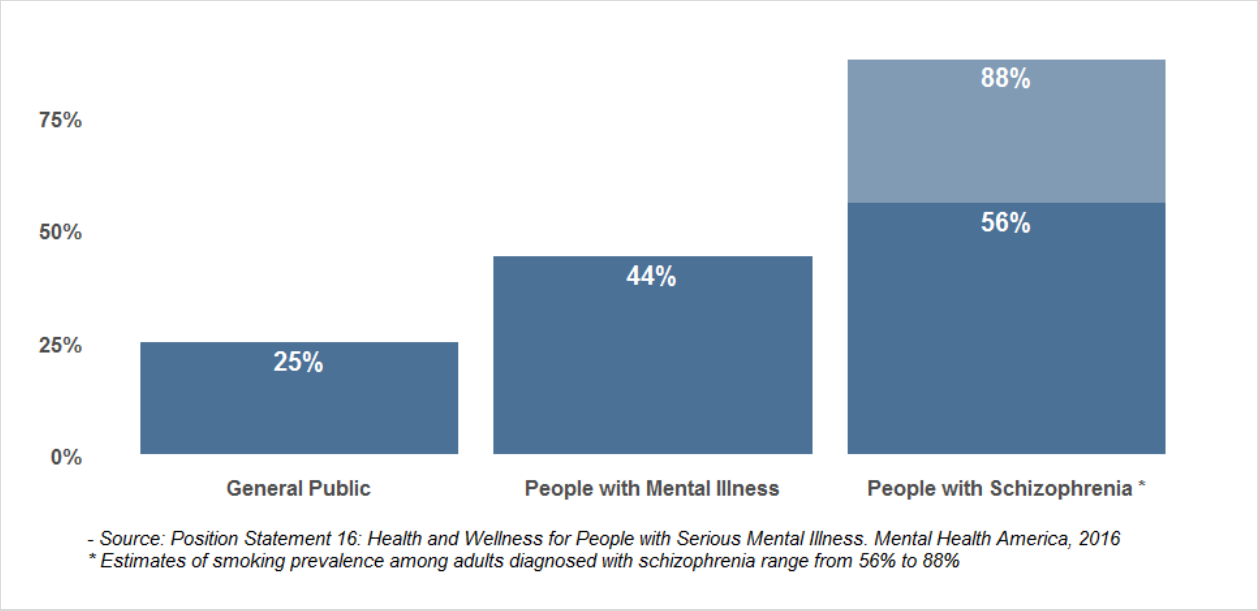
In addition, people with behavioral health needs have higher rates of smoking than the general public.[73] A Position Statement on Health and Wellness for People with Serious Mental Illness issued by Mental Health America[74] identified that nationally:

- 44% of all cigarettes smoked in the United States are by people who have a mental illness;

- Approximately 56% to 88% of people with schizophrenia smoke compared to 25% of the general public; and
- People with schizophrenia who smoke have a higher toxic exposure than other smokers, meaning they smoke more cigarettes and smoke more of each cigarette.

Figure 37 below illustrates the differences in smoking rates among the general public and United States residents with mental illness and schizophrenia.

Figure 37: Smoking Prevalence among Adults with Mental Illness in the United States and Rhode Island, 2011-2014.



- Source: Position Statement 16: Health and Wellness for People with Serious Mental Illness. Mental Health America, 2016
** Estimates of smoking prevalence among adults diagnosed with schizophrenia range from 56% to 88%*

According to the National Institutes of Health (NIH), people who currently smoke are much more likely to drink alcohol, and people who drink are much more likely to smoke.[75] Dependence on alcohol and tobacco also is correlated: People who are dependent on alcohol are three times more likely than those in the general population to be smokers, and people who are dependent on tobacco are four times more likely than the general population to be dependent on alcohol.[76]

- People who drink and smoke are at higher risk for certain types of cancer, especially cancers of the mouth and throat. Approximately 80% of cases of cancer of the mouth and throat in men and about 65% in women can be attributed to alcohol and tobacco.[77]

- Tobacco use and alcohol consumption both are major risk factors for various forms of cardiovascular disease.[78] While there is little evidence to suggest that drinking and smoking together raise the risk more than the sum of their independent effects, the negative effects from excessive tobacco use and excessive drinking and the high rates of co-occurrence are cause for concern.[79]

Opioid Use Disorders: Health Focus Area 4

Definition

Opioid Addiction

Opioid addiction (also called dependence) is a chronic brain disease that can develop with repeated daily exposure to opioids. It is characterized by the development of tolerance (the need for an increasingly higher dose to achieve the same effect) and withdrawal (an extremely painful condition that occurs when people try to stop usage abruptly). The natural progression of this disease leads to using greater amounts of drugs over time, which typically drives people to increasingly desperate and dangerous behaviors.[80]

Opioid Use Disorder

The *Diagnostic and Statistical Manual of Mental Disorders, Volume Five (DSM-V)* indicates that opioid use disorder (OUD) results from a problematic pattern of opioid use, inconsistent with use solely under medical supervision, leading to clinically significant impairment or distress as evidenced by meeting at least two of the following indicators in a 12-month period:

- Taking opiates in larger amounts or for longer periods of time than intended under medical supervision;
- Experiencing cravings;
- Continued use despite negative personal, social, and physical consequences;
- Development of tolerance; and
- Experience withdrawal.

OUD can result from the inappropriate use of prescription opioid medications, such as Vicodin, Percocet, or OxyContin, as well as illicit drugs, such as heroin.[81]

The prevalence of neonatal abstinence syndrome (NAS); past-year illicit drug dependence or abuse among individuals age 12 or older in Rhode Island presented in this Report is based on National Survey on Drug Use and Health (NSDUH) data (2009–2013).[82] The overdose-related death rates are as reported by the Rhode Island Centers for the Office of State Medical Examiners.

Prevalence across the Life Span

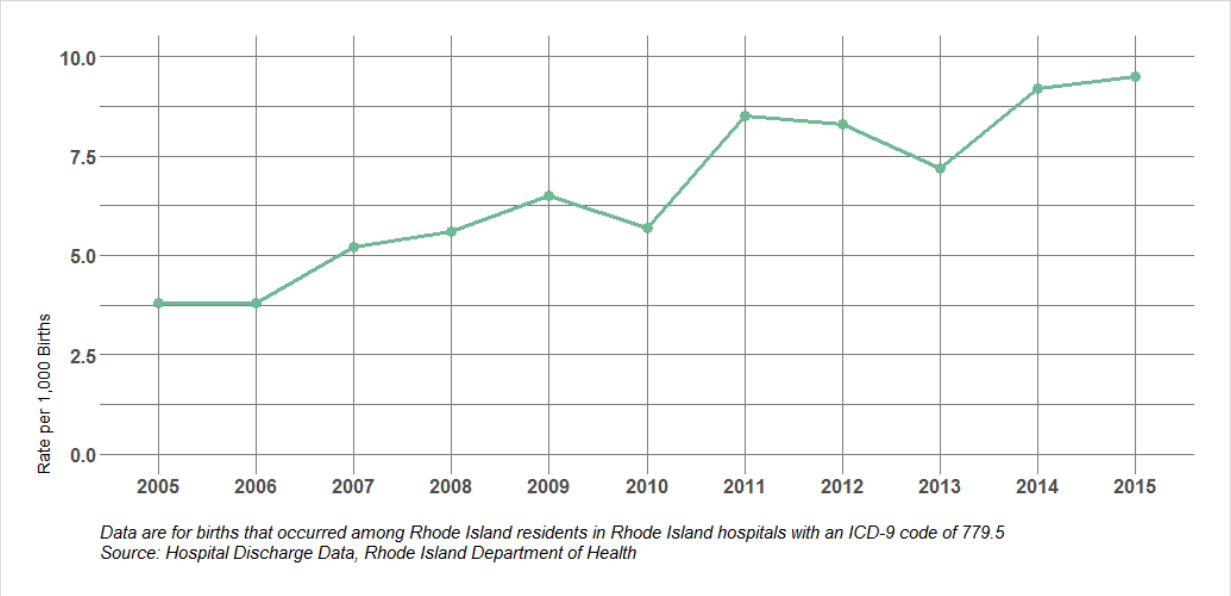
Neonates

NAS is a postnatal drug withdrawal syndrome that occurs in infants shortly after birth. NAS is most likely to occur as the result of in-utero exposure to opioids.[83] This exposure can result from maternal prescription opioid use, illicit opioid use, or medication-assisted treatment for an opioid use disorder. Newborns with

NAS experience symptoms that include central nervous system irritability (e.g., tremors, increased muscle tone, high-pitched crying, and seizures), gastrointestinal dysfunction (e.g., feeding difficulties), and temperature instability.[84]

According to a study published by the Centers for Disease Control and Prevention (CDC) in 2016, the incidence of NAS in 28 states with retrievable data from the Healthcare Cost and Utilization Project increased almost 300% from 1999 to 2013, from 1.5 to 6.0 cases per 1,000 hospital births.[85] The 2013 incidence of NAS per 1,000 births in Rhode Island was 7.2.[86] While the rate of NAS in Rhode Island is not the highest reported nationally, it has more than doubled between 2005 and the first three quarters of 2015, from 4.4 cases per 1,000 live births to 9.5 cases per 1,000 live births.[87] (See Figure 38 below).

Figure 38: Neonatal Abstinence Syndrome in Rhode Island, 2005-2015.



Data are for births that occurred among Rhode Island residents in Rhode Island hospitals with an ICD-9 code of 779.5
Source: Hospital Discharge Data, Rhode Island Department of Health

While the increase in the number of infants born with NAS is a concern, the national impact on healthcare utilization and costs is alarming.

- In some hospitals, infants with NAS comprise 50% of admissions to their Neonatal Intensive Care Units;
- Mean length of hospital stay = 23 days;
- Mean hospital charge = $93,400 per infant; and
- Total NAS inpatient cost in 2012 = $1.5 billion.[88]

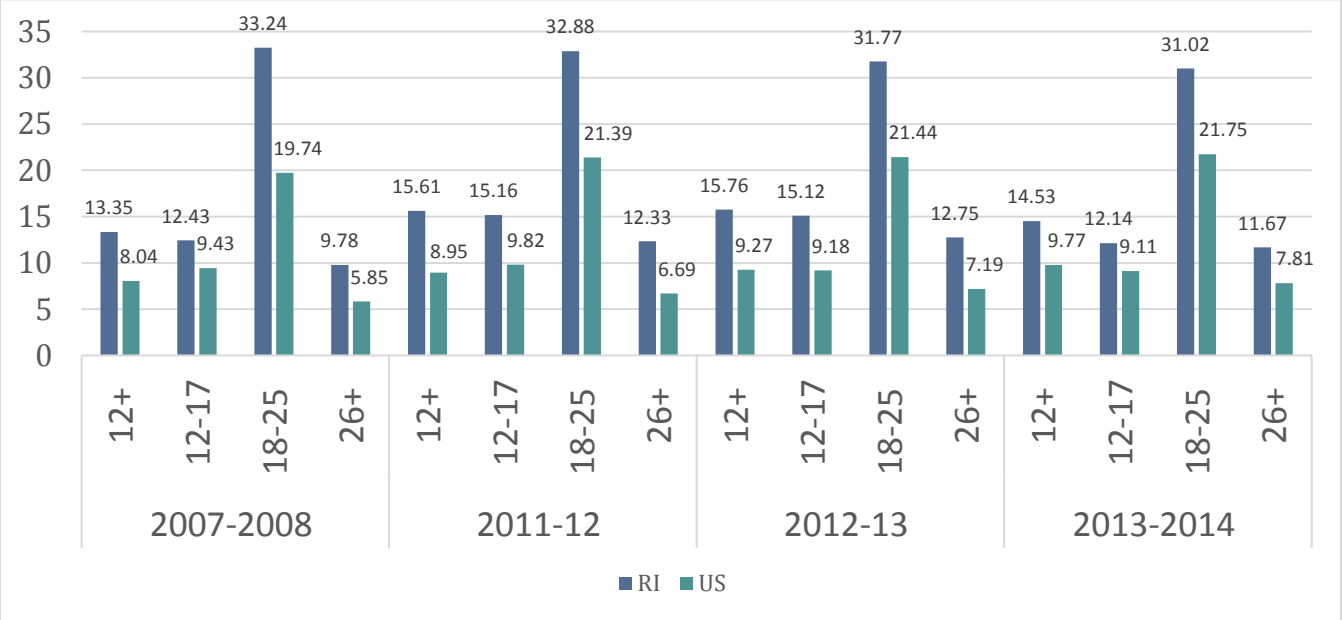
Individuals Age 12 and Older

According to data collected in the NSDUH, between 2009 and 2013, rates of illicit drug abuse or dependence among Rhode Islanders age 12 or older exceeded the national average.[89] (See Figure 39). In

2013, Rhode Island had one of the highest rates of illicit drug use in the nation, as well as the highest rate of drug overdose in New England.[90]

While the rates of prescription drug misuse among both middle and high school students have declined since 2011, according to 2015 Rhode Island Youth Risk Behavior Survey (RI YRBS) data, 12% of high school students and 4% of middle school students reported use of prescriptions drugs not prescribed to them.[91] From 2007-08 to 2013-14, for all age groups, Rhode Island had higher rates of illicit drug use compared to the national average. Despite recent decreases, Rhode Island continues to fare worse than the national average for illicit drug use in the past month across all age groups.[92] The State also ranks 35th highest for youth dependence on, or abuse of, illicit drugs or alcohol with a prevalence of 6.9%, or 5,000, youths reporting drug or alcohol dependence or abuse.[93]

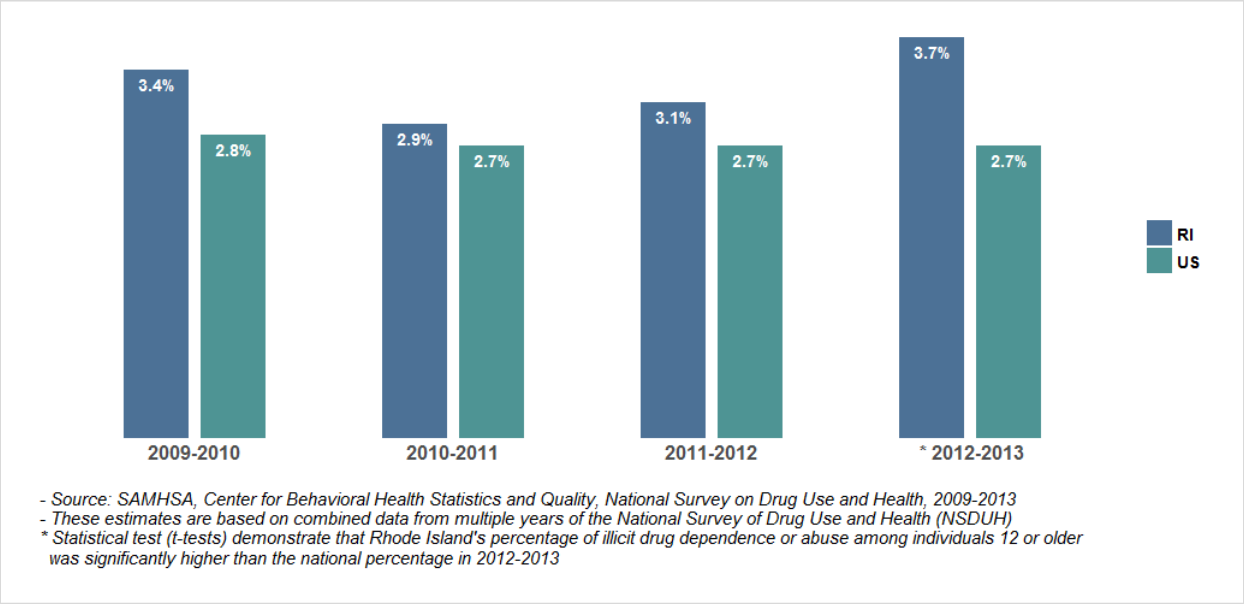
Figure38A: Any Illicit Drug Use in the Past Month (%) by Age Group, Rhode Island versus United States, 2007-2014.



Adults

Among adults, Rhode Island ranked second highest nationally for adult dependence on, or abuse of, illicit drugs or alcohol with a prevalence of 10.9% or 89,000 adults. [94]

Figure 39: Past-Year Illicit Drug Dependence or Use among Individuals Age 12 or Older, in Rhode Island versus the United States, 2009-2013.



The rate of opiate use in Rhode Island, similar to many states throughout the country, is described as an epidemic. According to a report issued by The Rhode Island Opiate Task Force, this recent increase in opiate use is directly related to a dramatic increase in the amount of opioids prescribed. The accessibility of opioid pain medications—such as Vicodin, Percocet, or OxyContin—often leads to the use of heroin, which has become much cheaper. Since 2002, rates of heroin use have doubled in the United States.[95]

Table 4 summarizes recent trends in the dispensing of opioids in Rhode Island as captured through the RIDOH Prescription Drug Monitoring Program. Between 2015 and 2016, there was a 4.4% decrease in the number of prescriptions filled for opioid pain medications. However, there was a 1.5% increase in the total number of doses prescribed during this same time. Fewer prescriptions for opioid medications, excluding buprenorphine, are being filled, but there is a slight increase in the average number of opioids dispensed per prescription. The number of prescriptions filled for methadone (to treat pain) during this same time did not change.

Table 4: Dispensing of Opioid Pain Medications* in Rhode Island, 2015-2016.

	2015	2016
Number of opioid prescriptions filled	716,254	685,042
Total doses dispensed	43,337,863	43,975,183
Average number of doses/script	60.5	64.2
Methadone prescriptions filled	6,710	6,748

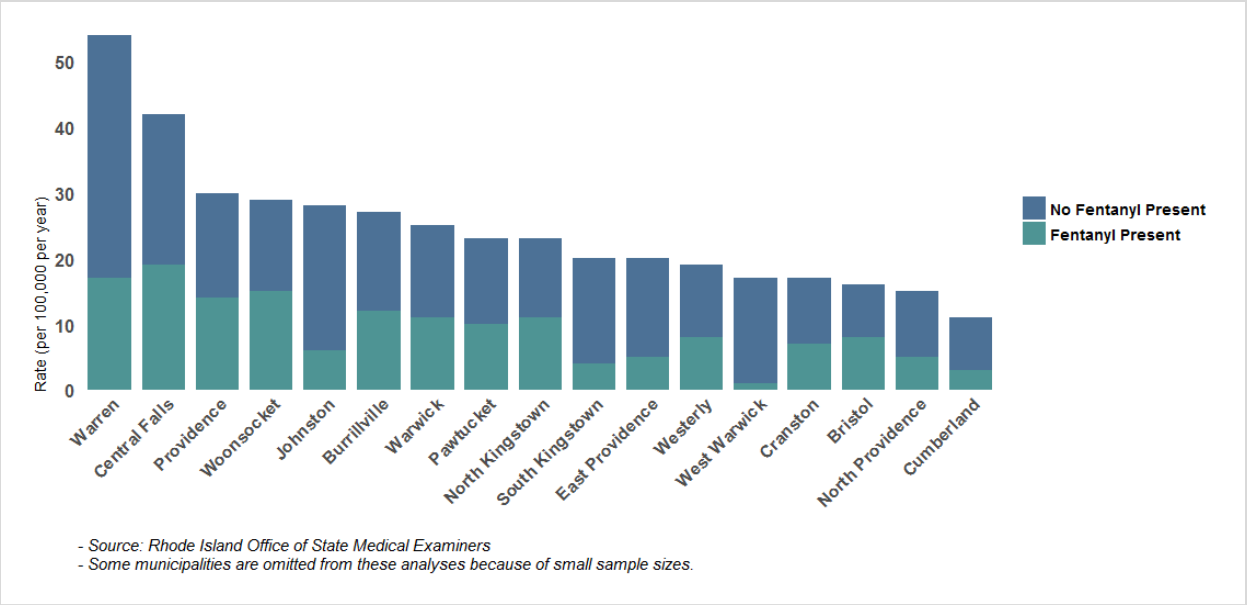
** Primary active ingredient was butorphanol, codeine, dihydrocodeine, fentanyl, hydrocodone, hydro-morphone, levorphanol, meperidine, methadone, morphine, opium, oxycodone, oxymorphone, paregoric, tapentadol, or tramadol. Excludes buprenorphine tablets, strips and patches.*

Source: Data are from Rhode Island DOH Prescription Drug Monitoring Program.

The opioid epidemic has had grave consequences for Rhode Islanders. From 2012 to 2013, the number of emergency department visits with a primary diagnosis of opioid overdose for youth/young adults up to age 19, increased by 80%, from 20 to 36; the number of visits for 20-24 year-olds increased by 32%, from 175 to 231.[96] Since 2002, the rate of heroin-related overdose deaths nearly quadrupled.[97] The death rate for all ages attributed to illicit drugs, including heroin, illicit fentanyl and cocaine, increased 400%, from 42 in 2011 to 171 in 2015.[98] Furthermore, the death rate for all ages attributed to narcotics, including opioids and hallucinogens more than doubled between 2011 and 2013. Eighty percent of overdose deaths in 2015 involved illicit drug use, up from 67-70% in prior years.[99] Overdose deaths related to fentanyl-laced illicit drugs increased from 35.3% (84/238) in 2014 to 46.9% (136/290) in 2015.[100]

According to the Rhode Island Center for the Office of State Medical Examiners, the highest rates of drug-related deaths in Rhode Island counties are (in order): Kent County, Providence County, Washington County, Newport County, and Bristol County.[101] According to the Opiate Task Force Report, reported overdose death rates for 2014-2015 were highest in Warren, Central Falls, Providence, and Woonsocket.[102]

Figure 40: Overdose-Related Death Rates Per Capita by Rhode Island City, 2014-2015.



Older Adults

While the incidence of illicit drug use is not as prevalent among older adults, age-related physiological changes, co-existing chronic health conditions, and social issues, such as isolation, make older adults a unique at-risk population with regard to prescription opioid use and misuse.[103] The increased rate of opioid use among older adults has resulted in increased medical emergencies, as evidenced by increased emergency department visits among older adults. From 2005-2011, the national rate of emergency department visits involving nonmedical use of narcotic pain relievers for patients age 55 and older increased 121%.[104] A recently published pilot study of patients older than 65 in a hospital emergency department within Rhode Island found:

- More than two-thirds of the sample of 88 patients had current or prior experience with prescription opioid use.
- Nearly one in five were actively using opioids.
- Five of the 17 active opioid users surveyed met criteria for opioid misuse. [105]

Access to Treatment

In spite of the escalation of the problem and growing need for treatment, state funding for substance abuse services decreased from about $15.5 million to $5 million between 2007 and 2014.[106] As seen in Table 5, within this time period, Rhode Island exceeded the national average in all age groups for the percent of individuals in need of, but not receiving, treatment for drug use.[107]

Table 5: Percent of Individuals Needing, but Not Receiving, Treatment for Drug Use in Rhode Island, 2011-2014.

	2011-2012			2012-2013			2013-2014		
Age Group	12-17	18-25	26+	12-17	18-25	26+	12-17	18-25	26+
US	4.0	7.0	1.4	3.5	7.0	1.5	3.3	6.4	1.6
RI	4.0	7.1	1.5	4.3	8.0	1.9	3.7	7.2	2.0

Source: 2013-14 National Survey on Drug Use and Health

There was a slight increase in the number of total substance use treatment admissions in Rhode Island, from 14,015 in 2012 to 14,406 in 2014. During this same time, treatment admissions across all ages for heroin increased from 20.5% of all substance abuse treatment admissions in 2012 to 31% of all admissions in 2014.[108]

Medication-assisted treatment (MAT), a combination of psychosocial therapy and United States Food and Drug Administration (FDA)-approved medication, is the most effective intervention to treat OUD.[109] Research has found MAT to be more effective than either behavioral interventions or medication alone. MAT significantly reduces illicit opioid use compared with nondrug approaches, and can reduce overdose fatalities.[110] Yet, the Rhode Island Governor's Overdose Prevention and Intervention Task Force estimated that in 2015 there were more than 20,000 individuals in Rhode Island with opioid use disorder not on MAT who could benefit from it.[111]

The use of peer recovery specialists in hospital emergency departments, which originated in Rhode Island, is viewed as a national model for combating opioid use disorders and is being replicated in several states including New York, New Jersey, Wisconsin, Maryland, Pennsylvania, Massachusetts, Delaware, and Connecticut. A recent study found that individuals are even more likely to participate in addiction treatment and reduce opioid use long-term if they are started on MAT while in the emergency department.[112]

Co-Morbidities

Illicit drug users are at particular risk for developing one or more primary conditions or chronic diseases, including HIV, AIDS, and viral hepatitis.[113] Similarly, individuals diagnosed with substance use disorders are roughly twice as likely to also have a diagnosed mood and/or anxiety disorder.[114] Some of the most common co-occurring mental health disorders found in individuals receiving MAT include:[115]

- Anxiety and mood disorders;
- Schizophrenia;
- Bipolar disorder;
- Major depressive disorder;
- Conduct disorders;
- Post-traumatic stress disorder; and

- Attention deficit hyperactivity disorder.

In addition to the development of addiction to prescription pain killers, older adults who misuse these drugs may be at increased risk for adverse events often associated with opioid use, such as delirium, falls, fractures, pneumonia, and increased all-cause mortality. [116]

Using alcohol while taking prescription painkillers (e.g., hydrocodone, oxycodone, morphine) can be very dangerous. Consuming alcohol even when taking a painkiller as prescribed can lead to increased intoxication and possible overdose. [117] Alcohol and opioid medications are central nervous system depressants and can slow down a person's breathing rate, and the combination of the two can significantly repress organ function, causing the body to stop breathing and can lead to brain damage or death. Older adults who mix alcohol and prescriptions opioids are at greater risk of falls resulting from loss of balance, serious memory loss, and increased effects of dementia.[118]

Maternal Child Health: Health Focus Area 5

Definition

Maternal and Child Health (MCH) is an umbrella term that covers a range of topics concerning the well-being of mothers, children, and their families. This *Health Assessment Report* focuses on a few selected measures, organized by the subcategories of pregnant mothers, infants, and children.

The metrics in this *Health Assessment Report* were selected based on priorities identified in other MCH-related state reports including: The *Maternal and Child Health (MCH) Title V Plan*; the *Children's Cabinet Strategic Plan*; and the *Rhode Island Department of Health (RIDOH) Infant Mortality Work Plan*. When possible, data that were already analyzed for those reports are reflected in this Report.

Pregnant Mothers

This sub-section takes an initial look at the health of pregnant mothers by examining rates of unintended pregnancy, teen births, delayed prenatal care, and pregnant women lacking dental care.

Definitions

Unintended Pregnancy

Unintended pregnancies are defined as pregnancies that are either mistimed or unwanted at the time of conception. Mistimed pregnancies are when the pregnancy occurred earlier than it was intended. Unwanted pregnancies are when the parents did not desire children or additional children.[119] Data on unintended pregnancy comes from the Pregnancy Risk Assessment Monitoring System (PRAMS) survey qustion which asks: "When you got pregnant with your baby, were you trying to get pregnant?"[120] Unintended pregnancies can serve as an indicator of the fertility of a population and the level of a community's unmet contraceptive and family planning resources.

Teen Births

Teen births are defined as births to women who are younger than age 20. Data on teen births come from Rhode Island birth records noting the mother's age at the time of the birth of her baby. Whether teen births are intended or not, they often create a negative ripple effect, impacting the health, economic stability, and educational attainment of both parents and their children. Babies born to teenagers are more likely to struggle academically, be incarcerated, and become teen parents themselves.[121]

Delayed Prenatal Care

When a birth is unintended or unexpected, pregnant mothers are less likely to initiate the prenatal care they need, in some cases because they are unaware of the pregnancy in its early stages. Data on delayed prenatal care come from Rhode Island birth records. After the birth of their babies, all Rhode Island mothers are asked: "how many weeks pregnant they were when they first received prenatal care".[122] Delayed prenatal care is technically defined as any time a pregnant woman starts receiving pregnancy-related care in her second or third trimester or not at all.

Early prenatal care allows health professionals to screen for and provide the healthy supports pregnant women may need including nutritional advice, mental health counseling, smoking cessation, and help leaving violent domestic situations. Prenatal care in the first trimester is also particularly important for pregnant mothers with chronic diseases who might require additional monitoring or treatment. Babies who received delayed prenatal care are at greater risk for a range of poor health outcomes, including low birth weight and death within the first year of life. [123]

Lack of Prenatal Dental Care

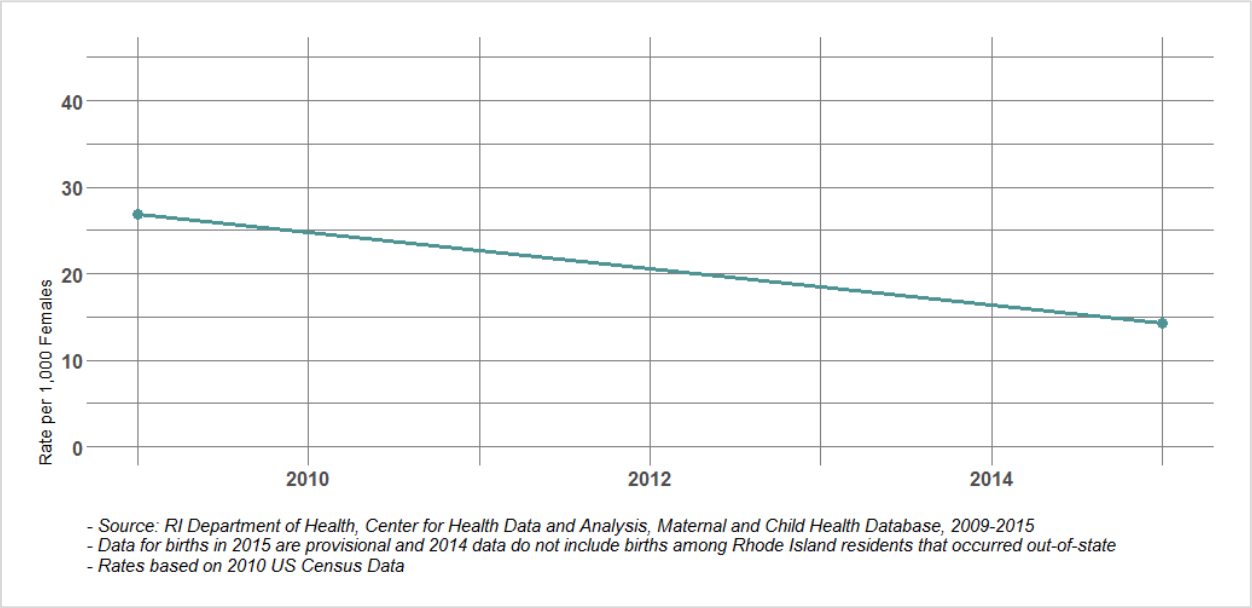
Dental care is also especially important for pregnant women. Changes in a woman's hormones and immune system during pregnancy lead to greater risk of oral health problems. Half of women develop gingivitis during pregnancy, which can lead to more serious health problems. That is why the American Academy of Pediatric Dentistry recommends that all women receive a dental exam during pregnancy.[124] Lack of prenatal dental care comes from responses to several PRAMS survey qustions about the care of pregnant women's teeth during pregnancy including the yes or no responses to: "I went to a dentist or dental clinic about a problem" and "A dental or other healthcare worker talked with me about how to care for my teeth and gums. I had my teeth cleaned by a dentist or dental hygienist."

Prevalence across the Life Span

According to PRAMS data, in 2014, 40.0% of Rhode Island pregnancies were unintended. That rate is lower than the *Healthy People 2020* target rate of 44% (described as a target of 56% *intended* pregnancies).[125] Rates of unintended pregnancies in Rhode Island have been lower than the *Healthy People 2020* target since 2002, when the state first started collecting PRAMS data. In 2011, Rhode Island had the 13th lowest rate of unintended pregnancies in the country. [126]

According to Rhode Island birth records, in 2015, the rate of teen births was 14.3 per 1,000 female adolescents. In keeping with national trends, rates of teen births s in Rhode Island have decreased in recent years, from a rate of 26.9 per 1,000 female adolescents in 2009 to 14.3 per 1,000 female adolescents in 2015.[127] Figure 41 below illustrates the steady decrease in teen births in the past six years.

Figure 41: Rhode Island Teen Birth Rates, 2009 – 2015.



In contrast to teen birth rates, the rate of unintended pregnancies in Rhode Island has remained stable. Since 2004, the rate of unintended pregnancies has hovered around 40%.[128]

Between 2011 and 2015, the overall rate of delayed prenatal care to all pregnant women was 13.5%.[129] These rates vary by whether a mother's pregnancy was intended or not. Between 2009 and 2011, 22% of Rhode Island mothers with unintended pregnancies had delayed or no prenatal care, while only 7.9% mothers with intended pregnancies delayed or skipped prenatal care.[130]

RIDOH analysis of PRAMS data from 2014 found that only 57.8% of women went to a dentist or a dental clinic during their pregnancy.[131] Since then, the state has initiated a series of programs and outreach efforts aimed at increasing dental visits during pregnancy. The State aims to increase the rate of prenatal dental care to 67% by 2020.[132]

At-Risk Populations and Disparities

While the overall rates of teen births in Rhode Island are low, rates are much higher among Rhode Island's minority and urban communities.[133]

- Hispanic/Latina teen birth rates are three times the rate of White teenagers.
- Black/African American teen birth rates are two times the rate of White teenagers.
- The rate of births by teenage mothers in the city of Central Falls is more than triple the state's overall rate.
- The other core cities of Pawtucket, Providence, and Woonsocket also have high rates of teen births.

Race/ethnicity, age, and education were statistically significantly associated with rates of unintended pregnancy. As teen births and unintended pregnancy are closely linked with delayed prenatal care, the populations that are most at-risk for missing healthcare services in the first trimester and/or skipping a visit to the dentists fit a similar profile. Pregnant women who are younger, less educated, lower income, and live in urban areas have higher rates of missing the healthcare services they need during pregnancy.[134]

Maternal and Child Health Spotlight: Infants Born at Highest Risk

Toxic stress associated with poverty, family chaos, maternal depression, and other adverse experiences can have long-term consequences on a baby's healthy development. That is why RIDOH and Rhode Island KIDS COUNT use data to identify "Infants Born at Highest Risk."

These infants are defined as babies who are born to mothers who are low-income, single, do not have a high school diploma, or are younger than age 20.

In 2015, 45% of the babies born in Rhode Island and a majority of the babies born in the core cities of Central Falls, Pawtucket, Providence, and Woonsocket had at least one of these key risk factors. The table below illustrates the presence of these risk factors among mothers in the core cities and in the state overall.

Table 6: Births by Key Maternal Risk Factors, by Four Core Cities and Rhode Island, 2015.

City	Births	% To Mothers without HSD/GED*	% To Single Mothers	% To Mothers Younger than 20	% To Mothers with All Three 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
RI	10,418	11	45	5	2

*Source: Rhode Island Department of Health, KIDSNET Database, 2015. * High school diploma or graduate equivalency degree*

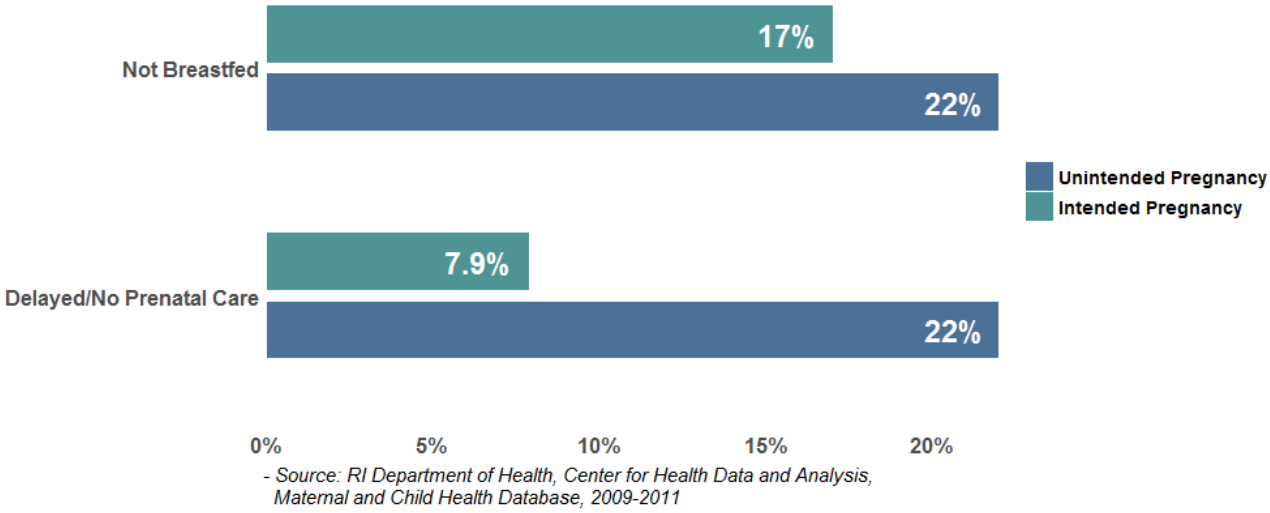
A mother's income level, marital status, educational level, and age play a key role in whether her baby lives in poverty and faces developmental challenges as it grows older.[120] In particular, children are more likely to struggle in school and experience health issues if their mothers have less education.[121] In Rhode Island, between 2011 and 2015, infant mortality rates were higher among mothers with a high school degree or less (6.8 per 1,000 births) when compared to mothers with more education (4.6 per 1,000 births).[122]

Co-Morbidities

Unintended Pregnancies

Unintended pregnancies raise the risk of a range of potential health problems for mothers and their babies. When babies are mistimed or unwanted, mothers are less likely to be physically and emotionally prepared for childbirth.[139] Unintended pregnancies are also associated with a range of risk behaviors including delayed or no prenatal care, smoking during pregnancy, and skipping prenatal vitamins. Unwanted or mistimed births also raise the risk of longer term social, economic and health issues for mothers and their babies.[140]

Figure 42: Comorbidities among Intended and Unintended Pregnancies, 2009-2011



- Source: RI Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2009-2011

Infants

This section examines the health of Rhode Island's infants during birth and the first year of life. The initial health topics for this portion of the report are rates of pre-term births, low birth weight, infant mortality, Cesarian sections (C-sections), and breastfeeding.

Definitions

Preterm Births

Preterm births are any birth that occurs before 37 weeks of gestation. However, the length of the gestation period plays a significant role in a baby's potential health outcomes. Babies born before 32 weeks gestation

are at the highest risk of death, high hospitalization costs, and serious long-term disabilities. So-called "late preterm" infants, born between 34-36 weeks gestation, are at lower risk of severe health issues but can also experience immediate and long-term health complications.[141] Data on preterm births come from Rhode Island birth records on the gestational age of a baby at birth.

The causes of preterm births are not entirely understood, but preterm births have been associated with a range of inter-related risk factors. Mothers with a history of pre-term births, who are carrying more than one fetus, and have abnormalities in their cervix or uterus appear to be at higher risk of having pre-term births. Other health factors associated with preterm births include maternal depression and maternal use of alcohol, tobacco, or other drugs during pregnancy. [142]

Low Birth Weight

Low birth weight often occurs among babies that are born prematurely, but even some infants brought to term are born at a weight that is below a healthy threshold. Babies with low birth weight are defined as those that weigh less than or equal to 2,500 grams at birth—which is equivalent to less than five pounds, eight ounces. Data on low birth weight babies come from Rhode Island birth records on the weight of a baby at birth.

Risk factors associated with low birth weight are similar to those for pre-term babies. The smallest babies—less than three pounds, four ounces—are 100 times more likely to die in their first year of life when compared to babies with a normal birth weight. Potential long-term health issues associated with preterm birth include severe physical and developmental delays.[143]

Infant Mortality

Complications of preterm birth are among the top five causes of infant mortality. Infant mortality is the number of infant deaths that occur per 1,000 live births. Deaths are considered "infant deaths" if the child died before turning one. Data on infant mortality in Rhode Island come from state vital records on infant deaths and births. In addition to low birth weight, birth defects, maternal complications, sudden infant death syndrome (SIDS), and unintentional injuries make up more than half of the causes of infant deaths in the United States.[144]

Cesarean Section

While Cesarean Sections (C-sections) are often medically necessary to protect the mother or her baby, they can also increase the risk of health issues later in the life of the mother. Women with C-sections have significantly higher rates of Intensive Care Unit (ICU) admissions, unplanned hysterectomies, and ruptured uteruses than women who deliver their babies through vaginal birth.[145] Data on caesarian sections come from Rhode Island birth records.

Breastfeeding

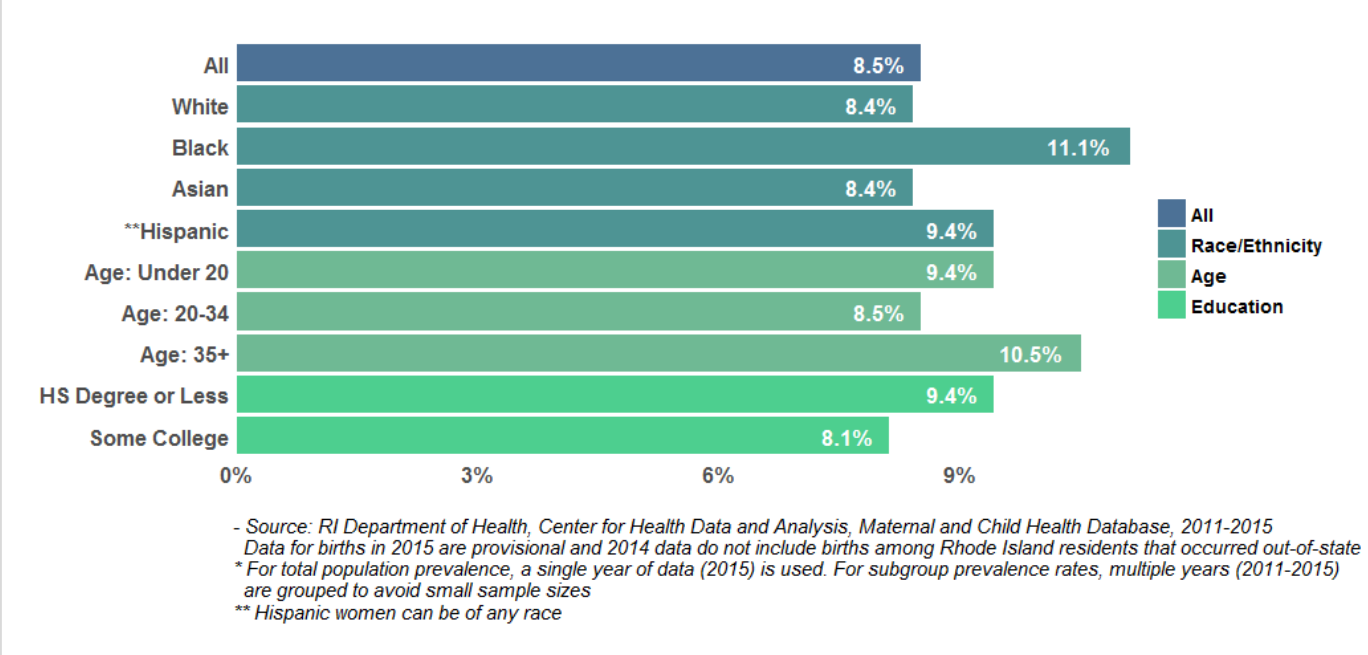
Breast milk is the ideal source of nutrition for infants in their first year of life. Experts recommend that mothers exclusively breastfeed their babies until the age of six months, breastfeed alongside solid foods until their babies turn one, and continue to breastfeed as long as both the baby and the mother want to continue.[146] Breastfeeding is associated with reduced risks of childhood obesity, type 1 and type 2 diabetes, and sudden infant death syndrome (SIDS), among other health issues.[147] Breastfeeding also encourages bonding between mothers and babies and is less expensive than purchasing formula.[148] Data on breastfeeding rates is based on responses to the Centers for Disease Control and Prevention (CDC)'s National Immunization Survey (NIS) which asks: "Was [child] ever breastfed or fed breast milk?", "How old was [child's name] when [child's name] completely stopped breastfeeding or being fed breast milk?" and "How old was [child's name] when (he/she) was first fed formula?"[149]

Prevalence across the Life Span

Preterm Births

According to Rhode Island birth records, in 2015, 8.5% of Rhode Island births occurred at least three weeks before their due date. This rate is lower than the *Healthy People 2020* target of 11.4% preterm births and has decreased over time (from 11.7% in 2004).[150] Figure 43 provides rates of preterm births by subgroups.

Figure 43: Preterm Births by Mother's Race/Ethnicity, Age, and Education, 2011 - 2015.

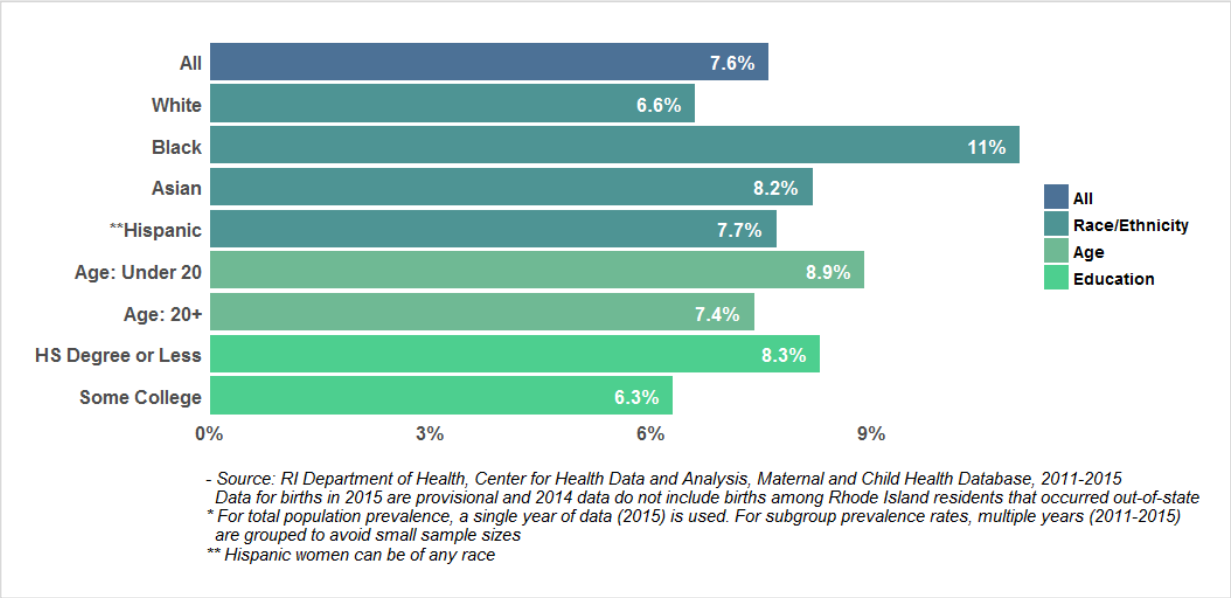


- Source: RI Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2011-2015
Data for births in 2015 are provisional and 2014 data do not include births among Rhode Island residents that occurred out-of-state
** For total population prevalence, a single year of data (2015) is used. For subgroup prevalence rates, multiple years (2011-2015) are grouped to avoid small sample sizes*
*** Hispanic women can be of any race*

Low Birth Weight

In 2015, 7.6% of all Rhode Island babies had a birth weight at or under 2500 grams. That rate is already lower than the *Healthy People 2020* goal of 7.8% of babies with low birth weight.[151] The rate of Rhode Island babies with low birth weight has held fairly stable over the years, from a high of 8.5% in 2003 to 7.6% in 2015.[152] Figure 44 below illustrates differences in low birth weight rates by subgroups.

Figure 44: Low Birth Weight Infants by Mother's Race/Ethnicity, Age, and Education, 2011–2015.

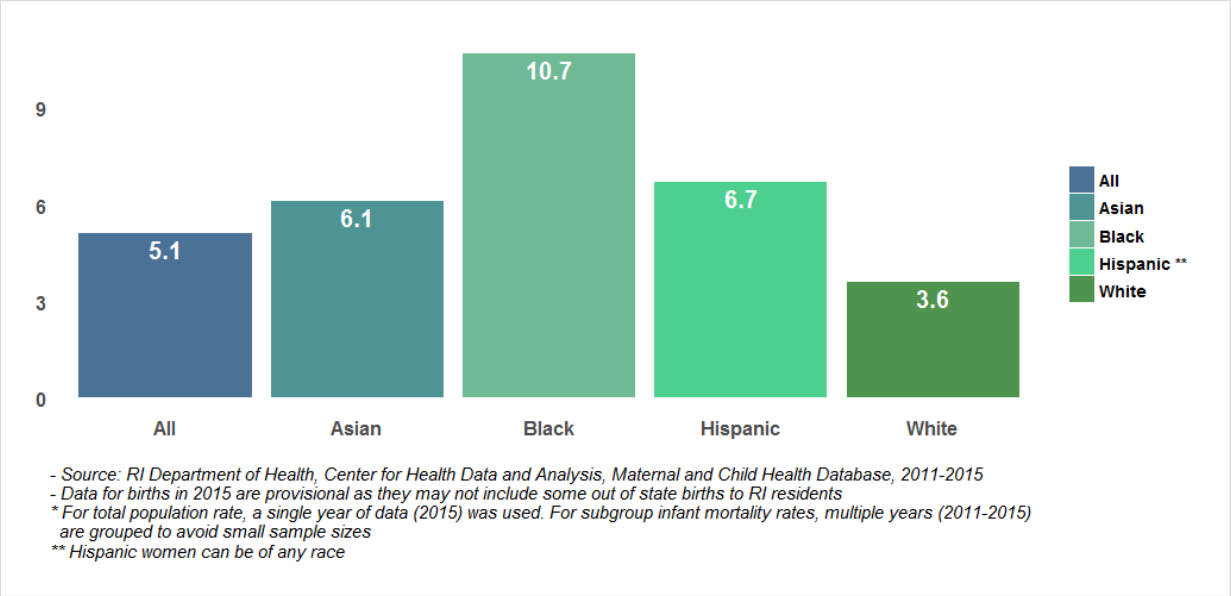


Infant Mortality

In 2015, Rhode Island ranked 13th in the nation and 5th in New England (alongside Massachusetts) for the lowest infant mortality rate.[153] Rates of infant mortality in the state and the nation have followed downward trend for decades, due to increased access to care, medical improvements, and economic growth.[154]

However, extreme disparities exist, especially in Rhode Island's Black/African American community. Between 2011 and 2015, the infant mortality rate among non-Hispanic Black infants in Rhode Island was 10.7 per 1,000 live births, compared to 3.6 for non-Hispanic, White infants and 5.1 for the state overall. Figure 45 below further illustrates how these rates vary by race and ethnicity.

Figure 45: Infant Mortality by Race/Ethnicity, 2011 – 2015.



RIDOH is committed to reducing those disparities and has launched a goal of reaching a Black, non-Hispanic infant mortality rate of 4.3 per 1,000 live births by 2020.[155]

Cesarean Section

Across the country, rates of C-section deliveries have increased by 60% between 1996 and 2015, from 20.7% to 32.0%.[156] These rising rates and the associated negative health outcomes have led to efforts by the American Congress of Obstetricians and Gynecologists, The United States Department of Health and Human Services (DHHS), and the Joint Commission to recommend activities to reduce the rate of "low-risk" C-sections. Low risk C-sections are defined as C-sections that occur when there is only one baby in the womb, the baby has reached full gestational age, and is positioned headfirst.[157]

C-section rates in Rhode Island have also followed an upward trend. First time, or "primary" C-section rates have increased from 18.9% in 2002 to 21.4% in 2013. In 2013, Newport Hospital had the highest primary C-section rate, at 25.2% and South County Hospital had the lowest rate at 16.1%, while the rest of the state's birthing hospitals had very similar primary rates, hovering just below or above 20%. In 2013, the overall rate of C-section births, including repeat C-sections was 31.7%.[158]

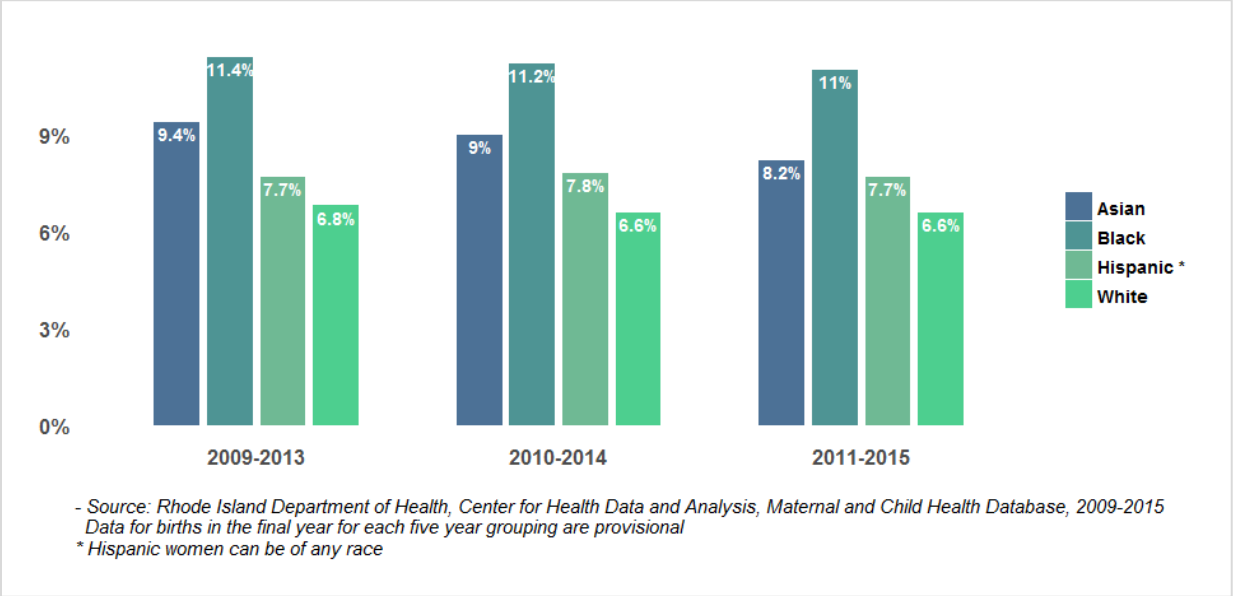
Breastfeeding

Data from CDC's NIS of 2013 births show that in Rhode Island, 81.8% of infants were breastfed at some point during their first year of life and 27.4% were breastfed exclusively for the first six months.[159] Rhode Island has almost met the Healthy People 2020 goal of 81.9% of infants ever breastfeeding and has already exceeded the *Healthy People* 2020 goal of 25.5% breastfeeding exclusively for six months.[160]

At-Risk Populations and Disparities

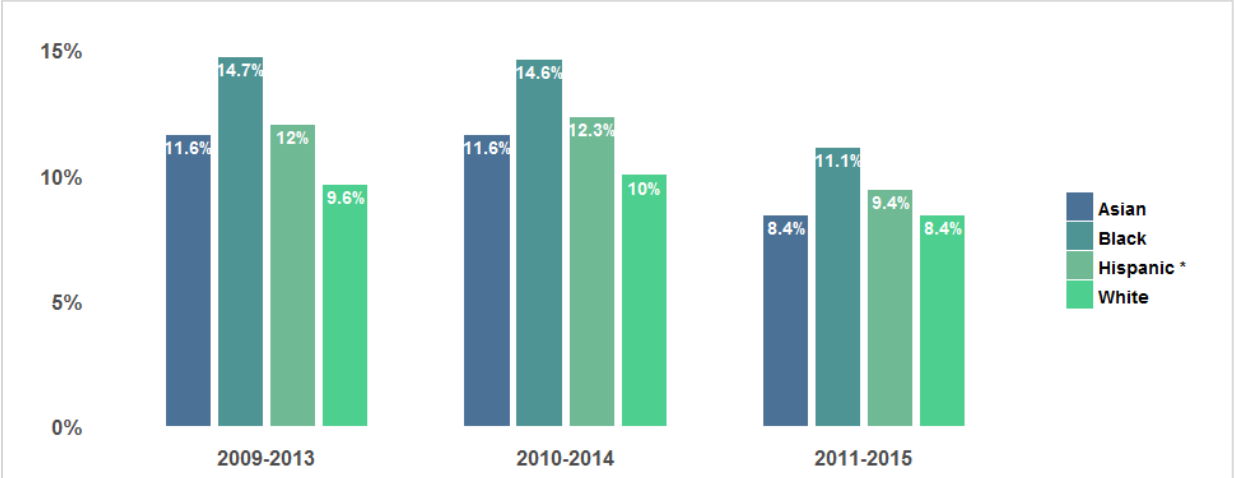
The populations that are most at risk for infant health conditions are similar to those most at risk for maternal health conditions. While much is unknown about the causes of pre-term births, women who are younger, lower-income, less educated and live in urban communities have higher rates of pre-term births and babies with low birth weight. Figures 46 and 47 present differences in low birth weight and preterm births by race, between 2019 and 2015.

Figure 46: Low Birth weight by Race/Ethnicity, 2009-2015.



- Source: Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2009-2015
  Data for births in the final year for each five year grouping are provisional
* Hispanic women can be of any race

Figure 47: Preterm Births by Race/Ethnicity, 2009-2015.



- Source: Rhode Island Department of Health, Center for Health Data and Analysis, Maternal and Child Health Database, 2009-2015
  Data for births in the final year for each five year grouping are provisional
* Hispanic women can be of any race

As mentioned above, non-Hispanic Black infants have higher rates of mortality, and so do babies born to mothers with a high school degree or less. While C-Section rates are fairly uniform across Rhode Island, breastfeeding rates go up as a mother's education, income, and age increase.[161]

Maternal Child Health Spotlight: Fetal Alcohol Spectrum Disorders

Fetal Alcohol Spectrum Disorders (FASDs) are a group of conditions that can occur in a person whose mother consumed alcohol during pregnancy. Effects include irreversible physical, behavioral, and/or learning impairments. Children with FASDs typically have at least one or more of the following characteristics and behaviors:[162]

- Low body weight;
- Hyperactive behavior;
- Difficulty with attention;
- Poor memory;
- Difficulty in school (especially with math);
- Learning disabilities;
- Speech and language delays;
- Intellectual disability or low IQ;
- Poor reasoning and judgment skills;
- Vision or hearing problems; and
- Problems with the heart, kidney, or bones.

Children and adults with FASDs often have a hard time in school, have trouble getting along with others, and as a result of poor judgment and poor impulse control, are often involved with the criminal justice system. The life expectancy at birth of people with Fetal Alcohol Syndrome (FAS), the most severe disorder on the spectrum, is greatly reduced. A recently published NIH study found that life expectancy for individuals with FASDs was 34 years, about 42% of that of the general population. The leading causes of death for people with FASDs were "external causes" (44%), including suicide (15%), accidents (14%), and poisoning by illegal drugs or alcohol (7%).[163]

The tragedy of these results is that FASDs are completely preventable.[164] While in the past, medical professionals warned against consuming alcohol in the third trimester of pregnancy, emerging research has determined that there is no safe time during pregnancy to drink. In addition, any amount or type of alcohol, including wine and beer, used during pregnancy or while trying to get pregnant increases the risk of FASD.[165] Future versions of this Report will explore Rhode Island data related to FASDs.

Children

Children's health can cover a wide range of topics. For this initial examination, this section focuses on rates of childhood lead poisoning and childhood asthma. Future versions of this report will include data on children with special healthcare needs.

Definitions

Childhood Lead Poisoning

Many homes in Rhode Island were built before 1978, when manufacturers discontinued the production of lead-based paint. Those older homes are likely to contain layers of lead-based paint, putting local children at increased risk for lead poisoning.[166] Even small amounts of lead exposure can have negative and long-term effects on a child's health. Lead poisoning can cause learning disabilities, reduced attention spans, and lower IQ.[167] RIDOH recommends that children be screened for lead poisoning at least twice between the ages of nine months and three years old, though some children might be screened more frequently if their results are not normal and these screenings may continue after the age of three if a child lives in a house built before 1978.[168]

The definition of lead poisoning has changed through the years. Currently, the CDC says children have significantly elevated blood lead levels if their blood contains five or more micrograms of lead per deciliter of blood (mcg/dL).[169] Prior to 2012, the CDC used 10 micrograms per deciliter as the "level of concern" for lead poisoning.[170] RIDOH collects data on the number of children younger than age 6 with a blood lead level equal to or higher than 5 mcg/dL, as well those with a blood lead level equal to or higher than 10 mcg/dL. It defines "significantly lead poisoned" as blood lead levels equal to or higher than 15 mcg/dL.

Childhood Asthma

Asthma is a disease that affects the lungs and can cause continued episodes of wheezing, breathlessness, chest tightness, and coughing. It can be controlled through medicine and changes in environmental triggers.[171] Common asthma triggers include respiratory infections, cigarette smoke, air pollution, exposure to cold air, and sudden temperature change.[172] Asthma is the most common chronic condition for children across the country and ranks third among the reasons for hospitalizations of children younger than age 15.[173]

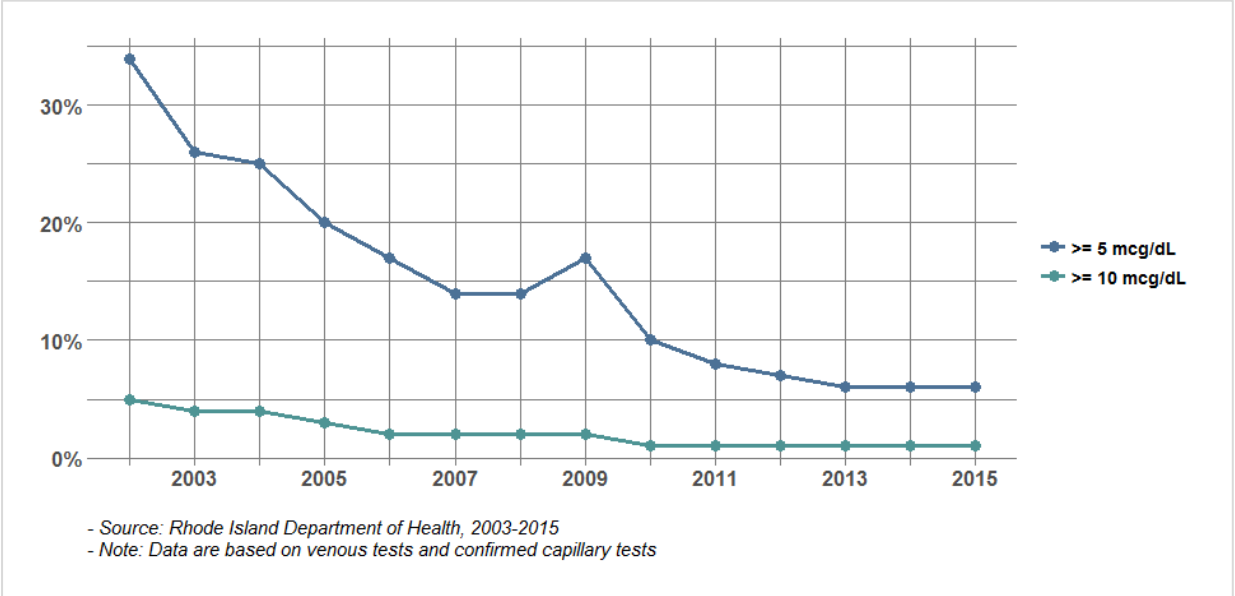
Prevalence across the Life Span

Childhood Lead Poisoning

In 2016, 5.3% of all Rhode Island children younger than age 6 who were screened for lead poisoning had a confirmed blood lead level equal to or higher than 5 mcg/dL and less than 1% of those children were

considered "significantly lead poisoned" with a blood lead level equal to or higher than 15 mcg/dL. As a result of targeted interventions, stable funding, and long-term commitment by the state,[174] these rates have drastically improved since 1997, when 71% of children screened for lead poisoning had blood lead levels equal to or higher than 5 mcg/dL.[175] Figure 48 illustrates how blood lead levels among Rhode Island children have decreased over time.

Figure 48: Elevated Blood Lead Levels among Rhode Island Children Younger than 6, 2002-2015



Childhood Asthma

In Rhode Island, childhood asthma is measured using a variety of data sources. The Rhode Island Behavioral Risk Factor Surveillance System (RI BRFSS) collects self-reported rates of childhood asthma using the "Childhood Asthma Prevalence Module" which randomly selects a child in the household and determines his or her asthma status, based on the reports from the adult in the household who is responding to the RI BRFSS survey.[176] Using that measurement, data from 2014 shows that 16.4% of children in Rhode Island have experienced asthma at some point during their lifetime. The percentage of children currently experiencing asthma in 2014 was 10.0%. Similar rates (10.9%) were found using data from the National Survey for Children's Health collected in 2011 - 2012.[177]

The Youth Risk Behavior Survey (YRBS) is given to high school and middle school students every other year and includes two questions about asthma: "Have you ever been told by a doctor, nurse, or other health professional that you have asthma?" and "Do you still have asthma?"[178] According to the 2013 results of that survey, 23.0% of Rhode Island high school students and 25.8% of Rhode Island middle school students have asthma. The rate of asthma among Rhode Island high school students is slightly higher than the national rate of 21.0%. National data on asthma among middle school students is not available.[179]

RIDOH also measures asthma prevalence by looking at asthma-related emergency department visits. In 2012, the rate of children age 0-4 with an asthma-related visit to the emergency department was 136.6 per 10,000 and the rate for children age 5-17 was 77.1 per 10,000. In the past decade, the rate of children age 0-4 with asthma-related emergency department visits has climbed and then dropped again. The rates of asthma-related hospitalizations among children age 5-17 has held fairly constant between 2000 and 2012.

At-Risk Populations and Disparities

As with the other health focus areas in this MCH section, children are at greater risk of lead poisoning and asthma if they are low-income minorities living in an urban area. In 2016, children living in the core cities of Providence, Central Falls, Pawtucket, and Woonsocket were more than twice as likely to have a blood lead level at or higher than 5 mcg/dL than children living in the rest of the state.[180] The rate of Black children age 0-4 who visited the emergency room for an asthma attack is more than triple the rate of White children of the same ages who went to the emergency department for asthma problems.[181] Rhode Island boys younger than age 18 have higher rates of asthma hospitalization than girls, and younger children age 0-4 have higher rates of asthma-related trips to the hospital than older children.[182]

Future Topics for Maternal and Child Health

The health topics here are by no means an exhaustive look at MCH. Future versions of this *Health Assessment Report* will include other topics such as maternal education, vaccinations, special healthcare needs, and partner violence, as well as a focus on adolescents (including sexual health and transitional age youth).

Maternal and Child Health in Other Sections of this Report

MCH related topics also appear in other sections of this report. Table 7 describes where other health focus areas discuss issues related to mothers or children.

Table 7: Health Focus Areas Discussing Maternal and Child Health Topics

Health Focus Area	Maternal and Child Health Topic
Obesity	• Childhood obesity
Chronic diseases	• Gestational diabetes
Tobacco use	• Tobacco use during pregnancy • Youth tobacco use
Opioid use disorders	• Neonatal abstinence syndrome
Children with social and emotional disturbance	• Childhood bullying
Depression	• Postpartum depression

Children with Social and Emotional Disturbance: Health Focus Area 6

Definition

For the purpose of this *Health Assessment Report*, Rhode Island defines children with social and emotional disturbance as individuals younger than age 21 who have one or more emotional, behavioral, or developmental conditions including autism, developmental delay, depression, anxiety, attention deficit disorder/attention deficit with hyperactivity disorder, and behavioral/conduct disorders.

Children with serious emotional disturbance (SED) represent a sub-set of the population of children with social and emotional disturbance. Children with SED have been diagnosed as having an emotional, behavioral, or mental disorder under the current edition of the Diagnostic and Statistical Manual 5 (DSM-5) or the Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (DC: 0-3). Furthermore, this definition reflects that: (1) the disability has been ongoing for one year or more or has the potential of being ongoing for one year or more; (2) the child is in need of multi-agency intervention(s); and (3) the child is in an out-of-home placement or risks placement because of the disability.[183]

Prevalence across the Life Span

Using the broader definition of social and emotional disturbance, 43,000 Rhode Island children age 2-17 have an emotional, behavioral, or developmental condition.[184] According to the Rhode Island Executive Office of Health and Human Services (EOHHS) claims data, in State Fiscal Year (SFY) 2015, 22% (26,930) of children younger than age 19 enrolled in RIte Care (the Rhode Island State Children's Health Insurance Program also known as SCHIP) 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 age 6 and younger, 34% were age 7-12, and 37% were age 13-18.[185]

The RI Department of Children, Youth and Families (DCYF) serves 4,514 children and youth; 1,166 (26%) of whom are age 16-21. Of these, 417 (36%) meet the criteria for SED. Rhode Island ranked sixth highest among all states for the prevalence of SED among school students with an Individual Educational Program: 15.48/1,000 students, much higher than the national average of 8.08 students/1,000.[186]

Adverse Childhood Experiences

Adverse childhood experiences (ACEs), such as abuse, neglect, household presence of mental health problems, domestic violence, substance use, divorce, or incarceration of relatives can increase the risk for health problems and diseases throughout the lifecourse.[187] The number, severity, chronicity, and individual response to adversities ultimately determine whether the experiences result in toxic stress. Toxic stress describes the physical changes in the brain and other organ systems that result from prolonged and significant ACEs. Absent protective factors, early identification of these stressors and the provision of

evidence-based interventions, a significant number of children living in Rhode Island are at risk for adopting maladaptive behaviors (such as substance use) and developing chronic health and behavioral health conditions in adulthood.

Research studies have shown that 48% of children in Rhode Island report experiencing at leastone1 ACE and 23% report experiencing at least two ACEs. The Rhode Island Behavioral Health Project (also referred to as the *Truven Report*) concluded that children living in Rhode Island are at risk of experiencing toxic stress through ACEs.[188] This exposure may explain the high rates of behavioral health disorders among children and adolescents, as shown in Figure 49 and Tables 8 and 9 below.

Figure 49: Prevalence of Adverse Childhood Experiences (ACEs) in Rhode Island Children, 2011-2012.

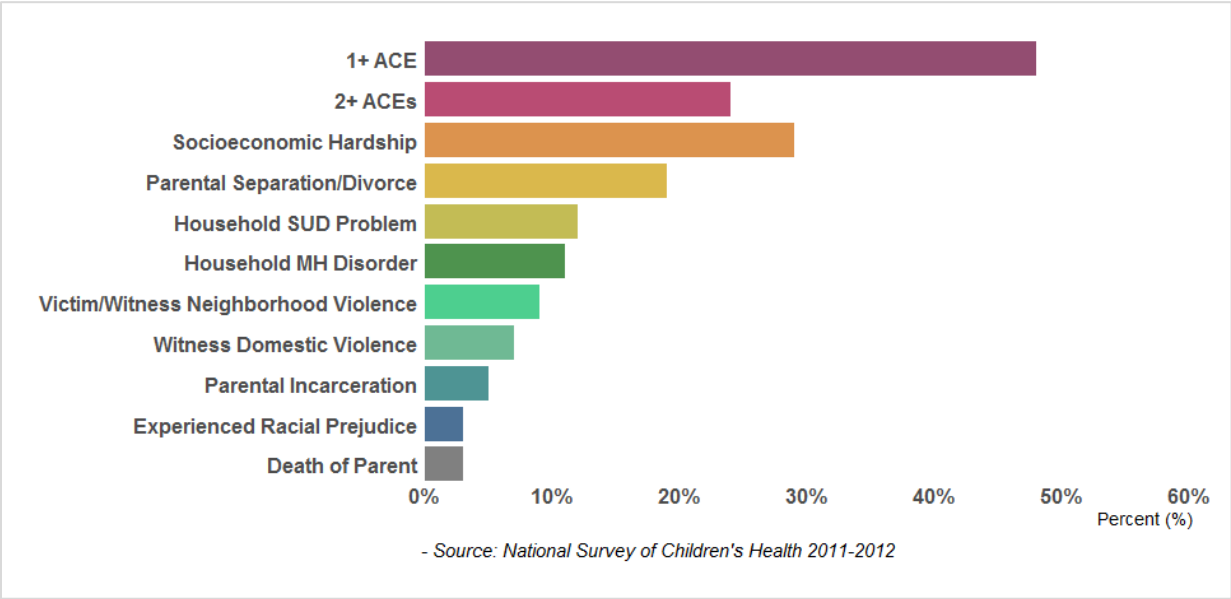


Table 8: Rates of Attention Deficit Hyperactivity Disorder (ADHD) in Children Age 4–17, 2011.[189]

State	Rate of ADHD
Rhode Island	9.4%
Connecticut	5.5%
Maine	7.3%
Massachusetts	8.0%
New Hampshire	7.2%
Vermont	7.8%

Source: National Survey on Children's Health

Table 9: Rates of Behavioral Health Disorders in Adolescents Age 12–17, 2012- 2013.[190,191]

State	Moderate to Severe ADD or ADHD*	Major Depressive Episode (MDE)*	Illicit Drug Use or Dependence
Rhode Island	**7.2%**	**11.3%**	**5.0%**
Connecticut	5.2%	9.4%	3.5%
Maine	6.2%	11.2%	3.3%
Massachusetts	7.1%	8.6%	3.6%
New Hampshire	7.2%	10.3%	4.4%
Vermont	5.6%	9.5%	3.8%
National Average	**5.6%**	**9.9%**	**3.8%**

** Adolescents were assessed as having moderate to severe ADD or ADHD based on parental perception. Source - National Survey of Children's Health, 2011/12. Child and Adolescent Health Measurement Initiative, Data Resource Center on Child and Adolescent Health website. Retrieved 05/09/17 from http://childhealthdata.org/learn/NSCH.*

Adolescents were assessed as having MDE if they had a period of 2 weeks or longer during which they had either depressed mood or loss of interest or pleasure in usual activities, as well as at least four other symptoms that reflect a change in functioning, such as problems with sleep, eating, energy, concentration, and self-worth. Source - National Survey on Drug Use and Health, 2012 and 2013. Substance Abuse and Mental Health Services Administration Data Center.

Adolescents were assessed as having illicit drug use if they reported use in the past month or dependence if their survey responses met DSM criteria. Source - National Survey on Drug Use and Health, 2012 and 2013.

Children Experiencing Bullying

According to national data collected from the 2015 Rhode Island Youth Risk Behavior Survey (RI YRBS), which represents grades 9-12, 20.2% of high school students reported experiencing school-based bullying.[192] In addition, 15.5% of students reported being a victim of cyber-bullying. According to the 2015 RI YRBS, Rhode Island high school students reported bullying at a rate of 15.5% while at school and 12.4% electronically (which is lower than the national average). Vulnerable sub-populations of Rhode Island high school students reported even higher rates of bullying.

Lesbian, gay, bisexual, transgender, and queer (LGBTQ) youth:

- 44.7% reported experiencing bullying either at school or electronically, more than twice the rate of their heterosexual peers.

Youth with disabilities:

- 33.8% reported experiencing bullying either at school or electronically, twice the rate of students without a disability.

Not only are those who experience bullying impacted, but the entire student population can also be affected in negative ways. Table 10 illustrates some of these negative effects on both those who are bullied and those who observe bullying.[193]

Table 10: Effects of Bullying on Children.

Students Who are Bullied	Observers of Bullying
Long-term effects of being bullied: • Depression • Suicidal thoughts • Low self esteem • Health problems • Poor grades	Effects on students who witness bullying: • Fearful • Powerless to act • Guilty for not acting
Students Who Bully Others	**Schools with Bullying Issues**
Students who bully are also more likely to: • Get into frequent fights • Drink alcohol and smoke • Steal and vandalize property • Report poor grades	Effects on climate when school does not act: • Environment of fear and disrespect • Students have difficulty learning • Students feel insecure • Students dislike school

Adapted from Violence Prevention Works; How Bullying Affects Children

Being bullied during childhood and adolescence has been linked to depression, anxiety, and substance use in adulthood. A longitudinal study on Adult Health Outcomes of Childhood Bullying Victimization, reported by Takigawa et al,[194] studied victims who had been exposed to bullying between the ages of 7-11. Follow-up at age 23 and age 50 found these victims experienced higher rates of depression, anxiety disorders, and suicidality than their counterparts who had not been bullied. In addition, the childhood bullying was associated with the victims' lack of social relationships, economic hardship, and a poor perception of quality of life at age 50.[195]

Data from the Rhode Island Department of Education (RIDE)'s SurveyWorks! indicate that Rhode Island students in elementary, middle, and high school report experiences of bullying well above the national average as assessed by the YRBS, perhaps because the YRBS collects only a random sample of high school students, while SurveyWorks! data represent all students who choose to respond to the survey.

The table below uses this source to identify the statewide average of students reporting experiences of bullying by school type, and the Community Mental Health Catchment Areas identified as having the highest rates of bullying experiences reported by students for each indicator.

Table 11: Percent of Rhode Island Students Who Report Experiences of Bullying, by School Level.

	Elementary School	Middle School	High School
One or more types of bullying			
Statewide rate	47.3%	56.9%	47.5%
Catchment area with highest reported rate	Providence 53.7%	Warwick 59.8%	Woonsocket[196] 52.7%
Two or more types of bullying			
Statewide rate	28.3%	N/A	N/A
Catchment area with highest reported rate	Providence 33.4%	N/A	N/A
Three or more types of bullying			
Statewide rate	N/A	31.9%	24.9%
Catchment area with highest reported rate	N/A	Warwick 35.1%	Woonsocket 29.0%

Source: SurveyWorks!, 2010 – 2014

More than half of Rhode Island middle school students statewide, reported experiencing one or more types of bullying, and almost half of elementary and high school students reported experiencing at least one type of bullying. In the SurveyWorks! survey, bullied is defined as experiencing one or more of the following in the past 12 months: purposeful exclusion from activities; being teased at school; being pushed, shoved, tripped or spit on; threatened with harm; having property destroyed on purpose; experiencing coercion; having rumors being spread about oneself; or experiencing cyberbullying.

This concern is further heightened by the rates of exposure to multiple types of bullying. More than one in four elementary school students in Rhode Island reported experiencing two or more types of bullying. Almost one in three middle school students, and one in four high school students, reported experiencing three or more types of bullying.

Given the behavioral health, physical health, and social consequences of exposure to bullying by recipients, perpetrators and observers, without increasing protective factors, prevention programs, early identification, and treatment options, bullied children and youth are at higher risk for poor behavioral health, physical health, and social outcomes as adults.

Access to Behavioral Health Treatment

The availability of, and access to, behavioral health treatment varies for children in Rhode Island. Currently, early childhood evidence-based practices, which can reduce the emergence of social and emotional disturbance in children, are funded through a federal grant and are predominantly available in

targeted geographic areas. Only 8% of children/families served by the Maternal, Infant, and Early Childhood Home Visiting Program lived outside of Rhode Island's four core cities.[197]

There is evidence of disparate access to care for mental health treatment. The Truven Report found that 34% of children in Rhode Island were not able to access mental health services when needed. There were significant disparities between populations of children who were unable to access mental health services: 75% of African American/Black and 74% of Hispanic children did not receive treatment when needed, as opposed to 17.2% of White children.

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 age 13-17, 50% had Medicaid/RIte Care coverage and 47% had commercial coverage, and 39% lived in one of the four core cities (Central Falls, Pawtucket, Providence and Woonsocket) where 33% of the child population lives.[198]

Co-Morbidities

There is a high degree of comorbidity in young children with mental disorders; of those with one disorder, approximately 25% have a second disorder. The proportion of children with comorbidity increases about 1.6 times for each additional year from age 2 (18.2%) to 5 (49.7%).[199]

A number of studies further support co-morbidities in children:

- The results of the ACE Study found a dose-response relationship between ACEs and numerous health problems: the more ACEs a child has, the higher the risk of developing chronic illnesses such as heart disease, chronic obstructive pulmonary disease (COPD), and cancer.[200]

- Bullying is associated with both physical and emotional disorders among children and youth who are victims, as well as perpetrators, of acts of bullying. Both are likely to report headaches and stomachaches, having difficulty falling asleep, depression, and significant anxiety. These symptoms tend to appear in a cluster, requiring an integrated treatment approach.[201]

- Some SEDs are found to occur at higher rates in adolescents with serious health conditions. One study found a significant association between the adolescent-onset diagnosis of bipolar disorder (age 13 and older) and the diagnosis of preexisting obesity, hypertension, migraine headaches, intellectual disability, endocrine disorders, and substance use disorders.[202]

Young children with behavior problems, such as lack of impulse control, restlessness, and poor attention are twice as likely to be diagnosed with alcohol dependence at age 21. Aggressiveness in children as young as age 5-10 has been found to predict substance use in adolescence. Childhood antisocial behavior is associated with alcohol-related problems in adolescence and alcohol abuse or dependence in adulthood.[203]

Adolescents with conduct disorders, ADHD, anxiety, and depression were found to have higher levels of alcohol abuse than their counterparts in the general population.[204] Excessive drinking in teens can result in physical, social, and legal consequences. Physical impairments include:

- Delayed puberty and/or negative effects on the reproductive system;
- Lower bone mineral density; and
- Higher levels of liver enzymes that indicate liver damage.

In addition, impaired judgment and thinking can lead to harmful consequences including:

- Criminal records that cannot be expunged;
- Car accidents;
- Physical and sexual assaults;
- Sexually transmitted diseases;
- Unplanned pregnancies; and
- Lost academic opportunities.

Depression: Health Focus Area 7

Definition

Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest.[205] Major depression is characterized by a depressed mood or loss of interest or pleasure in daily activities that represents a significant change from the person's normal mood, has persisted for the same two-week period, and has a negative impact on social, occupational, educational, or other important life functions.[206] Major depression can lead to a complete sense of hopelessness as well. Depression impacts how individuals feel, think, and behave, including impacting their overall well-being and participation in their healthcare.

The RI Behavioral Risk Factor Surveillance System (RI BRFSS) includes three questions that address depression among adults: "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?"; "Were you ever told you have a depressive disorder, including depression, major depression, dysthymia, or minor depression?"; and "In general, how satisfied are you with your life?" In addition, suicide rates and attempts are considered as proxy indicators of depression.

Prevalence across the Life Span

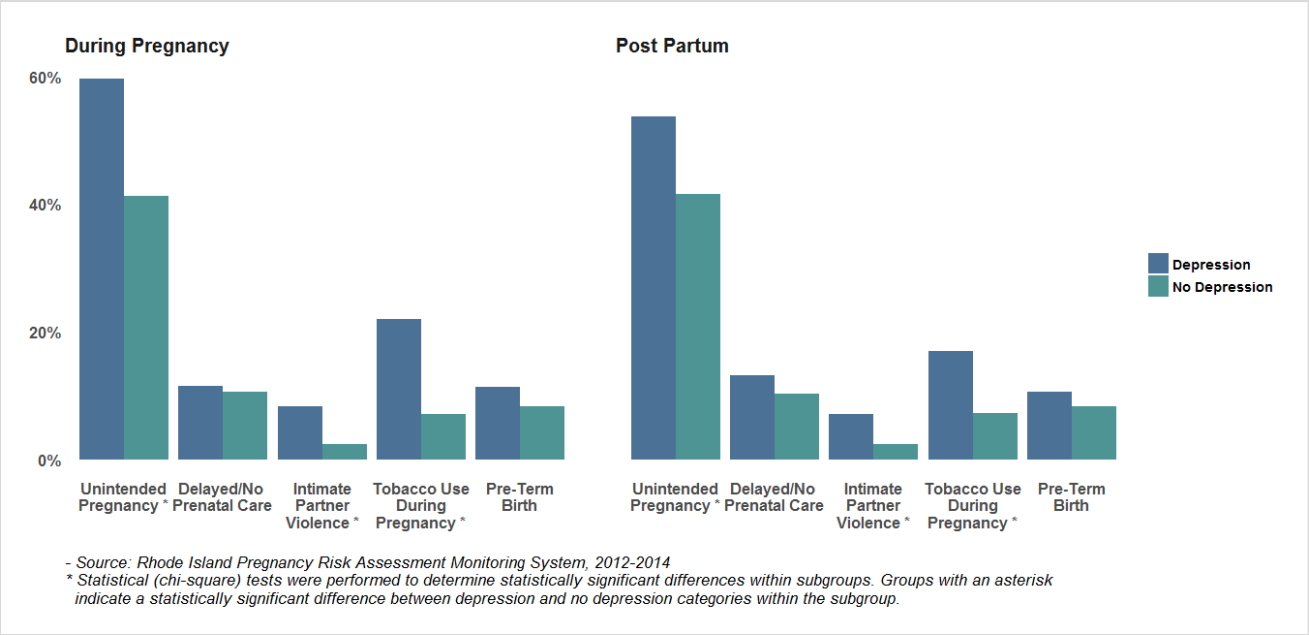
Perinatal

Depression during or after pregnancy (postpartum depression) may affect a woman's ability to perform daily activities or to take care of her infant. This, in turn, can present a risk to the physical, social, and emotional development of the child. According to the Rhode Island Pregnancy Risk Assessment Monitoring System (RI PRAMS) data:

- The proportion of Rhode Island mothers diagnosed with depression during pregnancy ranged from 6.8% to 10.5% during 2004-2014.[207]
- The proportion of Rhode Island mothers with postpartum depressive symptoms (PDS) ranged from 11.0% to 14.0% during 2012-2014.[208]

Mothers diagnosed with depression during pregnancy and postpartum were significantly more likely than non-diagnosed mothers to report certain risk behaviors (See Figure 50.). Other factors associated with postpartum depression include low birth weight baby (10%), fussy babies (12.3%), and never breastfeeding (24.8%).[209] Figure 50 illustrates the rates of multiple risk factors and the presence of diagnosed depression during or after pregnancy.

Figure 50: Risk Behaviors Outcomes by Maternal Depression Status during Pregnancy and Postpartum, 2012-2014.



Source: 2014 RI PRAMS Databook

Children and Adolescents

Children and adolescents exposed to stressful life events are at greater risk of developing depression, especially children and adolescents who have multiple negative life events. Risk factors include genetics, chemical changes in the brain, environmental factors, and/or traumatic events.[210] Negative family relationships, peer victimization through bullying, and maltreatment are examples of traumatic events.

Based on 12-month prevalence data for a major depressive episode as reported from the National Survey on Drug Use and Health (NSDUH), in 2015:

- 12.5% of United States adolescents age 12-17 had at least one major depressive episode in the past year.[211]
- Of those reporting an episode:
    - 70.7% reported the depression at a level of severe impairment, resulting in disruption in their lives for at least a period of two weeks; and
    - 39.3% of those reporting an episode reported receiving treatment for their depression.[212]

In Rhode Island, one source of data on child and adolescent depression is the SurveyWorks! annual survey of middle and high school students. Respondents are asked if they have depression, and students who

indicate experiencing depression are then asked additional questions about recent suicidal thoughts and attempts. Key findings from 2010-2014 are shown in Table 12.

Table 12: Rhode Island Middle and High School Students Reporting Depression, 2011 - 2014.

	Middle School		High School	
	N	%	n	%
Students reporting depression	7,231	27.68	8,266	28.45
Among students reporting depression				
Students with recent suicide ideation	2,568	35.51%	3,412	41.28%
Students with recent suicide attempt	1,059	14.6%	1,650	19.96%

Source: RI SurveyWorks!, 2010-2014

Comparing Rhode Island students to national prevalence data, rates of self-reported depression among Rhode Island students are well above the national average[213]. The level of depression among Rhode Island students is so severe that:

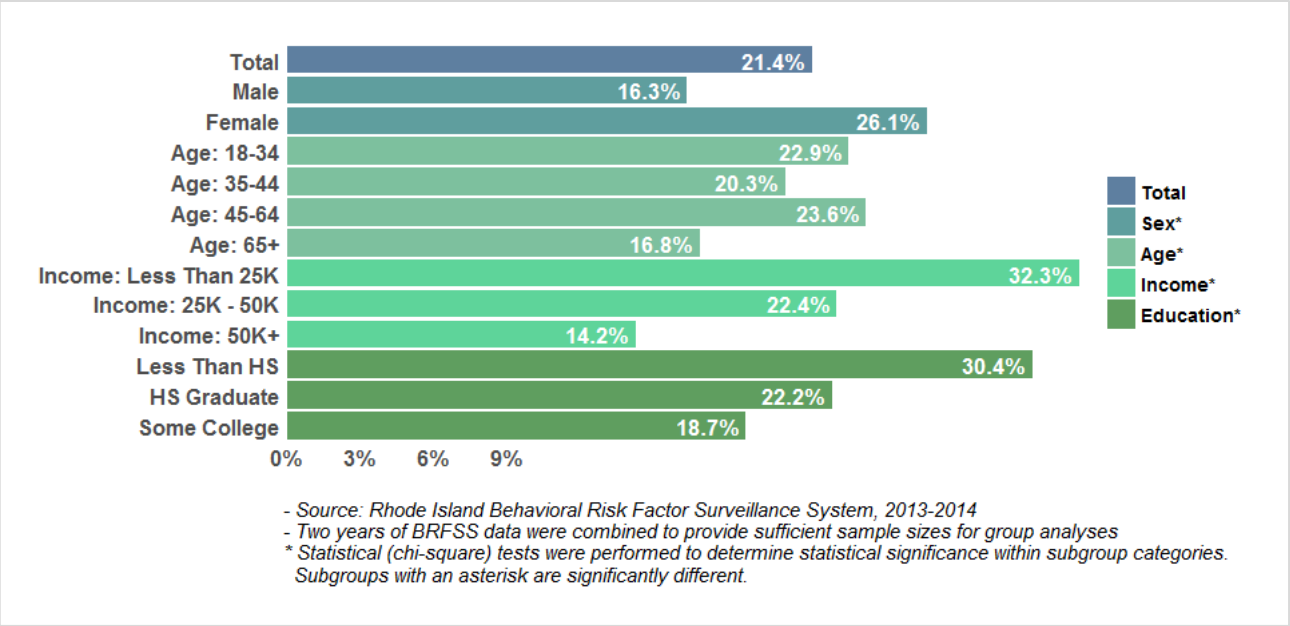
- More than one in three middle school students with depression reported recent thoughts of suicide.
- Two out of five high school students with depression reported recent thoughts of suicide.
- One in five high school students reported a recent suicide attempt.

Adults

A number of reports indicate that older adults in Rhode Island experience poor mental health. In 2013, the CDC reported that Rhode Island scored in the top 25 states (worst scores) in the country for the number of days that seniors reported mental distress (7.2 days). The America's Health Senior Report ranked Rhode Island 42nd highest in the country for rate of depression.[214]

The RI BRFSS includes three questions that address depression among adults: "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?"; "Were you ever told you have a depressive disorder, including depression, major depression, dysthymia, or minor depression?"; and "In general, how satisfied are you with your life?". In 2013-2014, 21.4% of Rhode Islanders reported that they had been diagnosed with depression. Depression is the third most highly reported chronic condition among Rhode Islanders across the lifecourse[215] and rates of depression in Rhode Island exceed the national average.[216] Rates of depression in Rhode Island have remained constant from 2011 through 2014. Figure 51 illustrates the prevalence of Rhode Islanders who have been told they have a depressive disorder across subgroups.

Figure 51: Rhode Island Adults Age 18 and Older Reporting Being Told They Have a Depressive Disorder, 2013-2014.



According to the *Truven Report*,[217] young adults in Rhode Island, age 18–24, were more likely to have serious psychological distress than young adults in other New England states and nationally. Specific to depression, adults age 18-64 living in Rhode Island reported rates of depression higher than the national average; the rate of depression among adults age 25-64 in Rhode Island was highest of all New England states (See Table 13).

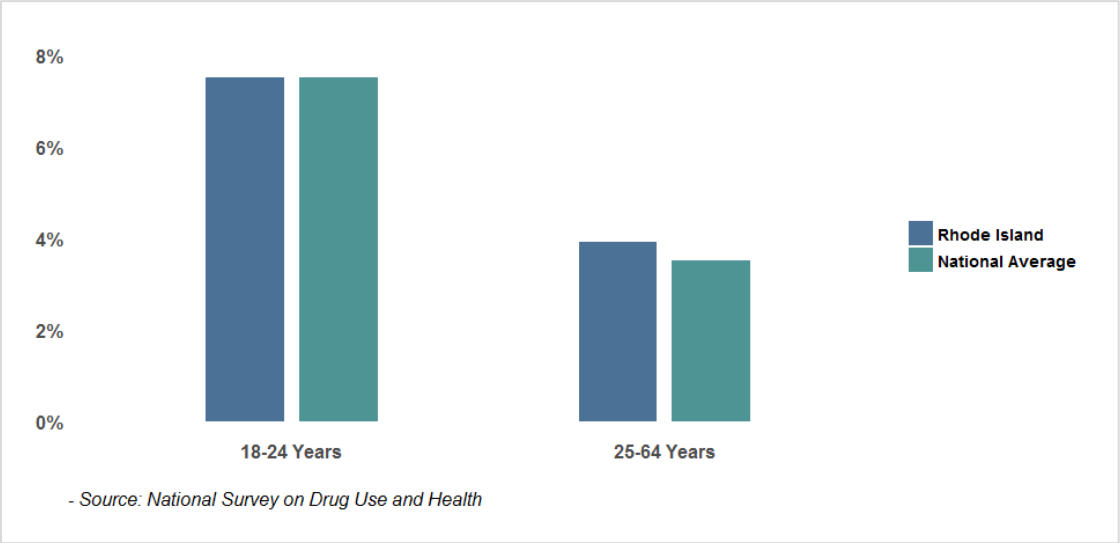
Furthermore, nearly 8% of young adults age 18-24 reported having suicidal thoughts in the previous 12 months, which is consistent with the national average, while the rate for adults age 25-64 is above the national average.[218] (See Figure 52).

Table 13: Self-Report of Depression in the Last Year among Adults, National and New England State Rates, 2012-13.[219]

	Percent Reporting Depressive Episode*	
State	Age 18-24	Age 25-64
Rhode Island	9.7%	8.2%
Connecticut	8.4%	6.0%
Maine	9.9%	7.8%
Massachusetts	8.5%	6.3%
New Hampshire	9.8%	6.4%
Vermont	10.7%	7.1%
National	8.8%	6.4%

*Source: National Survey on Drug Use and Health; *Percent reporting of at least one major depressive episode within the past twelve months.*

Figure 52: Rhode Island Adults, Age 18-64,
with Suicidal Thoughts in the Past 12 Months, 2012- 2013.

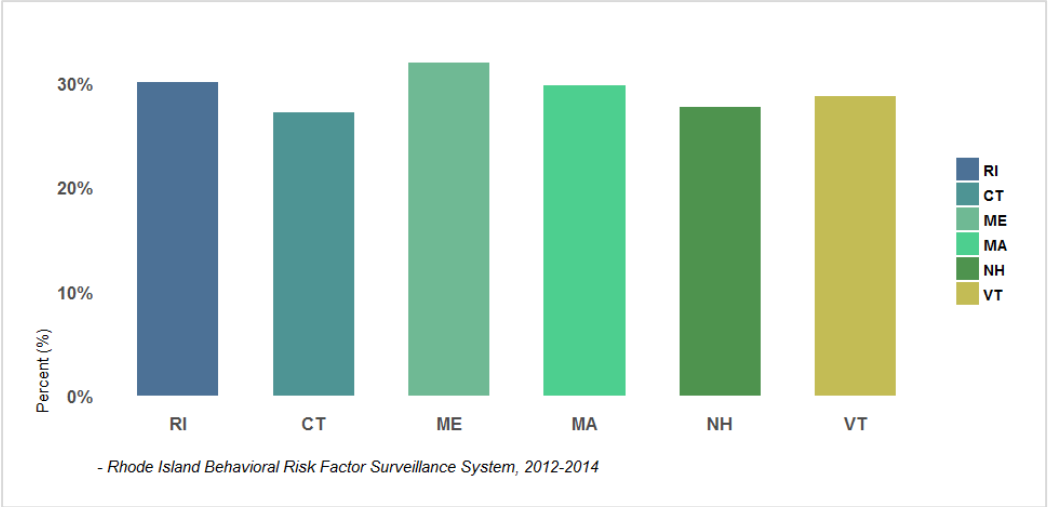


Older Adults

Isolation can lead to depression in older adults. Older adults in Rhode Island rank high in indicators of social isolation, which includes living alone, having few social network ties, and having infrequent social contact.[220] Thirty percent of Rhode Islanders age 65 and older reported living alone, which is higher than the national average (25%). In addition, older adults in Rhode Island report having little or no leisure time/activity and little participation in physical activity, limiting their time spent with others.

The Rhode Island Healthy Aging Data Report 2016 reaffirmed the high rates of depression among older adults age 65 and older in Rhode Island. Of all New England states, only older adults in Maine experienced a higher rate of depression (31.9%) than older adults in Rhode Island (31.9% vs. 30.0%).[221] (See Figure 53.)

Figure 53: Depression among Older Adults in New England, 2012-2014.



Access to Treatment

Children

According to analysis of data from the 2011-2012 National Survey on Children's Health, 34% of children in Rhode Island were not able to access mental health services when needed.[222] There were significant disparities between populations of children who were not able to access mental health services: 75% of African American/Black and 74% of Hispanic children did not receive treatment when needed, as opposed to 17.2% of White children.

Adults

In 2014, of the 27,015 treatment admissions reported through the RI Behavioral Health On-Line Database (BHOLD) 3,623 (13.9%) admissions were for the treatment of major depression and 4,040 (15.5%) were for the treatment of another mood disorder, representing a total of 7,663 (28.4%) of all reported treatment admissions.[223]

Using the previously identified prevalence rates, an estimated 60,567 Rhode Island adults age 18–64 have a depressive disorder. BHOLD claims data shows that in 2014, 12.7% of adults age 18-64 with a major depressive or other mood disorder living in Rhode Island were receiving treatment for depression through the formal behavioral healthcare system. A recent study determined that across the United States, an estimated 28.7% of adults with depression receive treatment for the disorder.[224] The percent of adults age 18-64 receiving treatment for depression in Rhode Island's formal behavioral healthcare system is below the national estimate.

Older Adults

In SFY 2015, 1,699 Rhode Island adults (age 65 and older) with a diagnosis of major depressive disorder or other depressive disorder, had claims submitted for treatment captured in BHOLD.

Adults age 65 and older comprise 14.4% of Rhode Island's population (151,881). Using prevalence rates for depression cited above, an estimated 45,564 adults age 65 and older have a depressive disorder. Based on the BHOLD claims data and applying 2010 United States Census data as the denominator, 3.7% of adults age 65 and older with a major depressive or other depressive disorder living in Rhode Island are receiving treatment for depression through the formal behavioral healthcare system. This rate of treatment for older adults within the formal behavioral health system is consistent with findings from across the country. Mental Health America reports that more than 55% of older individuals treated for mental health services receive care from primary care physicians and less than 3% age 65 and older receive treatment from mental health professionals.[225]

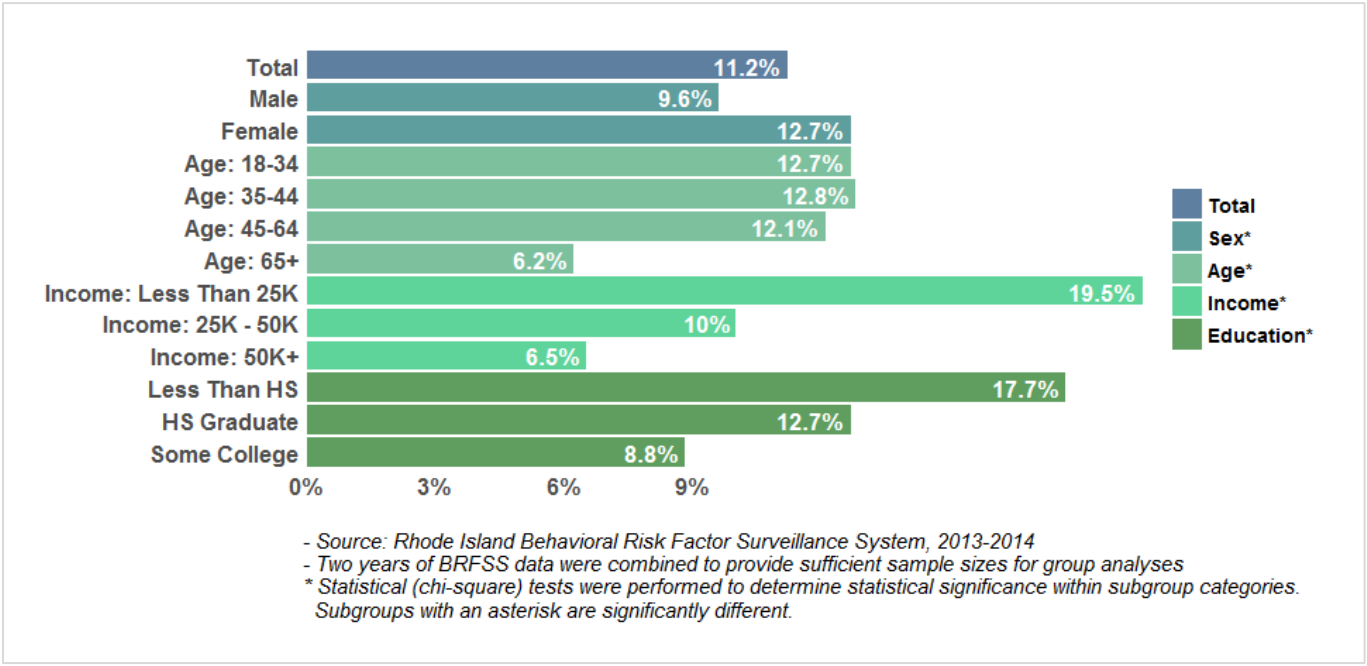
At-Risk Populations and Disparities

According to 2013-2014 BRFSS data:

- Adult females were more likely to report being diagnosed with depression than adult males (24.8% vs. 16.0%).
- At 22.1%, non-Hispanic, Black Rhode Islanders reported slightly higher rates of being diagnosed with depression than non-Hispanic, White (20.3%) and Hispanic (20.3%) residents.[226]
- According to the Rhode Island PRAMS data, mothers who were unmarried (11.9%), had less than 12 years of education (14.5%), had public health insurance (12.8%), and participated in the WIC program (12.9%) had a higher prevalence of being diagnosed with depression during pregnancy, compared with their counterparts. [227]
- Similarly, mothers who were Hispanic (14.5%), unmarried (15.1%), had 12 years of education (15.0%), had public health insurance (13.1%), and participated in the WIC program (13.7%) had a higher prevalence of postpartum depressive symptoms compared with their counterparts.[228]

As seen in Figure 54, in 2013-2014, 11.2% of Rhode Islanders age 18 or older reported experiencing 14 or more days of poor mental health during the last month. Statistical analyses reveal significant differences across gender, age, income, and education groups in those experiencing 14 or more poor mental health days during the last month. For instance, 19.5% of individuals reporting household incomes less than $25,000 a year report having 14 or more poor mental health days during the last month, significantly higher than those with higher household incomes (6.5%-10.0%). Similarly, 17.7 % of individuals without a high school degree report 14 or more poor mental health days during the last month. Female respondents are significantly more likely than males to report 14 or more poor mental health days during the last month.

Figure 54: Rhode Island Adults, Age 18 or Older, Reporting 14 or More Days of Poor Mental Health During the Last Month, 2013-2014.



In addition to statewide information, the *Rhode Island Healthy Aging Report* provides community-specific data on depression among Rhode Island's older adults. Data from the cities of Providence, Pawtucket, Central Falls, Woonsocket, Warwick, East Providence, and Cranston (focusing on 20 city ZIP codes) were analyzed across multiple health indicators. Rates of depression and having multiple co-morbidities[229] were higher than the state average for 12 out of 20 communities in the study.

RI BRFSS data confirms that the rate of depression is higher for adults age 65 and older who have chronic health conditions such as obesity, diabetes, and chronic heart disease. In addition, half of these communities mentioned above had a higher-than-state-average rate for the use of Medicaid-financed, long-term support services. Physician office visits were also lower than the state average in 10 of the 20 communities.[230] This finding is especially concerning given the higher rates of depression among older adults in these neighborhoods; older adults are more likely to seek treatment initially from a physician than from a specialty mental health provider. Table 14 identifies the communities with the lowest and highest rates of Medicare beneficiaries aged 65 and older with a diagnosis of depression.

Table 14: Percent of Medicare Beneficiaries Age 65 and Older Ever Diagnosed with Depression[231]

Lowest Rates of Depression		Highest Rates of Depression	
Town	%	Town	%
Exeter	19.7%	Central Falls	38.5%
New Shoreham	20.5%	Providence	34.0%
Jamestown	20.8%	Providence Other*	34.0%

Source: Centers for Medicare & Medicaid Services (CMS) Medicare Master Beneficiary Summary File

** Providence was further divided into two neighborhoods, the northeast and the rest of Providence referred to as 'Providence Other.'*

According to the *Rhode Island Healthy Aging Report*, lower rates of community engagement indicators are common among the communities with the most indicators of worse than average health, while high rates of good mental health and community engagement are found among communities with the most indicators of better-than-average health.[232]

Co-Morbidities

Individuals with untreated depression are at greater risk of developing serious chronic health conditions. People with depression have an increased risk of cardiovascular disease, diabetes, stroke, and Alzheimer's disease. Patients who are depressed when hospitalized for a heart condition are two to five times more likely to have severe chest pain, heart attack, or stroke in the next year. This recurrence is linked more closely to depression than to smoking, diabetes, high blood pressure, or high cholesterol. Untreated, depression increases the risk of dying after a heart attack.[233]

Depression in older adults also can increase the risk of developing various physical disorders, including heart attacks, and can complicate recovery from physical disorders when left untreated.[234] People with depression are at higher risk for osteoporosis than the general population,[235] which places older adults, particularly females, at higher risk for bone fractures.

The co-occurrence of alcohol use disorders and depression is well-established.[236] Alcohol use among adolescents has been associated with considering, planning, attempting, and completing suicide.[237] In one study cited by the National Institutes of Health (NIH), 37% of eighth-grade females who drank heavily reported attempting suicide, compared to 11% who did not drink alcohol.[238] Prevention efforts supported by the Department of Behavioral Healthcare, Developmental Disabilities, and Hospitals (BHDDH) are having positive results that may impact this disturbing relationship between drinking and attempting suicide: the rates of Rhode Island high school students reporting past-month alcohol use, which was once highest within the Northeast region, is now below national averages.[239] Alcohol was the most commonly identified substance in postmortem toxicological analysis, present in 31.9% of Rhode Islanders who committed suicide.[240]

Serious Mental Illness: Health Focus Area 8

Definition

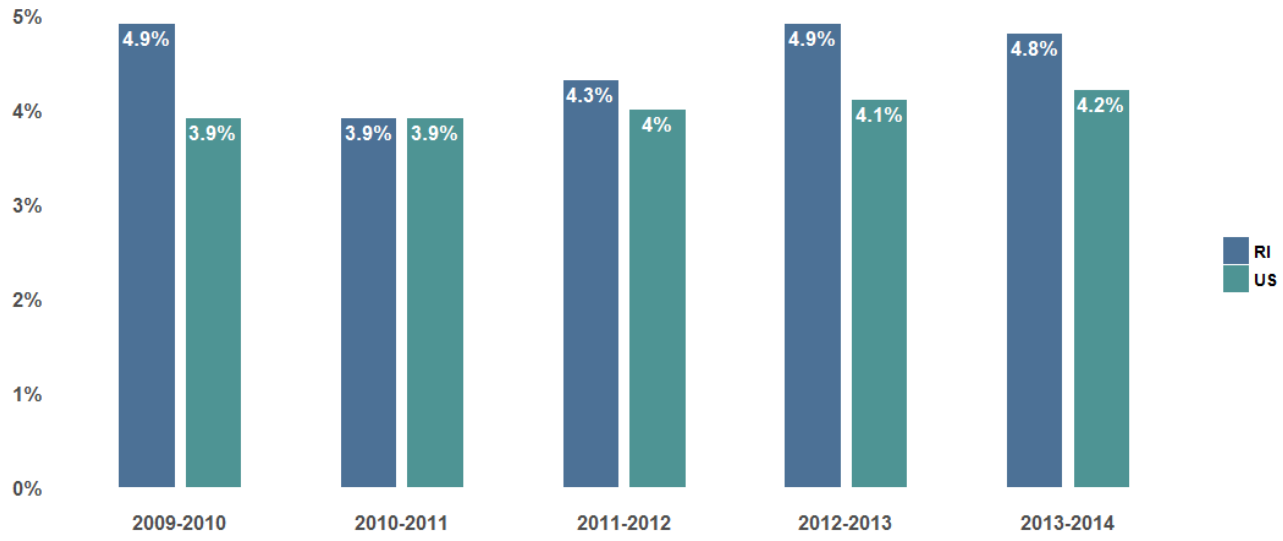
Serious mental illness (SMI) is a severe and/or persistent mental or emotional disorder in a person age 18 and older that seriously impairs his/her functioning relative to primary aspects of daily living such as personal relations, living arrangements, or employment.

The information presented in this Report about the percentage of residents who have experienced SMI or a major depressive episode in the past year based on clinical interviews and predictive modeling used by Substance Abuse and Mental Health Services Administration (SAMHSA) in its National Survey on Drug Use and Health (NSDUH).

Prevalence across the Life Span

Due to the small sample size of Rhode Islanders completing its survey, SAMHSA combined multiple years of data to estimate the prevalence of SMI in Rhode Island. According to clinical interviews and predictive modeling generated by SAMHSA, during 2012-2013, 4.9% of all Rhode Island adults had "experienced a serious mental illness within the year prior to being surveyed."[241] (See Figure 55.) Among Rhode Islanders, rates of SMI and rates of at least one major depressive episode in the past year vary slightly by age range but all rates are higher than the national average.

Figure 55: Percentage of Rhode Island Adults Experiencing a Significant Mental Illness in the Previous Year, 2011-2014



- Source: National Survey on Drug Use and Health, 2009-2014

Children

Please see Health Focus Area 6: Children with Social and Emotional Disturbance for a thorough discussion of mental illness among children.

Young Adults

Based on 2013 NSDUH data, 4.9% of young adults, age 18–24, living in Rhode Island experienced SMI, slightly higher than the national average of 4.2% for this age group.[242] Young adults with emerging SMI who fail to engage with treatment that meets their needs are at risk of:[243]

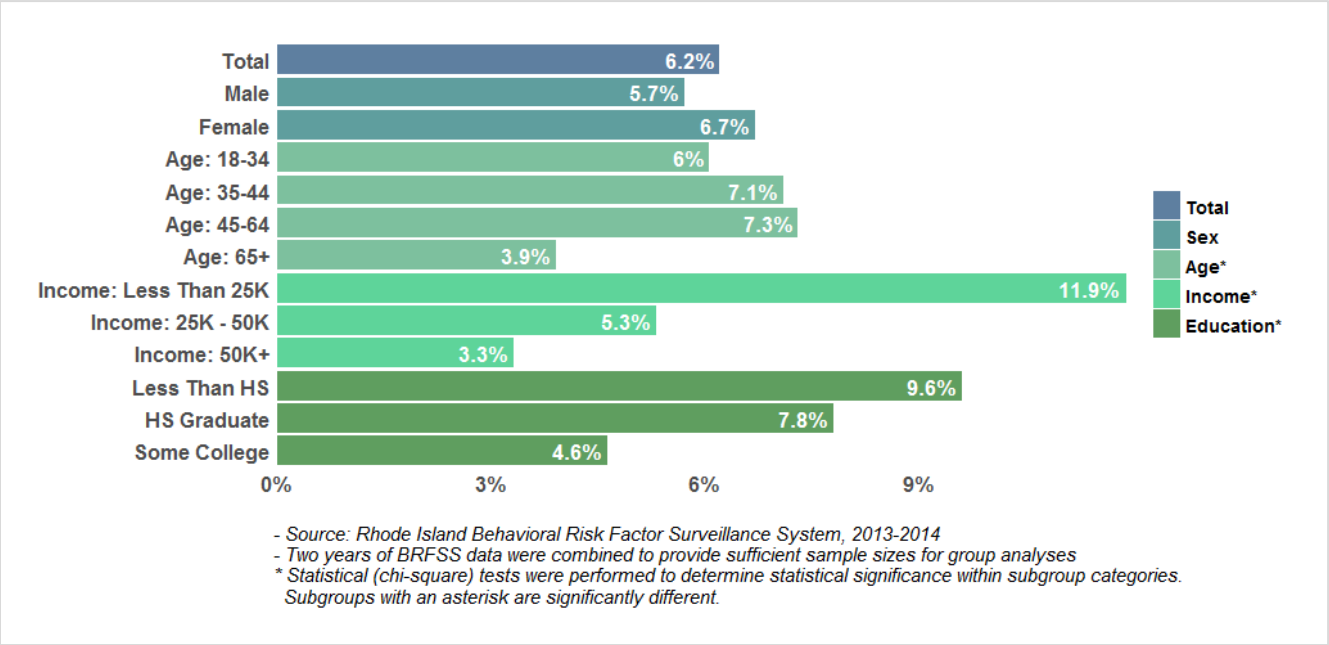
- Developing a chronic mental disorder;
- Becoming incarcerated, homeless, and/or addicted to illicit drugs and/or alcohol;
- Re-experiencing severe psychiatric crisis; and
- Academic underachievement, unemployment, and the loss of social supports.

Adults

According to NSDUH 2013 data, 5% of adults, age 25-64, living in Rhode Island experienced SMI, which is slightly higher than the national average of 4.1% for this age group.[244]

According to the Rhode Island Behavioral Health Risk Factor Surveillance System (RI BRFSS), in 2013-2014, 6.2% of adults age 18 and older reported experiencing 21 days of poor mental health during the last month. As seen in Figure 56, analysis determined that there were significant differences between those who reported 21 days of poor mental health and those who reported less days. For instance, 11.9% of individuals with household incomes less than $25,000 per year reported having 21 or more poor mental health days during the last month. Similarly, 9.6% of individuals without a high school degree report 21 or more poor mental health days during the last month. Subgroup analyses among the education and income groups found that the differences within these groups are statistically significant.

Figure 56: Rhode Island Adults Aged 18 and Older Reporting 21 or More Days of Poor Mental Health During the Last Month, 2013-2014.



Older Adults

The 2013 NSDUH data indicate that 5.1% of adults age 50 and older experienced SMI in the previous 12 months. It is possible that some individuals may be counted twice; first as an adult with SMI, then as an older adult with SMI. Nonetheless, the rate of 5.1% of SMI among older adults living in Rhode Island exceeds the national average of 3.1%.[245]

Rhode Island also has high rates of Alzheimer's. This may be attributed to the higher incidence of Alzheimer's with increasing age[246] and the higher than average life expectancy of Rhode Island's older adult population.[247]

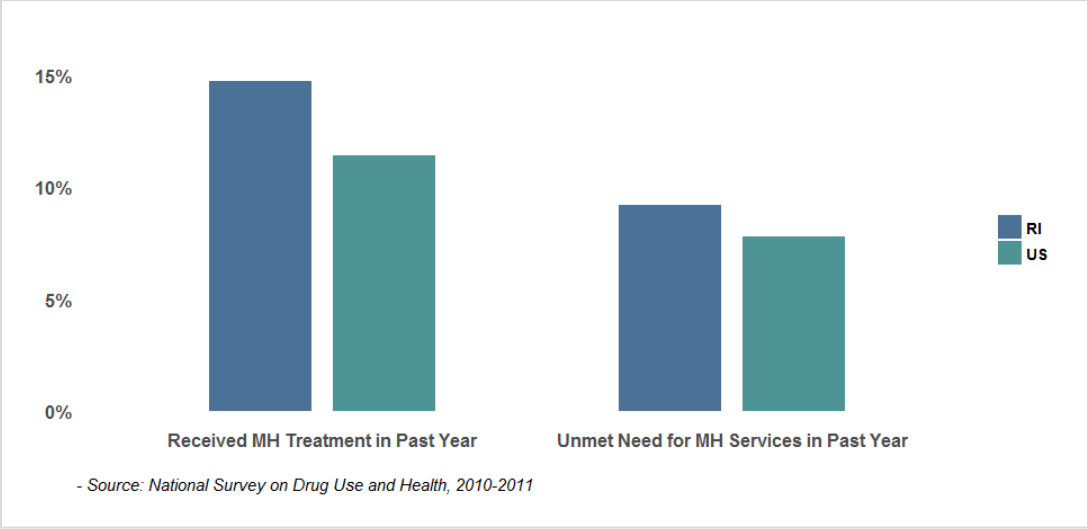
Access to Treatment

Young Adults

As depicted in Figure 57, the *Truven Report* identified that young adults in Rhode Island were both more likely to receive any mental health treatment within the past year and to report unmet needs for mental health services at rates higher than the national average.[248] Based on responses from 2010-11 NSDUH data, 14.7% of Rhode Islanders age 18-24 reported having received any mental health treatment in the past 12 months, exceeding the national average of 11.2%.[249] At the same time, 9.1% of Rhode Island young adults

reported an unmet need for mental health services in the past 12 months, which was also higher than the national average of 7.6% within this age group.[250]

Figure 57: Indicators of Mental Health Treatment for Young Adults Age 18-24, with Serious Mental Illness in Rhode Island, 2010–2011.

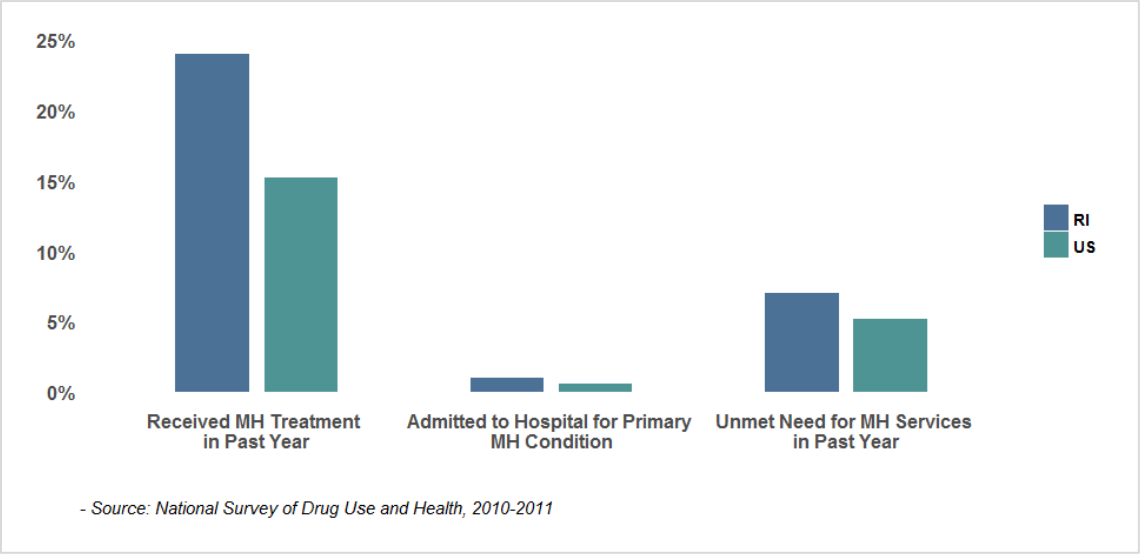


In a recent federal grant application, Rhode Island reported that 3,563 (approximately 2.3%) young adults age 16-25, were treated for SMI , severe emotional disturbance (SED), or co-occurring mental health and substance use disorders (COD) by the two public behavioral health agencies, the Department of Behavioral Healthcare, Developmental Disabilities and Hospitals (BHDDH) and the Department of Children, Youth and Families (DCYF). These two agencies estimated that approximately 10,200 young adults age 16-25 with SED, SMI, or COD are not receiving treatment in the public behavioral health system. While some of the young adults are likely receiving treatment through primary care practices and/or private mental health practitioners, it is also likely that many are not receiving any treatment. Improving access to treatment is critical for this age group as early identification and intervention for mental health issues results in improved outcomes, including faster and more complete recovery, and decreased frequency and severity of relapses.

Adults

As depicted in Figure 58, the *Truven Report* identified that adults age 25-64 in Rhode Island were also more likely to receive any mental health treatment within the past year and to report unmet need for mental health services at rates higher than the national average.[251] This discrepancy may be attributed to the high rates of psychiatric inpatient admissions among adults with SMI in Rhode Island, and the limited access to recovery services and supports. The expansion of Medicaid benefits to include assertive community treatment teams and Integrated Health Homes will help to address this imbalance; however, access to evidence-based treatment approaches and supports, such as Peer Support, would help to further improve recovery outcomes.

Figure 58: Mental Health (MH) Treatment for Adults Age 25–64, with Serious Mental Illness in Rhode Island, 2010–2012.



Detecting and treating SMI among adults is essential for impacting population health. A seminal 2006 study by the National Association of State Mental Health Program Directors found that the rates of mortality and morbidity among people with SMI are alarmingly high in comparison to the rest of the population.[252] Increased morbidity and mortality among those with SMI are largely due to other treatable medical conditions that are caused by modifiable risk factors such as smoking, obesity, and substance use, as well as inadequate access to medical care.

Individuals with SMI are less likely to have access to adequate healthcare, as evidenced by[253]:

- Over-use of emergency and medical acute inpatient care;
- Lack of a primary care relationship (Healthcare Home);
- Lower rates of routine testing to identify health conditions; and
- Poor dental care.

Additionally, a large National Institute of Mental Health (NIMH) Clinical Antipsychotic Trials of Intervention Effectiveness (CATIE) study of adults with schizophrenia found:[254]

- 88.0% of participants who had dyslipidemia (high cholesterol) were not receiving treatment;
- 62.4 % of participants who had hypertension (high blood pressure) were not receiving treatment; and
- 30.2% of participants who had diabetes were not receiving treatment.

Disparities in healthcare access and utilization may be even more pronounced between certain groups of individuals with SMI, differing by race, ethnicity, gender, economic disadvantage (including housing

stability) and socioeconomic status, and geographic location (chiefly, rural versus urban residence). Disparities exist for individuals identifying as lesbian, gay, bisexual, transgender, and queer (LGBTQ) and those who have difficulty communicating in English as it is a second language.[255]

Adults with untreated SMI often experience poor quality of life as the result of their disorder. In Rhode Island, one-third of individuals seeking services at an emergency shelter or transitional housing setting in 2014 reported having a mental health issue. More than half were assessed as having problems with alcohol and one-quarter as having problems with illicit drugs. In addition to behavioral health disorders, individuals who are homeless often have untreated chronic medical conditions. These co-morbidities result in high costs associated with ambulance transports, emergency room admissions, inpatient hospitalizations (including for mental health reasons), and interactions with the police.[256] In addition, it is estimated that more than half of all prison and jail inmates have a mental health issue. In Rhode Island, there are more than 3,000 individuals incarcerated annually in the adult correctional system.[257]

When appropriate physical and behavioral services, including rehabilitation-recovery services, are provided in a coordinated system, overall healthcare costs are reduced through:

- Reduction in inappropriate emergency room use;
- Reduction in hospital stays, both for acute physical and mental health interventions; and
- Elimination of prescription duplication and an increase in medication adherence.[258]

Individuals with SMI can and do recover when provided the proper treatment and support services. The percentage of adults reporting improved functioning from treatment received through the public mental health system was slightly higher in Rhode Island (71.6%) than in the nation as a whole (70%).[259]

Older Adults

Similar to other age groups with SMI, the *Truven Report* identified that older adults living in Rhode Island were more likely to receive any mental health treatment within the past year, as well as be admitted to a hospital with a primary mental health condition, at rates higher than the national average.[260] Older adults also were more likely to be admitted to State mental health services than the national average.[261]

Table 15: Indicators of Mental Health (MH) Treatment for Adults Age 65 and Older with Serious Mental Illness in Rhode Island, 2010 - 2011.

	Received Any MH Treatment in Past Year	Admitted to Hospital with Primary MH Condition	Admitted to State MH Services
Rhode Island	18.0%	0.4%	10.2/100,000
National Average	10.7%	0.3%	6.9/100,000

Sources: National Survey on Drug Use and Health; Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP); State Inpatient Databases, 2010-12, Center for Mental Health Services Uniform Reporting System (URS), 2011

Older adults are less likely to seek treatment from the formal behavioral health system, which may be a concern as older adults present unique challenges for treatment with regard to the use of antipsychotic medications. For older adults receiving antipsychotics, the risks of dangerous side effects such as strokes, fractures, kidney injury, and mortality are increased.[262] Yet despite these concerns, a study funded by the NIMH found:[263]

- The use of antipsychotic medications increases with age after age 65, approximately twice as high among adults age 80- 84 as among those age 65-69;
- Despite warnings issued by the Food and Drug Administration (FDA), around 80% of antipsychotic prescriptions among adults age 65 and older were for atypical medications; and
- About half of older adults age 65-69 and only one fifth of those age 80-84 who were treated with antipsychotics received these prescriptions from psychiatrists.

This issue is particularly relevant for Rhode Islanders due to having the highest proportion of older adults age 85 and older in the nation, the higher than average prevalence of SMI among older adults and the high prevalence of dementia.[264] In addition to supporting treatment for children, psychiatric consultation services may also be beneficial for primary care professionals treating older adults with SMI.

Co-morbidities

Adults with SMI often have co-morbid medical conditions as well as substance use disorders; not only do these co-morbidities exist but there are interactions between the illnesses that can worsen the course of both.

- In a study sponsored by the Robert Wood Johnson Foundation (RWJF), more than 68% of adults with a mental disorder reported having at least one general medical disorder.[265]
- Individuals with SMI are estimated to be losing 28.5 years of life; 85% of the premature deaths are due to preventable conditions such as high blood pressure, high cholesterol, diabetes, and heart disease.[266]
    - The rates of obesity are higher among individuals with SMI than the general public.[267]
    - People with depression are 1.2 to 1.8 times more likely than the general public to have obesity.
    - People with bipolar disorder are 1.5 to 2.3 times more likely than the general public to have obesity.
    - People with schizophrenia are 3.5 times more likely than the general public to have obesity.

A number of studies have substantiated substance use disorders among individuals with SMI:

- About 47% of individuals with schizophrenia also had a lifetime diagnosis of substance use disorder (SUD).[268]
- About 56% of individuals with bipolar disorder had a lifetime SUD.[269]

- Individuals with depression were approximately twice as likely to have SUD.[270]
- Individuals diagnosed with mood or anxiety disorders are about twice as likely to also have a drug use disorder (abuse or dependence) compared to the general population.[271]

These co-morbidities lead to poor outcomes. People with bipolar disorder who also abuse drugs or alcohol benefit less from any treatment they are receiving, recover more slowly from violent mood swings, and are more likely to commit suicide. Similarly, individuals with psychotic disorders who abuse drugs or alcohol spend more days hospitalized, have higher rates of HIV infection, relapse, re-hospitalization, depression, and suicide risk.[272]

Conclusion

To improve population health, Rhode Island is focusing equally on (1) system transformation–moving state healthcare systems from volume to value-based, and (2) population health improvement. The cost of healthcare, including behavioral healthcare, is growing at an unsustainable rate in Rhode Island and across the United States. For each dollar the United States spends on healthcare, another approximate 55 cents is spent on social services within the United States health system.[273] This is approximately a quarter of what other developed countries spend on social services, many of which have better overall life expectancy.[274]. Smarter spending and improved health are a focus of Rhode Island's health system transformation efforts. To this end, Rhode Island has committed considerable time and resources to assessing the health of its residents and analyzing the quality of its healthcare system.

The State and its partners are working to institutionalize a population health model for improvement within Rhode Island's healthcare delivery system. Rhode Island's health leaders are taking advantage of Rhode Island's dual emphasis to maximize changes in the State's health system and improvements in residents' health in eight specific health focus areas that were identified by State officials and local stakeholders from a wide variety of backgrounds. This Health Assessment Report compiled information on these focus areas in order to concentrate State efforts, encourage collaboration, and most importantly, guide the development of efficient and effective action steps to address the health focus areas and improve health for all Rhode Islanders.

Rhode Island has invested time and resources in this Health Assessment Report because the State believes that population health improvements will only happen when stakeholders share responsibility for and collectively engage in:

- Reforming the healthcare delivery system;
- Addressing the social and environmental determinants of health; and
- Creating change within a culture of collaboration and integration.

Moving Population Health Forward in Rhode Island

As the State continues to develop additional key documents that build on this *Health Assessment Report*, the collection of the documents, once developed, will represent the *Rhode Island State Health Improvement Plan*. This plan and its associated documents will serve as a centralized source document for statewide population health planning. This approach is ideal because the plan can be updated in one central location and then be referenced, as needed, for multiple needs across State and local agencies. Establishing this process for population health planning further strengthens Rhode Island's culture of collaboration and enhances the State's ability to have cross-sector impacts on population health. As the State created this Report, the State has affirmed the following:

- A definition of population health that is not just based on short-term and long-term outcomes (for example, obesity prevalence and mean mortality), but the disparities in outcomes between groups.
- A desire to view health from the perspective of the whole-person, including a focus on both the mind and the body.
- Inclusivity within the term population health, whereas both physical and behavioral health are integrated and whereby the term physical health includes oral health, and the term behavioral health includes both mental health and substance use.
- An understanding that health is place-based (meaning created where we work, life, learn, and play) and is considered a resource for everyday life.
- Acknowledgement of many factors that can impede an individual's ability to achieve optimal health, including inadequate access to quality healthcare, lack of early intervention services, and availability of interventions specifically designed to meet needs across the lifecourse and in tandem with co-occurring conditions.
- And finally, population health planning efforts must consider all the determinants of health affecting Rhode Islanders.

Future Directions for Rhode Island's Health Assessment Report

While this Health Assessment Report is expansive and contains a wide range of data analysis, it is important to note that nevertheless, it could be even more comprehensive. Due to time constraints and the limited focus of Rhode Island's State Innovation Model (SIM), we hope that the next iteration or revision of this Report will include the following:

- Categorical analyses within the health focus areas that reflect the needs of underserved populations, many of whom lack the necessary trained providers and specialty targeted interventions required for adequate care. Such analysis may include:
    - Using disability status as an indicator, including those individuals with physical, intellectual, and developmental disabilities who may have functional and access needs;
    - A broader inclusion, where applicable, of other underserved populations including: incarceration status, sexuality and gender identity variables, non-English speaking

population groups, and other specific groups such as individuals who have autism or individuals experiencing brain injuries; and
    - Demonstrating disparities based on insurance type (such as Medicaid, Medicare, commercial), lack of insurance coverage, and cost of care within our health focus areas.

- Incorporation of additional data sets for the health focus areas that include specific and preferred measures for analyzing specific health focus areas in new ways, including:
    - Using national benchmarks for the data provided within this *Health Assessment Report*;
    - Using hospital discharge data, emergency department admission rates, and other sources of healthcare-specific data;
    - Leveraging data sets that can provide data that can be analyzed on various geo-scales to provide geographic-specific information; and
    - Utilizing measures (or proxy measures) of social and environmental determinants of health within the analysis of our health focus areas.

- Expansions within our existing health focus areas and later, beyond the current health focus areas in this version of the *Health Assessment Report* to reflect:
    - Broader array of substance use disorders (including an emphasis on alcohol) in lieu of just opioid use disorder;
    - Additional chronic conditions that are prevalent in Rhode Island and contribute to high healthcare costs (such as asthma and cancer);
    - Inclusion of nutrition and maternal risk-factor within Maternal and Child Health; and
    - Emerging issues in population health such as the lack of oral healthcare, increase in sexually-transmitted infections (such as HIV), among others.

Institutionalizing a Multi-Agency Population Health Planning Process

Rhode Island's SIM Test Grant provided critical resources to begin institutionalizing a population health planning process, but these resources are limited and ultimately will end, requiring other partners to continue this effort at that time. Through planned sustainability efforts, it is anticipated that this is the beginning of a long-term commitment by the State's leadership to continue this connection between research, planning, and action for improving population health. Given this approach, we plan to:

- Continue to **explore the data** about our population health and over time, add health focus areas to inform us about evolving and future challenges ahead.
- Develop a **framework for population health** to inform better planning: from a lifecourse perspective (how do health challenges change from preconception to death); from an intervention lens (how best can we intervene along the continuum of care to create change); and from a co-occurrence and co-morbidity approach (how often do health challenges appear with each other and how are they affected by each other).
- Design our value-based purchasing and other healthcare reforms to have a **positive impact on Rhode Island's population health**.
- Develop and monitor a comprehensive set of **health improvement activities** that are implemented to reach our integrated population health goals.

- **Evaluate** over time the impact of our collective interventions on population health goals.

By establishing centralized source documents and a multi-agency process for population health planning, this *Health Assessment Report*, and, ultimately, the *Rhode Island State Health Improvement Plan*, further strengthens Rhode Island's culture of collaboration and represents a first step toward enhancing the State's ability to have measurable cross-sector impacts on population health.

Appendix 1:
Convergence of Trends and Local Assessments

Rhode Island is committed to improving the health of its residents through informed decision-making. In the past several years, the State and various partners have embarked on a range of efforts to collect in-depth information about the needs of Rhode Islanders and the effectiveness of initiatives aimed at meeting those needs.

Each report summarized below contains slightly different, but related, information about the needs of Rhode Islanders. Read in isolation, the documents offer important information about a select population or a particular governmental approach. Arranged together, they form a more comprehensive and complex picture of state needs and efforts moving forward.

The top-level findings of those efforts are summarized in an effort to maximize their potential and illustrate how a myriad of state approaches have coalesced to inform the state's eight health focus areas and its health planning process.

Local Community Assessments

The reports summarized below take a community approach to identifying the health needs of Rhode Islanders. They include:

- **The 2013 and 2016 Community Health Needs Assessments (CHNAs)**: these assessments, completed by the Hospital Association of Rhode Island (HARI) and Lifespan Hospitals, capture the health gaps and priorities in the areas served by Rhode Island's local hospitals. Full reports are available online for the HARI CHNA and the Lifespan CHNA.
- **The 2015 Health Equity Zone (HEZ) Assessments:** these assessments, competed by the Rhode Island Department of Health (RIDOH), focus on specific communities with identified health disparities. Full reports are available online for each HEZ.

Combined, the findings from these reports paint a comprehensive picture of the health needs of Rhode Islanders across the state and in geographic areas with socioeconomic disadvantages.

Both the CHNAs and the HEZ assessments identified issues that align with the health focus areas in this Health Assessment Report. The figure below illustrates where this alignment exists.

Table 1A: SIM Alignment with Community Health Needs Assessments (CHNA) and Health Equity Zone (HEZ) Health Needs Assessments.

Health Focus Area	SIM Health Focus Area	HARI* Community Health Needs Assessment	Lifespan Community Health Needs Assessment	HEZ* Regional Health Needs Assessments
Chronic Disease	✓	✓	✓	✓
Obesity	✓		✓	✓
Tobacco Use	✓			✓
Maternal and Child Health	✓	✓		✓
Depression	✓	✓	✓	✓
Children with Social & Emotional Disturbance	✓	✓	✓	✓
Serious Mental Illness	✓	✓	✓	✓
Opioid Use Disorders	✓	✓	✓	✓

**Source: Hospital Association Rhode Island (HARI) and Health Equity Zones (HEZ)*

Hospital Association of Rhode Island's (HARI) Community Health Needs Assessments (2013 and 2016)

Every three years, Rhode Island's hospitals complete a CHNA, an extensive report on the health needs of the communities they serve. The most recent assessments were completed in 2016 and build off the efforts and infrastructure created for the 2013 assessments. In both 2013 and 2016, HARI members conducted a statewide CHNA.[275] As a non-HARI member, Lifespan hospitals conducted a separate CHNA. Both HARI and Lifespan CHNAs drew on community partner and consumer engagement as well as secondary data sources to compare statewide data to local hospital service area data, identify and prioritize local health issues, monitor and measure success, and improve population health.

Table 2A: HARI Member Hospitals.

HARI Member Hospitals	
Butler Hospital	Providence Veteran's Administration Medical Center
Eleanor Slater Hospital	Roger Williams Medical Center
Fatima Hospital	South County Hospital
Kent Hospital	Westerly Hospital
Landmark Medical Center	Women & Infants Hospital
Memorial Hospital of Rhode Island	

The 2013 data sources were later compiled on a HARI-sponsored website, RIhealthcarematters.org, to make the information easily available to the public. The website features not only data measures but also data maps, resources, and tools for generating reports on a range of topics, from access to health insurance to the rate of violent crime. When available, data can be broken down by census tract, county, and ZIP code. The site also compares Rhode Island-specific data with *Healthy People 2020* benchmarks to show the State's current status on selected health issues.

HARI CHNA Methodology

The first data collection process for the 2016 CHNA was a community partner engagement effort in which nearly 200 community leaders provided insight and feedback regarding health and socioeconomic needs in their locale, community assets, gaps in existing services, and opportunities for partnership and collaboration with other community and state stakeholders. Community citizens also were engaged to provide information about community-level experiences and perceptions. Focus groups were conducted with 40 health consumers or those who purchase health insurance and use healthcare services. Focus group participants discussed experiences central to two distinct topics: accessing behavioral health services among residents in Washington County and diabetes among the Latino population in the Central Falls/Pawtucket area.

Secondary data collection efforts for the 2016 CHNA consisted of demographic and socioeconomic data, public health statistics including Rhode Island Behavior Risk Factor Survey System (RI BRFSS) and Centers for Disease Control and Prevention (CDC) data, and hospital utilization data. Regional and local assessment reports such as the RIhealthcareMatters.org web portal, 2013 CHNA and Children's Health Insurance Program (CHIP) reports, the *Truven Report*, and the *Rhode Island KIDS COUNT Factbook* were also used in the analysis.

Based on this analysis, 2016 CHNA priorities were shifted to focus on the following priority areas:

- Behavioral health;
- Chronic disease (both diabetes and heart disease); and
- Maternal and child health.

Notably, the 2016 CHNA included indicators of social determinants of health, including poverty, employment, and education, as well as regional health disparities within each of these priority areas. Table 3A shows a sample of selected measures taken from the 2016 CHNA Research Overview that are relevant to the Health Focus Areas contained in this Report.

Table 3A: Selected CHNA Measures Relevant to SIM Health Focus Areas.

	Statewide	Data Source	Disparity Data Available?	Measure Period	*Healthy People 2020* Target
Socioeconomic Indicators					
Families in poverty	10.4%	Nielsen	County	2016	NA
Families with children in poverty	8.1%	Nielsen	County	2016	NA
Unemployment	6.2%	Nielsen	County	2016	NA
Less than high school diploma	14.2%	Nielsen	County	2016	NA
Depression and Serious Mental Illness					
Mental health condition among emergency department (ED) patients	14%	Hospital Utilization Data	Hospital		NA
Opioid Use Disorders					
Drug overdose deaths per 100,000	21.7	CDC, Fatality Analysis Reporting System	County	2009-2014	NA
Substance use among ED patients	13%	Hospital Utilization Data	Hospital		NA
Chronic Conditions: Diabetes					
Adult Type 2 diabetes Prevalence	9.8%	CDC, RI BRFSS	Age, gender,	2011-2014	NA but "good"

			race/ ethnicity		compared to other U.S. states
Chronic Conditions: Heart Disease					
High blood pressure	32.9%	CDC, RI BRFSS	County, age, gender, race/ ethnicity	2011, 2013	Not met (26.9%)
High cholesterol	39.8%	CDC	County	2011	Not met (13.5%)
Maternal and Child Health					
Low birth weight	7.7%	Health Indicators Warehouse	Race/ ethnicity	2007-2013	Met (7.8%)
Preterm births	11.0%	Health Indicators Warehouse	Race/ ethnicity	2007-2013	Met (11.4%)

HARI Informant Interviews and Community Health Forum

Through feedback from the community partner engagement process, HARI's 2016 CHNA identified several barriers to accessing services as well as needed services that are missing from Rhode Island's delivery system. The most cited issues included:

- Eligibility criteria/social determinants of health;
- Lack of care coordination;
- Limited health education and literacy;
- Lack of providers (especially home-based, multilingual, and psychiatrists);
- Limited funding for free or reduced-cost services;
- Stigma; and
- Transportation.

It should be noted that similar issues regarding access to care, particularly insurance coverage, cost of care, and transportation, were highlighted as a concern in HARI's 2013 CHNA.

Community engagement efforts involving consumers in Washington County were focused on experiences using behavioral health services. Focus groups identified the following key issues:

- Prevalence of behavioral health conditions and lack of recognition of symptoms;
- Lack of inpatient and outpatient resources and providers;
- Gaps in services; and
- Lack of coordination between services and care providers.

Community engagement efforts involving consumers in Central Falls/Pawtucket were focused on Diabetes among Latino populations. Focus groups identified the following issues:

- Recognition of the prevalence of diabetes among Latinos;
- Barriers in accessing care;
- Lack of community health education; and
- Limited opportunities for healthy eating and exercise.

Summary of HARI CHNA Findings

When HARI combined this qualitative data with its other data sources about the health of Rhode Islanders, it uncovered a number of "overlapping health issues" at the intersection between community health needs and delivery system gaps. The CHNA report highlights these issues as the most prominent concerns for Rhode Island:

- **Behavioral Health**
  Stakeholders raised specific concerns about the prevalence of mental health and substance use disorders in Rhode Island compared to other states. Data analyzed in the CHNA indicated that adolescents in Rhode Island experience major depressive episodes at higher rates than other New England states, and 14% of high school students report attempting suicide. Rhode Island adults have the highest rate of death due to narcotics compared to other states, and often have unmet mental health needs, due in part to a low behavioral health provider to patient ratio.

- **Chronic Disease: Diabetes**
  Diabetes prevalence and death attributable to diabetes have been on the rise in recent years. Further, approximately one-third of adults with diabetes in Rhode Island have not been diagnosed, with non-Hispanic, Black residents having the lowest rates of diabetes testing. Stakeholders in Central Falls/Pawtucket worked to identify barriers that contribute to racial/ethnic disparities among the Latino population in particular.

- **Chronic Disease: Heart Disease**
  High blood pressure and high cholesterol, two risk factors for heart disease, are more prevalent in Rhode Island than in other states. Racial/ethnic disparities also persist, as Black and Hispanic Rhode Islanders are more likely than White Rhode Islanders to delay medical treatment due to cost.

- **Maternal and Child Health**
  The rate of Neonatal Abstinence Syndrome (NAS) in babies in Rhode Island nearly doubled between 2006 (37.2 per 100,000 births) and 2013 (72 per 100,000 births).[276] While rates of low birth weight and preterm births are low compared to the rest of the country, significant racial/ethnic disparities exist, with the highest prevalence among Black and American Indian/Alaska Native infants.

HARI published preliminary findings in a presentation, *2016 Community Health Needs Assessment Research Overview*, to offer a statewide perspective on the health of the state. Each member hospital also generated individual reports focusing on data specific to the needs of each hospital's service area.

Lifespan Community Health Needs Assessments (2016)

As noted previously, Lifespan hospitals (Rhode Island Hospital—including Hasbro Children's Hospital, Bradley Hospital, The Miriam Hospital, and Newport Hospital) conducted their own CHNA, focused on data specific to the service areas and priorities of their hospitals.

Lifespan CHNA Methodology

Similar to HARI's CHNA process, Lifespan hospitals assessed their respective communities' health needs by conducting analyses on primary and secondary data, conducting interviews with community partners and key informants, and facilitating community forums. Between October 2013 and September 2016, the Lifespan Community Health Institute (LCHI) identified key stakeholders and conducted unstructured discussions on a variety of health topics. Each Lifespan hospital conducted a series of community health forums that were facilitated by diverse and intensively trained community liaisons. Altogether, 24 forums were held in a variety of community locations, with a total of 427 participants. Themes from these conversations are reflected in each hospital's implementation plan.

Lifespan hospitals also conducted an analysis of patient data through FY 2015 to understand trends in utilization of services and the underlying distribution of patient characteristics. These analyses were complemented by secondary data sources including: RI BRFSS, Kaiser Family Foundation State Health Facts, County Health Rankings, Commonwealth Fund Report Cards, *Rhode Island KIDS COUNT Factbook*, *2015 Statewide Health Inventory*, and *Rhode Island's Strategic Plan on Addiction and Overdose*. The Lifespan CHNAs also incorporated RIDOH's strategic priorities around population health and health needs identified through RIDOH's HEZ initiative.

Summary of Lifespan CHNA Findings

The significant needs described reflect community feedback obtained through the community health forums, key stakeholder interviews, and national, local, and hospital-level data. While needs varied by hospital and community, a number of common issues arose across regions, several of which align with the state's health focus areas. The most significant needs that align with the state's health focus areas are:

- **Obesity and Chronic Disease: Diabetes and Heart Disease**
  Food access, healthy weight, and nutrition emerged as a specific area of need. Although Rhode Island's rate of obesity is the 12th lowest in the nation, diet-related diseases such as diabetes, hypertension, and heart disease affect more than half of Rhode Islanders.[277] The Lifespan CHNAs recognize that upstream determinants of health, specifically food insecurity caused by physical and structural barriers to accessing food, prevent many Rhode Islanders from making healthy choices.

- **Chronic Disease: Heart Disease**
  Cardiovascular disease, including heart disease and stroke, is the leading cause of death and disability in Rhode Island and the country.[278] Health systems and hospitals can support good cardiac health by providing diagnostics, surgery, intervention, and rehabilitation, as well as expanding access to more preventive programs that focus on nutrition and physical activity.

- **Opioid Use Disorders**
  Substance use disorders and children's behavioral health emerged as two specific areas of need in Lifespan's communities. In the past decade, opioid use disorder has been on the rise. In 2015, 259 people in Rhode Island died of drug overdose. In providing early diagnosis and treatment, and adhering to the recommendations of the *Rhode Island Strategic Plan on Addiction and Overdose*, hospitals are critical players in addressing this epidemic. Among children in Rhode Island, mental healthcare has become one of the most pressing issues. Access to behavioral health services, which includes insurance, transportation, and availability of providers and services, has been identified as an area of need in Lifespan's CHNAs.

RIDOH Health Equity Zone Community Needs Assessments (2015)

In 2015, RIDOH launched the Health Equity Zone (HEZ) initiative in communities across Rhode Island. A HEZ is a contiguous geographic area that has measurable and documented health disparities, poor health outcomes, and identifiable social and environmental conditions that can be improved. The initiative is designed to achieve health equity by eliminating health disparities using place-based strategies that promote healthy communities. The 10 HEZ Collaboratives are funded with state and federal dollars to support innovative approaches to prevent chronic diseases, improve birth outcomes, and improve the social and environmental conditions of neighborhoods across five counties statewide. The HEZ Collaborative is built on meaningful engagement and coordination between multi-sector key stakeholders including municipal leaders, residents, businesses, transportation entities, faith leaders, community planners and partners, law enforcement, education systems, and health systems, among others.

HEZ-funded interventions will be implemented over a three or four-year period. As a first step, HEZ grantees were directed to conduct in-depth needs assessments to aid in developing a work plan that focuses on serving each respective community, investing in local resources, and improving population health. The coming years will be spent implementing HEZ interventions.

Table 4A: HEZ Regions and Lead Agencies.

HEZ Region	Regional Scope	Lead Agency
Providence	Citywide	Healthy Communities Office, City of Providence
Pawtucket and Central Falls	Citywide	Local Initiatives Support Corporation (LISC)
North Providence	Neighborhood	North Providence School Department
Olneyville	Neighborhood	ONE Neighborhood Builders

Providence	Neighborhoods (Southside, Elmwood, West End)	Providence Children and Youth Cabinet
Washington County	Countywide	South County Health
West Warwick	Citywide	Thundermist Health Center
Woonsocket	Citywide	Thundermist Health Center
Bristol	Townwide	Town of Bristol
Newport	Citywide	Women's Resource Center

Assessment Findings

For the majority of the 10 HEZs, year one was dedicated to conducting community needs assessments. The Olneyville, Washington County, and Woonsocket HEZs, however, were able to begin in the action phase, since each of these regions were able to tap into recently conducted assessments and studies of health needs, including the CHNAs, leveraging collaborative resources to engage services providers, educators, community leaders, and residents to collect information about the communities' unique health burdens and needs. While methods varied across HEZs, each region completed extensive data collection efforts through surveys administered to residents and stakeholders, focus groups conducted with specific populations or groups of professionals, and one-on-one targeted interviews. Results of these needs assessments were summarized in reports that HEZ Collaboratives submitted to RIDOH at the end of year one.

Collectively, the 10 HEZ Collaboratives identified 134 community needs spanning seven distinct health topic areas, including healthy eating, physical activity, general health and well-being, social determinants of health, substance use, mental health, and child and family health. Despite wide variation in identified needs across HEZs, there were several specific health needs that were articulated by many of the 10 HEZ regions. The most commonly cited needs, each identified by at least five HEZs, were:

- Access to affordable, healthy foods;
- Transportation to obtain healthy foods;
- Access to affordable, organized exercise/recreational opportunities;
- Maintained and safe sidewalks/paths for walking and biking;
- Transportation to medical appointments;
- High prevalence of chronic disease;
- Improved public transportation; and
- Employment/economic supports and opportunities.

Many of the health concerns highlighted in this assessment process align with the State's population health priorities. The following table displays a selection of HEZ-identified needs that overlap with the State's health focus areas and the respective HEZ regions that identified each need.

Table 5A: HEZ Health Needs Relevant to SIM Health Focus Areas.

SIM Health Priority Area	HEZ Need	HEZ Region
Tobacco Use	Address high prevalence of tobacco use	Olneyville, W. County
Obesity	Provide overall access to affordable healthy foods	Bristol, Newport, Olneyville, Pawtucket, W. Warwick, Woonsocket
	Assure transportation to obtain healthy foods	Bristol, Newport, Olneyville, W. Warwick, Woonsocket
	Address low consumption of fruits and vegetables	Newport, Olneyville, W. Warwick, Woonsocket
	Create access to affordable organized exercise/recreational opportunities	Bristol, Newport, Olneyville, Providence, W. Warwick, Woonsocket
	Maintain safe outdoor spaces for physical activity	Bristol, Newport, Providence, W. Warwick, Woonsocket
	Address high prevalence of obesity	N. Providence, Olneyville, S. County
Maternal and Child Health	Address high rates of teen pregnancy and birth	W. Warwick, Woonsocket
	Address racial/ethnic disparities in low birth weight and preterm births	S. County
Chronic Disease	Address high prevalence of chronic disease	N. Providence, Olneyville, S. County, W. Warwick, Woonsocket
	Increase access to and awareness of chronic disease monitoring/prevention programs	Bristol, Olneyville
	Provide education about diabetes, cholesterol, and nutrition	Bristol
	Increase rate of having blood pressure and cholesterol checked	S. County
Opioid Use Disorders	Address growing substance use problem	Bristol, Pawtucket, W. Warwick, Woonsocket
	Increase access to treatment and supports for substance use	Bristol, W. Warwick, Woonsocket
	Address high rate of accidental drug overdose	S. County, W. Warwick, Woonsocket

Children with Social and Emotional Disturbance & Serious Mental Illness	Address prevalence of behavioral health issues among youth	N. Providence, Providence, S. County
Cross-Cutting Behavioral Health Focus Areas: • Depression • Children with Social and Emotional Disturbance • Serious Mental Illness • Opioid Use Disorders	Address high rate of mental illness and trauma	S. County, W. Warwick, Woonsocket
	Improve access to social services among those with mental health and/or substance use issues	Pawtucket, S. County

Obesity, Physical Activity, and Nutrition

HEZ investments across regions are largely funding activities that align with the State's health focus areas. Nine of the 10 HEZs are using funds to expand access to healthy foods with activities such as encouraging retail venues to offer and promote healthy foods and to accept WIC and SNAP benefits, increasing the capacity and patronage of new and existing farmer's markets, and developing and implementing healthy eating policies. Eight of these HEZs are complementing their healthy food and nutrition activities with efforts to increase physical activity among residents. Some of these activities call for improvements in neighborhood infrastructure, such as the development of bike paths and green spaces, while others are focused on providing recreational and fitness programming in existing facilities and outreaching to members of the community to encourage participation.

Chronic Disease

HEZ funds are also being allocated across eight HEZs to support diabetes prevention and self-management, largely through promoting and providing evidence-based programs targeted to individuals who have been diagnosed or identified as being at higher risk for diabetes.

Maternal and Child Health

All 10 HEZs are investing in projects to promote and integrate physical and behavioral health for pregnant women, infants, children, and teens. Specific interventions focus on supporting children's readiness for school by building social-behavioral capacities and strengthening parenting skills, promoting healthy homes and neighborhoods to improve developmental outcomes, reinforcing community programming that empowers young people and encourages healthy lifestyle choices, and making reproductive and prenatal healthcare services more accessible. Included in these activities are interventions aimed at prevention of youth initiation of tobacco use, which is a priority in the Olneyville and City of Providence regions.

Behavioral Health

Behavioral health strategies are an important aspect of seven HEZs' work plans as well, with interventions focused across the lifecourse. Interventions include training modules for parents and teachers to support development and social emotional learning, school-based substance use prevention and mental health counseling, mental health, first aid and suicide-prevention programming for teens, toxic stress screening and mitigation services, and opioid overdose prevention and recovery supports. These investments align closely with three of the four SIM behavioral health focus areas: depression, children with social and emotional disturbance, and opioid use disorders.

Findings from Other State Plans and Key Reports

The reports summarized below examine Rhode Island's healthcare system, identifying gaps and setting action steps for improvement. They include:

- The *2013 Rhode Island State Healthcare Innovation Plan (SHIP)* reported on the results of Rhode Island's "State Innovation Model (SIM) Design Process" which laid the foundation for the current SIM grant and the population health plan's eight health focus areas. Full report available online.
- The *2013 Rhode Island Coordinated Chronic Disease Prevention and Health Promotion Plan* took an integrated approach to addressing chronic diseases. Full report available online.
- The *2014 State Health Assessment and Improvement Plan (HAHIP)* embarked on a comprehensive and coordinated approach to gathering and maintaining accurate data about disease and injury in Rhode Island. Full report available online.
- The *2015 Statewide Health Inventory* presented the State's most extensive collection of data on healthcare utilization and capacity in Rhode Island. Full report available online.
- The *2015 Rhode Island Children's Cabinet Strategic Plan* published a five-year strategic plan that recognizes health inequities faced by children and families in Rhode Island. Full report available online.
- The *2015 Rhode Island Commission for Health Advocacy and Equity Legislative Report* assessed health disparities in the state. Full report available online.
- The *2015 Reinventing Medicaid Report* presented a multi-year plan for reimagining the way Rhode Island delivers publicly financed healthcare. Full report available online.
- The *2015 Truven Report* quantified the demand, spending, and supply for the full continuum of behavioral health services in the state. Final report as well as reports on behavioral health supply, demand, and cost available online.
- The *2015 Combined Substance Abuse/Mental Health Assessment Plan* included the results of a two-year assessment to identify the strengths and needs of Rhode Island's behavioral health system. Full report available online.
- The *2016 Rhode Island Healthy Aging Data Report* examined healthy aging in the state, providing custom profiles that include more than 120 indicators of healthy aging. Full report available online.

Rhode Island State Healthcare Innovation Plan (2013)

Before Rhode Island embarked on its current State Innovation Model (SIM) grant, the office of Lieutenant Governor Elizabeth Roberts received SIM funding to conduct a SIM Design Process. The end result was

the *2013 Rhode Island State Healthcare Innovation Plan (SHIP)*, which laid the foundation for the current SIM grant and its activities.

The SHIP authors noted that the plan should not be read "as the implementation blueprint, but rather a holistic model with the need for further debate and discussion on program details."[279] Indeed, the SIM project has evolved since this initial document, with the SIM Steering Committee taking on the responsibility for that debate and discussion. Many of the concepts and proposals from the SHIP plan continue to evolve through the current SIM efforts. Figure 6A illustrates the overlap between the SHIP and the current Population Health Plan Health Focus Areas.

Figure 6A: SHIP Findings and Goals Relevant to Health Focus Areas[280]

Health Focus Area	Finding/Goal
Obesity	• Finding: Identified as one of four "modifiable risk factors" for chronic diseases and indicator of "unmet community need." • Finding: Identified as one of two major risk factors for most common chronic diseases. • Goal: Use BMI of 30 or higher as a disease/conditions indicator. • Goal: Use "sedentary lifestyle" as a behavioral/lifestyle indicator.
Tobacco Use	• Finding: Identified as one of four "modifiable risk factors" for chronic diseases and indicator of "unmet community need." • Finding: Identified as one of two major risk factors for most common chronic diseases. • Goal: Use smoking rates as a behavioral/lifestyle indicator.
Chronic Disease	• Finding: Identified as among the most common and expensive illnesses in Rhode Island. • Finding: Includes diabetes as a risk factor for oral health.
Cross-Cutting Behavioral Health Focus Areas: • Serious Mental Illness • Depression • Children with Social and Emotional Disturbance • Opioid Use Disorders	• Finding: Behavioral health identified as the "largest single source of burden of disease" in Rhode Island. • Goal: Reform state's behavioral health system through payment transformation, co-location of primary care and behavioral health services, and use of community health teams.
Maternal and Child Health	• Finding: includes pregnancy as a risk factor for oral health.

Rhode Island State Healthcare Innovation Plan (SHIP) Assessment

The SHIP begins with a description of Rhode Island's current healthcare system, highlighting the burden of chronic diseases. It identifies heart disease, stroke, diabetes, and arthritis as among the most common and costly chronic diseases in the state, tying the presence of these conditions to age-adjusted hospitalization and mortality rates. All of these diseases, except for arthritis, are included in the current Health Focus Areas presented in this report.

Smoking, high blood pressure, overweight/obesity, and lack of physical activity are identified as the four "modifiable risk factors" that are responsible for these chronic conditions. Smoking and obesity are current health focus areas, and lack of physical activity is related to obesity, while high blood pressure is not included in the current population health plan.

The SHIP identifies the need for targeted, sustainable health promotion efforts and chooses reducing smoking, lowering the level of diabetes, and specific population health efforts.

Focus on Behavioral Health

The SHIP identifies behavioral health as the "largest single source of burden of disease" in Rhode Island, noting that behavioral health-related conditions are among the top three diagnoses for Medicare, Medicaid, and commercial health insurance. SHIP also breaks behavioral health into subcategories:

- General mental health;
- Depressive disorders;
- Alcohol use; and
- Serious mental illness.

These focus areas have changed slightly since the SHIP was written. Serious mental illness and depression are still among the most current health focus areas, but general mental health and alcohol use have been replaced by the focus areas of opioid use disorders and children with serious mental illness.

The SHIP also recommended a complete reform of the state's behavioral health system, including payment transformation, the co-location of behavioral health and primary care providers and the use of community health teams as key strategies for this transformation.

Focus on Co-Morbidity

Similar to this Report, the SHIP acknowledged the presence of co-morbidity and co-occurrence, using the term "clustering" to describe combined presence of health conditions/unhealthy behaviors. The SHIP noted that the most expensive 5% of the population requires intensive services because of multiple co-morbidities and at least one complex illness. These Rhode Islanders are considered "high-risk patients."

Steps to Improve Population Health

The SHIP created the groundwork for the efforts of the current population health planning efforts by setting "Improve the Health of all Rhode Islanders" as its first of three primary goals. To do this, the SHIP process recommended three levels of measurement:

- **Indicators of overall health:** One way to examine health on a population-wide basis is focusing on years of potential life lost.
- **Prevalence of specific diseases and conditions that contribute to population health:** The SHIP mentions overall prevalence of Type 2 Diabetes and Rhode Islanders with a BMI of 30 or higher as potential examples.
- **Behavioral and lifestyle indicators that impact the health of the population:**[281] Smoking rates and rates of Rhode Islanders with "sedentary lifestyles" are among the potential indicators.

These efforts are currently present in the SIM funding priorities, in the comprehensive data collection in this *Health Assessment Report*, and in future efforts to monitor and measure the health of all Rhode Islanders.

Rhode Island Coordinated Chronic Disease Prevention and Health Promotion Plan (2013)

In 2013, RIDOH released *the Rhode Island Coordinated Chronic Disease Prevention and Health Promotion State Plan (RI CCDPHP)*. The RI CCDPHP identified heart disease, stroke, diabetes, and arthritis as some of the most common and costly illnesses in Rhode Island, yet preventable by addressing risk factors such as smoking, high blood pressure, overweight/obesity, and the lack of physical activity. While these conditions were being addressed individually within categorical programs in the Department, there was no interface across program areas. RIDOH determined that an integrated approach to surveillance and evaluation would be needed to improve population health outcomes. The table below illustrates areas of connection between the findings from the RI CCDPHP and the assessment report's health focus areas.

Table 7A: Selected Findings from RI CCDPHP Relevant to Health Focus Areas.

Health Focus Area	Finding/Goal
Obesity	• One of four modifiable risk factors identified as responsible for much of the illness and premature death in Rhode Island adults. • 62.5% of Rhode Island adults are overweight or obese. • 26.2% of Rhode Island adults reported no physical activity/exercise within the past 30 days. • Overweight and obesity increase risks of heart disease, stroke, type 2-diabetes, and osteoarthritis.

Tobacco Use	• One of four modifiable risk factors identified as responsible for much of the illness and premature death in Rhode Island adults. • 20% of Rhode Island adults report being current smokers. • Smoking, physical inactivity and high blood pressure (hypertension) increase the risks of heart disease, stroke, type 2 diabetes, and rheumatoid arthritis.
Chronic Disease	• Heart disease, stroke, diabetes, and arthritis are among the most common, costly, and preventable of all illnesses in Rhode Island. • An estimated 7.4% (62,000) of Rhode Island adults have diagnosed diabetes. People with diabetes have medical expenditures 2.4 times higher than they would if they did not have diabetes. In Rhode Island, direct healthcare costs for adults with diabetes amount to an estimated $722 million annually. • As of 2010, the annual mortality rate due to stroke in Rhode Island was 34 deaths per 100,000 population. Approximately a third of Rhode Island adults have diagnosed high blood pressure, a major cause of stroke. • In Rhode Island, 29% adults have arthritis. Of these adults, 41% have activity limitation due to their arthritis.

The RI CCDPHP included cross-cutting, statewide goals, objectives, and recommendations that included strategies that support healthy behaviors population-wide. It included policies at the state and community levels that are related to tobacco-free living, healthy environments, healthy development, social equity and social cohesion, and chronic diseases and their associated risk factors. The RI CCDPHP was guided by a vision that aligned with United States Public Health Services and *Healthy People 2020* strategic directions and long-term objectives for community transformation, chronic disease prevention, and health promotion. The RI CCDPHP incorporated health equity, which addresses the social determinants of health; policy integration; environmental, programmatic, and infrastructure strategies; and strategy implementation for populations across the life span.

RI CCDPHP Findings Relevant to Health Focus Areas

The RI CCDPHP was a concerted effort of the Division of Community, Family Health and Equity within RIDOH. The internal collaborative process occurred in coordination with the work of an external group of more than 35 partners who comprised the Rhode Island Collaborative for Health Equity. This partnership was established to help Rhode Island significantly reduce and control chronic diseases and risk factors population-wide by implementing crosscutting strategies in multiple settings that connect healthcare, workplaces, child and adult care settings, and schools, among other places. These strategies relate to the five goals of the RI CCDPHP:

- Enhance capacity in leadership, management, advocacy, communication, surveillance, evaluation, and community mobilization to promote a culture of collaboration and advance disease prevention and health promotion;
- Create an integrated surveillance system that provides information on health-related risk and protective factors across the life span;
- Advance environmental strategies to improve individual-level health behaviors;
- Enhance services and systems in place that expand access to and utilization of coordinated healthcare services and reduce morbidity and mortality of preventable chronic diseases and risk factors; and
- Expand access to community-based preventive services and strengthen their linkages with clinical care."[282]

Rhode Island Health Assessment and Health Improvement Plan (2014)

In 2014, RIDOH released *the Rhode Island's Health Assessment and Health Improvement Plan (HAHIP)*. RIDOH determined that gathering and maintaining accurate data about disease and injury was one of the most important aspects of its mission, to assist in identifying both health focus areas and opportunities for improvement in addressing those concerns. Data also were viewed as being essential for determining how Rhode Island's health indicators compared with other states in order to identify opportunities to improve health for all Rhode Islanders. Finally, RIDOH determined that a health improvement plan should reflect the views and perspectives of the individuals that make up Rhode Island's communities and the partners that work to support them.

The HAHIP is the product of a statewide collaboration and includes selected qualitative and quantitative data from a variety of sources and partners identifying needs and collaborative strategies to make Rhode Island's cities, towns, and neighborhoods healthier places to live, work, and learn.

HAHIP Findings

RIDOH gathered and analyzed a variety of data sources. The first source of data involved snapshots of the 39 cities and towns in Rhode Island, which included the median family income of residents; rates of low birth weight babies, infant mortality, teen births, high school graduations and attainment of a college degree; and the percent of the population born outside of the United States. A second data source was a report of Rhode Island's performance related to America's Health Ranking indicators. Though, as of 2013, Rhode Island ranked 19th overall as healthy compared to other states in the nation, the state ranked lowest of all New England states suggesting areas of needed improvement. A third source of data were the Minority Health Facts reports.

Produced in partnership with the Rhode Island Public Health Institute, the reports assessed disparities in rates of mortality, chronic health conditions, and access to healthcare among racial and ethnic populations. Finally, HAHIP included input from communities throughout the state. Information was gathered from the Community Health Assessment Group, the Maternal and Child Health Community Input Process, needs assessments conducted by HARI and Community Health Reports produced by the Public Health Institute.

The figure below summarizes selected HAHIP needs that overlap with the State's health focus areas.

Table 8A: Selected HAHIP-Identified Needs Relevant to Health Focus Areas.[283]

Health Focus Area	HAHIP-Identified Need	Community
Tobacco Use	• Reduce tobacco use	• Southside Providence, Central Falls, Constitution Hill – Woonsocket, Olneyville
	• Increase coverage for cessation products	• Olneyville
Obesity	• Address low consumption of fruits and vegetables	• Southside Providence, Central Falls, Constitution Hill – Woonsocket, Olneyville
	• Offer transportation to obtain healthy foods	• Olneyville
	• Increase affordability of healthy foods	• Olneyville
	• Increase access to affordable organized exercise/recreational opportunities	• Southside Providence, Central Falls, Constitution Hill – Woonsocket, Olneyville
Chronic Disease	• Address high rates of high blood pressure, diabetes, and heart disease	• Southside Providence, Central Falls, Constitution Hill – Woonsocket, Olneyville
	• Increase screening for diabetes	• Southside Providence
	• Reduce risks of chronic diseases associated with second-hand smoke	• Constitution Hill-Woonsocket
	• Improve access to preventive care	• Constitution Hill-Woonsocket
Cross-Cutting Behavioral Health Focus Areas: • Serious Mental Illness • Depression	• Reduce high rates of reported impairment in daily activities due to poor mental health	• Southside Providence, Constitution Hill-Woonsocket

HAHIP Interventions

Several key activities outlined in this document relate to the health focus areas contained within this report.

- **Obesity**
  Provide adult healthcare providers with tools and training to better address obesity prevention; and increase the percent of older adults who exercise on most days of the week.

- **Tobacco and Chronic Disease**
  Advocate for insurers to improve access to low and no-cost, face-to-face smoking cessation programs; conduct a joint campaign regarding the impact of smoking and second-hand smoke on asthma, targeting high school students and adults; expand the use of the Chronic Care Model with emphasis on racial/ethnic minorities; and disseminate *American Diabetes Association (ADA) Guidelines* to providers for diabetes screening recommendations.

- **Behavioral Health**
  Reduce years of potential life lost and days of lost work, school, and leisure in Rhode Island as measured by reduced opioid overdose related deaths; enhance access to mental health and substance abuse services; and prevent violence and injuries in Rhode Island as measured by a decrease in the number of suicide deaths among 15-24 year-olds.

Statewide Health Inventory (2015)

In 2015, RIDOH conducted an extensive healthcare utilization and capacity study. The inventory surveyed primary care facilities, outpatient specialty practices, behavioral health providers, hospitals, nursing facilities, assisted living centers, adult day care programs, home health providers, MRI imagining centers, ambulatory surgery centers, and dialysis centers to gather data on:

- Number of patients served;
- Services and treatments provided;
- Number of visits;
- Insurance accepted;
- Patient demographics;
- Languages spoken;
- Interpreter services;
- Transportation services; and
- Hours of operation.

The inventory also conducted a patient and community study to understand how community members access care. An extensive outreach effort led to a more than 90% response rate for nearly all surveys. As a result, the State Inventory reflects Rhode Island's most detailed and accurate picture of healthcare utilization and capacity to date.

These findings will play an important role in healthcare planning as the state seeks to address unmet needs, reduce duplication, and prioritize less expensive, community based services. The table below illustrates connections between the findings of the Statewide inventory and this report's health focus areas.

Table 9A: Selected Statewide Inventory Findings Relevant to the State's Health Focus Areas.

Health Focus Area	Finding
Obesity	• A significant gap in the availability of primary care providers.
Tobacco Use	• A significant gap in the availability of primary care providers.
Chronic Disease	• A significant gap in the availability of primary care providers.
Opioid Use Disorders	• Lack of substance abuse services from private psychiatrists and psychologists.
Cross-Cutting Behavioral Health Focus Areas: • Serious Mental Illness • Depression • Children with Social and Emotional Disturbance • Opioid Use Disorders	• Low levels of integration between physical and behavioral health providers. • Low rates of psychiatrists serving Medicaid recipients.
Maternal and Child Health	• A significant gap in the availability of primary care providers.

Major findings of the inventory include:

Primary Care Shortages and Disparities

The *2015 Statewide Health Inventory* uncovered a significant gap in the availability of primary care providers. On average, there is only one, full-time primary care provider for every 1,718 Rhode Islanders. Earlier studies had over-estimated the size of this workforce by 40%. The updated data show that Rhode Island must increase its pool of primary care doctors by at least 10% to meet national standards.

This scarcity has led to waiting lists at 20% of the state's primary care practices, with an average number of 62 patients per waiting list and an average wait time of about eight months. When patients struggle to find a primary care doctor, they are less likely to access care and screenings that can improve health outcomes and prevent more expensive treatments in the future. Addressing this gap will be important for

improving the health of all Rhode Islanders, especially given that having a primary care medical home is key to preventing, diagnosing, treating, and recovering from many, if not all, of the health focus areas within this report.

Although the physical location of primary care providers is not enough to accurately assess sufficient or insufficient access to primary care by geography, the initial data does indicate significant disparities, especially in communities where residents might rely on public transportation to get to their primary care provider. Notably, the Providence neighborhoods of South Elmwood, Silver Lake, Reservoir, Manton, Hartford, Fox Point, Federal Hill, and Downtown had no primary care providers at the time of the survey.

During the calendar year 2014, nearly 20% of all primary care practices in Rhode Island saw no Medicaid patients. Overall, less than 20% of practices had a patient mix that included at least 30% Medicaid patients.

Behavioral Health Segmentation and Disparities

In the surveys conducted by RIDOH, Rhode Island's Licensed Behavioral Health Clinics reported low levels of integration with physical health providers. Only 19% reported some type of integration with primary care practices and 91% did not have the same electronic medical record system as primary care providers. Despite efforts in the state to develop Patient Centered Medical Homes (PCMHs) that use a team approach to treat the whole person, less than 5% of Behavioral Health Clinics were connected to a PCMH. Private psychiatrists and psychologist reported similar low levels of integration with primary care providers.

While more than 45% of patients at Behavioral Health Clinics are Medicaid recipients, rates of Medicaid patients seen by private psychiatrist and psychologists are in the single digits. On average, fewer than 6% of patients at these practices have Medicaid coverage and at the time of the survey, less than 17% of private practices were accepting new Medicaid patients. Rates of Medicare patients were also low - only 3.9% for psychiatrists and 5.1% for psychologists. Of the psychiatrists and psychologists surveyed; less than 27% provided both mental health and substance abuse treatment and none focused primarily on substance abuse services.

Other Systemic Issues

Other systemic issues relevant to population health included the following:

- **Race, Ethnicity, and Language Gaps**
  The report uncovered a lack of information regarding patient race/ ethnicity, and language needs across the healthcare industry. In many outpatient settings, these data were not collected or data were very limited. At almost all types of healthcare facilities across the state, interpreter services were either not available or very limited. Family members or staff who spoke a patient's language often stood in as ad-hoc interpreters.

- **Electronic Medical Records Variation**
  There is still a wide variation in the use of Electronic Medical Records (EMRs) in practices across the state. Although about 85% of primary care practices use EMRs, only 60% of behavioral

health clinics and 55% of outpatient specialty clinics report substantial use. There is also a lack of integration between EMRs for behavioral health and physical health. A majority of behavioral health providers indicate that they do not use the same EMR platform as primary care practices, creating compatibility issues and challenges in continuity of care.

- **Lack of Medicaid Options for Community-Based, Long-Term Care**
  Rhode Island's Medicaid program aims to transition its elderly and disabled recipients away from institutional care and towards community settings whenever possible. However, that goal is difficult to meet when such community placements are unavailable. More than 50% of the state's assisted living facilities were not accepting new Medicaid patients when the state conducted its 2015 inventory. More than 50% of both long-term care and nursing facilities also lacked dementia care units.

Rhode Island Children's Cabinet Strategic Plan (2015)

According to the *Truven Report* (also known as the Rhode Island Behavioral Health Project), children in Rhode Island face greater economic, social, and familial risks for the development of physical health and behavioral health disorders than children in other New England states and the nation.[284] Unemployment among parents in Rhode Island is higher than in other New England states, more children live in single parent households in Rhode Island than in other New England States, and one in five children in Rhode Island belong to a family that lives below the federal poverty line. Children experiencing poverty are most at risk of not achieving their full potential. Poverty is linked to every aspect of a child's development and well-being. Between 2010 and 2014, nearly two-thirds (64%) of Rhode Island's children living in poverty lived in four cities: Central Falls, Pawtucket, Providence, and Woonsocket.[285]

Despite the substantial investments Rhode Island has made in services that support children, adolescents, and their families, service delivery may be disjointed across agencies. In addition, there are significant gaps in the use of evidence-based programming, and child and youth outcomes can be improved. In order to address these concerns, in July 2015, Governor Raimondo reconvened the Rhode Island Children's Cabinet, bringing together 10 statutorily-authorized cabinet leaders tasked with providing overarching leadership and a holistic approach necessary to address these concerns. The Cabinet has established a five-year strategic plan that recognizes health inequities faced by children and families in Rhode Island and how those inequities place children at risk for poorer health outcomes in adulthood.[286] Children and families in Rhode Island experience the following vulnerabilities:

- While approximately 96.7% of Rhode Island children younger than age 18 have health insurance, Rhode Island continues to experience persistent disparities in childhood obesity, asthma, lead poisoning, and infant mortality. African American children are disproportionately affected.

- Nearly a quarter of the high school students who participated in the most recent Rhode Island Youth Risk Behavior Survey (RI YRBS) "felt sad or hopeless almost every day for two weeks or more," and 16% reported more than one suicide attempt. Children and youth who face alienation, loneliness, and a lack of connection to society due to mental, emotional, and behavioral health

conditions and who fail to receive needed treatment at key transition points often find themselves in prison, homeless, and/or struggling with addiction later in life.[287]

- Approximately 4,000 (5%) young adults age 16-19 in Rhode Island are not in school and not working. Many of these young adults lacked access to appropriate early learning opportunities, had poor school attendance, did not receive necessary classroom supports, and/or received inadequate attention to their physical and mental health needs.

- The more disconnected a child becomes from school, work, or community, the more likely he or she is to become involved in the juvenile or criminal justice system.[288]

- Many Rhode Island children lived in households with incomes below the poverty threshold in 2016 (19.8%), and more than 9,000 children (4%) lived in families receiving cash assistance from the State. Many parents and families struggle to maintain safe housing and stable incomes to support their children in safe and healthy environments that impact their children's development and future outcomes.

This Plan focuses on five outcome areas that are critical to the well-being and holistic development of children living in Rhode Island—physical health and safety, behavioral and emotional security, academic empowerment and career readiness, social, cultural and civic engagement, and family and community stability. The plan also commits to intervene in and address disparities in child and youth outcomes that are rooted in racial inequity, income-level, and other special needs.

Table 10A: Selected Children's Cabinet Strategic Plan Findings Relevant to Health Focus Areas.

Health Focus Area	Finding/Goal
Obesity	• Rhode Island continues to experience persistent disparities in childhood obesity, disproportionately affecting African Americans
Tobacco Use	• One-half (52.5%) of Rhode Island children are exposed to second-hand smoke.
Chronic Disease	• Rhode Island continues to experience persistent disparities in childhood asthma, disproportionately affecting African Americans.
Cross-Cutting Behavioral Health Focus Areas: • Serious Mental Illness • Depression • Children with Social and Emotional Disturbance	• Nearly a quarter of the ninth through twelfth graders who participated in the most recent Rhode Island Youth Risk Behavior Survey "felt sad or hopeless almost every day for two weeks or more". • Slightly more than 16% of high school students reported more than one suicide attempt.

Maternal and Child Health	• Rhode Island continues to experience persistent disparities in childhood lead poisoning and infant mortality, disproportionately affecting African Americans.

Rhode Island Commission for Health Advocacy and Equity Legislative Report (2015)

In 2015, the Rhode Island Commission for Health Advocacy and Equity released its legislative report to assess "health disparities, or differences in health between population groups in our state."[289] The report offered a vision for a healthier Rhode Island, discussed the impact of social determinants of health, painted a brief picture of the demographics of Rhode Island, and discussed some of the factors that lead to health disparities. The report also explored the presence of health disparities across six key health areas:

- Maternal and child health;
- Asthma;
- Obesity;
- Diabetes;
- Heart disease; and
- Oral health.

Except for oral health, these key health areas align with the health focus areas in this *Health Assessment Report*. Figure 10A illustrates the overlap between the *Rhode Island Commission for Health Advocacy and Equity Legislative Report* and the health focus areas.

Assessment Gaps

Although the Health Advocacy and Equity Legislative Report identified clear disparities among its six key health areas, the Commission lacked the data to provide a comprehensive study of health inequities across the state. The report noted three key factors contributing to these data gaps:

- Non-standardized reporting of the social determinants across health outcomes.
- Exclusion of important social categories from some data collection tools (for example, sexual orientation).
- Exclusion of racial and ethnic populations, such as Native American and Southeast Asians, due to small population and sample size.[290]

Strategies for addressing these issues, such as the development of a social determinates of health measures set, will begin to address these limitations.

Overall Recommendations

The Health Advocacy and Equity Legislative Report also offered overall recommendations for addressing health disparities and improving the health of all Rhode Islanders including:

- Incorporate a Health in all Policies approach;
- Improve systems for collecting health disparities data;
- Strengthen Rhode Island's capacity to address health inequity;
- Expand partnerships; and
- Coordinate efforts for action.[291]

The Health Advocacy and Equity Legislative Report noted that the work to address health disparities requires partnerships across many sectors including academic institutions, hospitals. and government.[292] It voiced a commitment to finding new champions and spokespeople to advocate for policies and investments that promote health equity.

Figure 10A: Health Advocacy and Equity Legislative Report Findings and Recommendations Relevant to Health Focus Areas.[293]

Health Focus Area	Finding/Recommendation
Obesity	• Finding: Male adolescents have a higher prevalence of obesity than female adolescents. • Finding: LGBTQ adolescents have a higher prevalence of obesity than adolescents who identify as heterosexual. • Finding: Adults with disabilities have a higher prevalence of obesity than adults without disabilities. • Recommendation: Increase the required number of minutes for physical education in Rhode Island's schools. • Recommendation: Give school physical education teachers annual professional development opportunities. • Recommendation: Implement a statewide Healthy Food Financing Initiative to offer grants and loans to retailers that improve access to healthy foods in underserved communities.
Chronic Disease	• Finding: Adults with incomes less than $25,000 have a higher prevalence of heart disease than Rhode Islanders who earn more money. • Finding: Adults with disabilities have a higher prevalence of diabetes, high blood pressure, and heart disease than those without disabilities. • Recommendation: All health insurers should offer evidence-based programs that encourage healthy behaviors, improve health status, and reduce emergency room visits/ hospital stays.
Maternal and Child Health	• Finding: Infant mortality rate for Black infants is almost double the rate for White infants. • Finding: Teenagers with public health insurance have more than double the rate of unintended pregnancies than teenagers with private health insurance.

	• Finding: Children in the core cities of Woonsocket, Pawtucket, Providence, and Central Falls have the highest rates of trips to the doctor or the hospital for asthma. • Recommendation: Implement the interventions described in Rhode Island's Infant Mortality Team's strategic plan. • Recommendation: Support the Rhode Island Preconception Health Collaborative Program. • Recommendation: Create better funding mechanisms for repairing schools with unhealthy environments.

Reinventing Medicaid Report (2015)

In 2015, Governor Raimondo established the Working Group for Reinventing Medicaid to review the current Medicaid program and recommend specific quality improvement and cost-containment measures. An initial report focused on immediate actions to create short-term cost savings measures[294] without cutting Medicaid eligibility or benefits, but the State recognized that Medicaid also required a total transformation to address what had become an inefficient and expensive system. As a result, the Working Group released a second report detailing a multi-year plan for reimagining the way Rhode Island delivers publicly financed healthcare.

Reinventing Medicaid Assessment

Before the Working Group released its report for transforming the Medicaid program, it offered an analysis of the factors contributing to the program's rising costs. Medicaid serves a diverse population of Rhode Islanders: low-income adults included in the Affordable Care Act's "Medicaid Expansion," low-income children and families, children with special healthcare needs, adults with disabilities, and older adults. The cost of providing Medicaid benefits to these populations varies widely.

In Fiscal Year 2014, the per-member, per-month cost for Rhode Island older adults on Medicaid was more than seven times the cost for covering low-income children and families. In fact, a small percentage of Medicaid patients, those with medically complex health needs, account for the biggest portion of the program's costs. The Working Group recognized that the best opportunity for reducing costs existed in finding better and less costly methods to meet the needs of medically complex patients while also reducing the unnecessary utilization of the most expensive healthcare settings: hospitals and long-term care facilities. The Working Group also identified behavioral health and substance use as key areas of focus for cost and quality improvement because there is a high prevalence of those disorders among Medicaid recipients.

The Working group's report identified key systematic issues that are both related to the health focus areas contained in this Report and that contribute to rising Medicaid costs including:

- **Fragmented, duplicative, and poorly coordinated care management.**

Care management for Medicaid recipients currently takes place in a range of settings and through a variety of different programs. Although care managers do important work, Medicaid recipients often work with multiple care managers who do not share information with each other. This siloed approach can result in duplication of efforts and confusion for patients, and can pose significant challenges for people who receive behavioral healthcare and physical healthcare from different provider organizations.

- **Low health literacy and distrust of the healthcare system.**
  Many Medicaid recipients lack the language skills, social supports, and educational levels to navigate a complex healthcare system. Patients might be labeled as "non-compliant" when in reality, they face very real challenges getting the care they need.

- **Inability to address social determinants of health not covered by health insurance.**[295]
  When Medicaid recipients struggle to receive food, clothing, shelter, and employment, health interventions are more likely to fail, leading to poor outcomes and expensive treatments for medical issues that could have been prevented.

Figure 11A: Reinventing Medicaid Findings and Goals Relevant to Health Focus Areas.[296]

Health Focus Area	Finding/Goal
Chronic Disease	• Goal: Use core quality, utilization, and outcome measures to track progress of reinventing Medicaid, focused on high-cost/high-need patients.
Serious Mental Illness	• Finding: High use of emergency departments among recipients with serious mental illness (SMI). • Goal: All Medicaid beneficiaries with a severe and persistent mental illness (SPMI) should be enrolled in an accountable health home by 2018.
Opioid Use Disorders	• Finding: A high prevalence of behavioral health and substance use disorders among Medicaid recipients which contributes to rising costs.
Cross-Cutting Behavioral Health Focus Areas: • Serious Mental Illness • Depression • Children with Social and Emotional Disturbance • Opioid Use Disorders	• Finding: Lack of integration between the funding and delivery of physical and behavioral health. • Goal: Design a system that treats the whole person, not just one condition or characteristic.

Maternal and Child Health	• Goal: Continue RIte Care's "legacy of success" and aim to maintain a "top five" ranking in any future national assessment.

Rhode Island Behavioral Health Project--The Truven Report (2015)

An important priority of Rhode Island is to ensure that all of its residents have the opportunity to achieve the best possible behavioral health and well-being within their healthy local communities that promote empowerment, inclusion, and shared responsibility. In its continuing efforts to fulfill this vision, in 2015, the EOHHS, BHDDH, RIDOH, and the Office of the Insurance Commissioner (OHIC) contracted with Truven Health Analytics to develop a series of reports that quantified the demand, spending, and supply for the full continuum of behavioral health services in the State. Subsequent to these analyses, Truven Health Analytics created a summary report that recommend practices, policies, and system structures to further the goal of providing accessible, high-quality, and affordable behavioral healthcare.

A keystone of the analyses was a population health approach, organizing population groups across age ranges to represent the life span to provide an effective conceptual framework for addressing behavioral healthcare issues. Since the population health approach identifies need, prevention, and treatment services by age group, Rhode Island requested that all data be evaluated by stages in one's life (such as infants, children, adolescents, adults, and older adults). This framework grounded data analysis, interpretation, and subsequent policy recommendations in the knowledge that behavioral health disorders may be preventable developmental conditions, and that different age groups require different types of interventions and services.

Behavioral Health Assessments

Data analysis focused on assessments of the demand for behavioral services across the life span, the supply of behavioral health services and providers in Rhode Island and the direct and indirect cost of behavioral health disorders to the State. The following table summarizes selected findings from this analysis.

Table 12A: Selected Truven Report Findings Relevant to Health Focus Areas.[297]

Health Focus Area	Finding
Depression	• Adolescents age 12–17 were more likely to have major depressive episodes than other New England states and the nation.
Children with Social and Emotional Disturbance	• Children age 0-17 in Rhode Island face greater economic, social, and familial risks for developing mental health and substance use disorders than children in other New England states and the nation. • Young adults age 18-24 in Rhode Island were more likely to have serious psychological distress than young adults in other New England states and in the nation.[298]
Serious Mental Illness	• Adults age 18 and older in Rhode Island are more likely to report unmet need for behavioral healthcare services than adults in any other New England state. • Rhode Island is spending more, in total, on behavioral healthcare services primarily because of relatively greater expenditures on inpatient care and prescription medications. • For older adults in Rhode Island (age 65 and older), behavioral health issues can contribute to increased functional impairment, inappropriate usage of healthcare services, cognitive disability, risk of unnecessary institutionalization such as nursing homes, and slower or lack of recovery from medical illness and early death.
Opioid Use Disorders	• Adolescents age 12–17 in Rhode Island had higher rates of illicit drug use (5%) than the other New England states (low of 3.3% in Maine to 4.4% in New Hampshire) and the nation (3.8%). • Adults age 25–64 in Rhode Island are more likely to have illicit drug dependence or abuse in the past year than adults in other New England States or in the nation. • In 2013, Rhode Island (per 100,000) had a higher age-adjusted death rate from narcotics and hallucinogens than any other New England State or the nation.
Maternal and Child Health	• 10.3% of mothers of infants age 0-2 (FY 2011) reported postpartum depressive symptoms. • 10.5% of mothers of infants age 0-2 (FY 2011) reported having alcoholic drinks during last three months of pregnancy. • 9.7% of mothers of infants age 0- 2 (FY 2011) had smoked during last three months of pregnancy. • 4.1% of infants age 0-2 (FY 2011-2012) had problems relating to the typical "building blocks" of positive well-being, such as attachment behavior issues.

Recommended Interventions

Based on these analyses, *Truven Report* recommend practices, policies, and system structures to further the State's goal of providing accessible, high-quality, and affordable behavioral healthcare across the span of one's life in all Rhode Island communities.

- **Prevention and Early Intervention**
  Although Rhode Island has an innovative vision and system for addressing the needs of children and adolescents, the State may see significant benefits from greater investment in primary and secondary preventive services for these individuals and their family supports. Since most mental health disorders have their roots in childhood,[299] mental health prevention in Rhode Island should be a priority for agencies serving at-risk children and their families. The types of preventative programs that Rhode Island currently provides cross an array of settings, state agencies, and payers. Services to expand or enhance include evidence-based home visiting, Early Intervention services, and early childhood programs (e.g., Early Head Start).

- **Infrastructure to Promote Population-Based Behavioral Healthcare**
  Rhode Island incurs significant costs from the consequences of mental health and substance use disorders. The State spends nearly 10% of its total state budget on the costs of providing services due to substance use disorders and mental health, including housing prisoners who are incarcerated because of addiction and serious mental illnesses; caring for children whose families are disrupted by substance use disorders and mental illness; and providing social services such as disability insurance to individuals who are unable to work because of serious mental illness or addictions. The lack of a cross-systems' interface between data collection and information reporting prevents the ability to assess and analyze the full impact of the lack of appropriate behavioral healthcare services on individuals and families and on the system as a whole.

- **Outcome-Based Vision and Shared Priorities**
  State agencies must continue to develop a coordinated process between their leadership and management structure, building on new innovations and individual agency successes in order to generate a comprehensive, population-based system for the provision of behavioral healthcare services. Though not awarded a Certified Community Behavioral Health Clinic demonstration grant, the planning and application process laid the foundation for data informed system improvements with performance-based expectations.

Combined Substance Abuse/Mental Health Assessment Plan (2015)

In 2015, Rhode Island received a Mental Health Block Grant and Substance Abuse Block Grant from the Substance Abuse and Mental Health Services Administration (SAMHSA) to address the behavioral health needs of its population. The grant required the State to conduct a two-year assessment to identify the strengths and needs of Rhode Island's behavioral health system, which would serve as the basis for a plan for system improvement.

The Assessment was to include activities in response to new federal legislation, initiatives and changes in technology, and advances in research and knowledge describing the totality of the state's efforts and how the block grant funding fit into the states' overall goals and constraints. Since awarded Block Grant funds were intended to plan, carry out, and evaluate activities and services, including those for children with social and emotional disturbance, BHDDH partnered with the DCYF in completing the combined assessment and plan.

The assessment identified numerous strengths in the systems that serve and support children and adults with behavioral health needs in Rhode Island:

- The State's commitment to the comprehensive reform effort intended to develop a behavioral system continuum of care embedded in the State's healthcare system;
- The close collaboration between EOHHS departments, which allows for an interdepartmental approach to the changes in the behavioral healthcare system;
    - Examples of these collaborations include the joint BHDDH/DCYF administration of the "Healthy Transitions" grant; the BHDDH/RIDOH response to the overdose epidemic; the joint BHDDH/Department of Corrections re-entry grant application and pilot programs; and the ongoing consultation between BHDDH and Medicaid as behavioral healthcare services move into managed care.
- The integration within BHDDH between substance abuse treatment, prevention, and mental health services;
- The integration within the peer and clinical training programs that address mental health, substance use, and prevention by all;
- The integration of the recovery model and recovery services into BHDDH's system; and
- The use of federal discretionary grants to advance the goals of BHDDH and DCYF.

The assessment also identified needs within the behavioral healthcare system. Selected needs that overlap with SIM health focus areas are summarized in the table below.

Table 13A: Selected Block Grant Needs Relevant to Health Focus Areas[300]

Health Focus Area	Combined Block Grant Assessed Need	Proposed Strategy
Depression	• Number of adolescent suicides • Lack of suicide prevention for adults	• Increase suicide prevention programs • Procure a vendor(s) to provide 24/7 mobile crisis response
Children with Social and Emotional Disturbance	• Strengthen collaborations and data analysis among State departments, community agencies, and health plans serving youth struggling with severe emotional disturbance	• Coordinate data collection, reporting of outcome measures, and analysis across departments

	• Reduce the number of children and youth in out-of-home placement	• Increase emphasis on prevention-focused services • Explore the use of team decision making, differential response, expedited permanency meetings, and coaching for child welfare supervisors
	• Reduce the number of admissions, readmissions, and length of stay in children's psychiatric facilities	• Increase access to intensive, home-based treatment services for children and adolescents and community-based supports • Increase parent support programs
Serious Mental Illness	• The State spends most of its dollars on prescription drugs and inpatient services with no follow-up upon release	• Shift financing from high-cost reactive, inpatient services to person-centered, community-based, and recovery-oriented, coordinated care • Increase access to Peer Recovery supports • Increase access to supportive housing
	• The lack of community services capacity results in high rates of hospitalization and use of other intensive residential treatment for adults age 65 and older	• Increase access to home-based, specialized geriatric behavioral healthcare and case management • Increase residential care options for older adults who do not require nursing home level of care • Increase geriatric expertise in the Community Mental Health Centers (CMHCs)
Opioid Related Overdose	• Rhode Island has the 7th highest rate in the nation for illicit substance use by young adults • Rhode Island continues to be among the states with the highest overdose death rates in the nation	• Continued focus on prevention and early intervention • Healthy Transitions Grant and State Youth Treatment Planning Grant • Restore access to adolescent residential treatment beds • Increase access to Medication Assisted Treatment (MAT)

		• Increase access to Recovery Coaches for individuals admitted to EDs for drug overdose

Rhode Island Healthy Aging Data Report (2016)

More than 217,000 Rhode Island residents are age 60* or older, representing 20% of the population. The number and proportion are expected to continue increasing. In addition, Rhode Island has the highest proportion of adults age 85 and older than the nation.[301]

The *Rhode Island 2016 Healthy Aging Data Report* is a comprehensive examination of healthy aging in the state. The Report provides custom profiles that include more than 120 indicators of healthy aging for all 39 Rhode Island communities, plus 20 focused profiles at the ZIP code level for the core cities and high population areas of the state. Rhode Island is one of only two states in the nation to have such comprehensive data on healthy aging.[302] Compelling findings include:

- Compared to other New England states, older adults living in Rhode Island are in relatively poor health, with the highest regional rates of high cholesterol, hypertension, ischemic heart disease, diabetes, asthma, anemia, osteoarthritis/rheumatoid arthritis, cataracts, and those living with four or more chronic diseases.

- There is an association between resources and health status of older adults living in Rhode Island: in wealthier communities, health indicators are generally better than the state average; and in less resourced, mostly urban areas, health indicators are generally worse than the state average.

Table 14A: Demographic and Socioeconomic Factors Contributing Most to Differences in Older Adult Population Health in Rhode Island.

Factors associated with BETTER population health in older adults	Factors associated with WORSE population health in older adults
• Higher levels of income and education • Having a more racially-diverse and acculturated population, other things being equal • Good health behaviors • Use of preventive services	• A less-educated, poorer population • Poorer social environments (e.g., higher crime rates, lower voter participation rates) • Higher percentages of older women in the population • Higher percentages of veterans in the population

***** *Age 60 is the number of years used to define "Aged" in the Healthy Aging Data Report*

Authors of the *2016 Rhode Island Healthy Aging Data Report* suggest that significant progress can be made in improving health outcomes in a relatively short time frame, generally within one to four years, by focusing on specific actions such as addressing improved nutrition, physical activity, or obesity. They also suggest that issues such as reducing poverty rates, reducing racial and ethnic disparities, and addressing other social determinants of health are longer-term challenges that will require collaborative community, regional, and state efforts—engaging all community members, even those not typically involved in healthy aging endeavors.

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