

Virginia State Health Assessment

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Executive Summary

As Virginia moves toward becoming the healthiest state in the nation, we must understand the landscape of health. Virginia ranks 21st (2014) in the nation, up from 26th in 2013, and we expect to perform better. Health is a currency – the value is in where you live, work and play and the set of factors that determine what quality of life you may have. We know that life expectancy varies by zip code. Access to quality health care is limited for some. Certain populations are at greater risk for select diseases like hypertension or outcomes like infant mortality. Educational attainment and high school graduation significantly impact employment and incomes, which are critical drivers of health. Housing and transportation, poverty and nutrition assistance can predict how healthy a community can be. VDH is data rich and we must continually strive to use such data to ensure effective and efficient development of state health assessments that provide actionable planning efforts for the citizens of Virginia.

The data provided in this report span across disciplines for a population health approach. Each section offers insight into the indicators of health and well-being, and those that we continue to struggle to impact positively. Building off the success of other state-level initiatives, the Virginia Department of Health conducted both internal and external collection and review of meaningful indicators for the state health assessment.

Virginia's population has increased by 3.8% since 2010 and approximately 16% speak a language other than English. Less than half of adults are married, and the top adverse childhood experiences include economic hardship, divorce, alcohol use, violence and mental illness. About 11% of Virginians are living in poverty with Lynchburg (24.8%), Richmond (24.6%), and Roanoke (22.4%) having a higher burden than the state. Greater than 90% of Virginians have health insurance.

Arthritis, asthma, and infant mortality have all decreased since 2011. There has been little change in diabetes, cardiovascular disease, and obesity prevalence. Hypertension has increased and breast cancer rates remain higher than the nation. Cancer screenings – colorectal, prostate and breast – for target populations remain between 66-75% of adults. Females, college graduates, and those with incomes over \$50,000 report the highest fruit and vegetable consumption, and consistently 75% of adults were physically active in the past month. Only 67.3% saw a dentist for any reason. Teen pregnancy continues to decline significantly. Hepatitis B remains a concern as street and injected drug use increase, and new cases of tuberculosis are increasing as more foreign-born populations reside in the state. Assault-related injury is 5.5 times higher among men than women, and there were 128 healthcare associated infection outbreaks in health care settings.

The state health assessment was completed through a collaborative, systematic approach. Priorities were identified and solidified through many levels of influence and input from the Governor's Office and General Assembly to organizations and individual Virginians. Many partners and stakeholders provided data, which promoted a blended approach to the data selected. Sharing the role to help all Virginians thrive is best accomplished through collective impact. This assessment of Virginia's health status and determinants of health will lead to action and strategic direction for the Commonwealth.

Recommendations

As Virginians, we must work together to champion and create healthy and safe communities, expand and strengthen clinical and community-based preventive services, empower individuals to get involved in their health and eliminate health disparities that unfairly lead to poor health outcomes and quality of life for so many Americans. An investment in prevention will have broad implications and positively affect everyone. Families and communities will enjoy the benefits of healthy environments. People will lead healthier and more productive lives. Businesses will thrive through individual productivity and innovation. Health care costs will be contained.

The SHA presents prioritized and vetted data that provides a broad scope of the health status of Virginians. The value of this assessment resides in its ability to provoke action for health improvement. Many stakeholders contributed to the identification of the data necessary to create and sustain conditions that support health and well-being, resulting in a framework of actionable themes to guide the development of a state health improvement plan.

- 1. Healthy, connected communities means feeling safe, supported and connected to family, friends and neighborhoods. Place matters: the condition in which people live, work and play shape their health. Families need to be able to maintain economic stability, and our communities need to collaborate to improve the population's health.
- 2. A strong start for children is impacted by many factors: biological influences, nutrition, illness, parental health, environmental influences, and quality health and social services. Health-related factors affect school performance, and in turn academic success is associated with health outcomes during childhood and later in adulthood. Virginians need to plan their pregnancies, ensure children are prepared to succeed in Kindergarten, and improve racial and economic disparities of infant mortality.
- 3. Preventive actions are the drivers of a culture of health and wellness. Following a healthy diet and living actively can prevent and reduce the effect of chronic diseases like cardiovascular disease, diabetes and obesity. Prevention of tobacco use is essential for the reduction of chronic lung disease and asthma. Vaccines save lives from preventable diseases like influenza and the Human Papillomavirus (HPV). Cancer is the leading cause of death and screening for colorectal cancer is vital. Disability-free (healthy) life expectancy means people can live in their own home and community safely, independently, and comfortably, regardless of age, income or ability level.
- 4. Excellence among all healthcare providers and hospitals evokes a quality system of health care to meet the needs of the population. A strong primary care system that is linked to behavioral health care, oral health care, public health and community supports is an ideal for which many communities strive. Prevention of health care-associated infections is an ongoing complex issue. Health information technology (IT) systems connect people, services and information to support health outcomes.

Introduction

In August 2015, the Virginia Department of Health (VDH) began a state health assessment (SHA) that was born out of the collaborative efforts spearheaded by the Virginia Center for Health Innovation (VCHI) for the State Innovation Model (SIM) grant, led by the Lieutenant Governor's Quality, Payment Reform and HIT Roundtable (QPHR). VCHI coordinated the Virginia Health Innovation Plan (VHIP) which aims to improve health outcomes for all Virginians, regardless of insurance status.

Because there were significant aspects of the VHIP process that mirrored a SHA, VDH decided to bring forward the relevant data and information for further evaluation. The VHIP process convened hundreds of stakeholders from all regions and constituencies to develop solutions to some of our most complex health challenges. These stakeholders identified 78 indicators, out of an initial list of 560, necessary to demonstrate improvement and set priorities. VDH capitalized on these efforts and moved the SHA onward internally to avoid duplication of what was already completed.

VDH identified and convened cross-office and division teams to determine how to effectively optimize what was organized and learned from the VHIP process. The teams vetted through the eight priority health categories by conducting an intensive Datathon, which invited subject matter experts to present and provide data on 106 health indicators. Following this event, internal teams standardized the data and developed metric packages in a standard file format. This enabled the prioritization and ranking of health data among 134 localities from VDH Offices and Local Health Districts (LHD). The localities represent a county or independent city and the 35 Health Districts are aggregations of these localities and serve as units of service delivery and public health management for VDH. Additional input and guidance was also provided by the Office of the State Health Commissioner. Following the consolidation of the feedback, the VDH Leadership Team finalized the health indicators for inclusion in the SHA.

In October 2015, Dr. Marissa Levine, State Health Commissioner, presented these findings to the Joint Commission on Health Care, a commission of the Virginia General Assembly (statutory purpose and authority are denoted in Code of Virginia §§30-168 through 170), to provide information and to solicit comment on the priorities for measures. Additional meetings were held with state agency heads under Secretary of Health and Human Resources, Dr. William Hazel, to organize and determine which issues Virginia should focus on to improve health. Magnitude, seriousness of consequences, and feasibility of correcting were the criteria for inclusion in the SHA. The final activity in the SHA process was a public survey that garnered 155 responses and validated the results of assessment priorities.

The data and information provided herein will facilitate state and local leaders to coalesce around core measures and a framework for a call to action through a plan for well-being – a state health improvement plan – in the Commonwealth of Virginia.

Demographics

Virginia's population is increasing and living longer, healthier lives. With a growing population and an increase in cultural diversity, communities strive to develop and maintain an environment characterized by health, resiliency and connectedness. An opportunity for health begins with understanding the community as defined and population as composed. Health is influenced by opportunities being present or absent; health becomes an opportunity when social and economic factors are addressed. Virginia's population can be examined through several important lens. Overall the population has increased 3.8% (301,672) from 8,024,617 (2010) to 8,326,289 (2014), with the largest in Fairfax County (1,137,538; 2014), and the smallest in Highland County (2,248). The comparison of female to male residents in 2014 is reflective of the national population, with a slightly greater proportion of females (50.8%) to males (49.2%).

The state's population is predominantly White at 71.9%, with Black or African American residents comprising 20.6%, Asians or Pacific Islanders at 6.9%, and American Indian/Alaskan Natives making up less than 1%. Hispanics of any race were 8.9% of the population in 2014 (Table 1). Among Virginia residents, 15.9% speak a language other than English at home.

Languages include Spanish (7.0%), Other Indo-European languages (3.5%), Asian and Pacific Island languages (3.8%) and other languages (1.6%) (U.S. Census Bureau, 2015). Approximately half of Virginia's population (49.1%) is married (Table 2) with the largest portion of the population being males between the ages of 20-24 years (310,345: 3.70%) (Figure 1), followed by females 50-54 years (309,440: 3.69%) (Figure 1).

Race	Percent	Count
Total	100.0%	8,326,289
White	71.9%	5,985,615
Black	20.6%	1,711,801
Asian or Pacific Islander	6.9%	577,726
American Indian or Alaskan	0.6%	51,147
Ethnicity	Percent	Count
Hispanic	8.9%	737,316
Non-Hispanic	91.1%	7,588,973

Table 1: Virginia 1 year Population Estimates by Race, 2014 **Source:** National Center for Health Statistics Notes: Hispanic included in the White Category.

Demographics

Marital Status Distribution	Percent
Married	49.1%
Divorced	10.5%
Separated	2.5%
Widowed	5.5%
Never married	32.4%

Table 2: Marital Status Distribution [2015]Source: U.S. Census Bureau, 2015 American Community 1 Year Estimates



Figure 1: 2015 Percent Population Age Breakdown

Socioeconomic Factors

Many socioeconomic factors influence whether a person lives in poverty, which directly affects health status. Virginia is perennially one of the wealthiest states in the nation (Frochlich, Sauter, & Stebbins, 2016); however, a wealth gap exists preventing equitable opportunities for optimal health and longevity.

Education

Increasing the percent of a population who obtain education beyond high school may help close the wealth gap and prepare Virginians for today's job market. Improved opportunity for employment enables access to health care, stable housing and healthy food. Compared to the national percentage (27.6%), the percentage of Virginians who have a high school diploma (24.6%) is lower. Conversely, there are more graduate or professional degree holders (15.7%) than nationally (11.6%) (Table 3) .Virginia's educational spending per student varies from year to year, but has remained above \$6,000 (2010-2014) (Table 4).

Educational Attainment	VA	USA
Did Not Graduate High School	11.1%	12.8%
High School Graduate (Includes Equivalency)	24.6%	27.6%
Some College, No Degree	19.8%	20.7%
Associate's/Bachelor's Degree	28.8%	27.2%
Graduate or Professional Degree	15.7%	11.6%

Table 3: Educational Attainment for Population 25 Years and OverSource: U.S. Census Bureau, 2015 American Community Survey 1-Year EstimatesNote: Does not equal 100% since they are estimates and have a margin of error.



Educational Spending Per Student

Table 4: Virginia Educational Spending Per StudentSource: Virginia Dept. of Education Note: Student is defined K-12 grade

Income and Poverty

Trend estimates indicate Virginia has both a higher per capita mean income and median household income compared to national estimates (Tables 5, 6) (United States Census Bureau, 2015).

	2011	2012	2013	2014	2015
Virginia	\$32,123	\$32,517	\$33,145	\$34,052	\$34,780
National	\$26,708	\$27,319	\$28,184	\$28,889	\$29,979

 Table 5: Per Capita Mean Income 2011-2015 Trend Estimates

Source: U.S. Census Bureau, American Community Survey 1-Year Estimates

	2011	2012	2013	2014	2015
Virginia	\$61,882	\$61,741	\$62,666	\$64,902	\$66,262
National	\$50,502	\$51,371	\$52,250	\$53,657	\$55,775

 Table 6: Median household Income 2011-2015 Trend Estimates(Inflation-Adjusted Dollars)

 Source: U.S. Census Bureau, American Community Survey 1-year estimates

Poverty trend estimates for Virginia are lower than national levels. In 2015, 11.2% of Virginians were living in poverty, 3.5% lower than the national rate of 14.7% (Table 7) (United States Census Bureau, 2015).

	2011	2012	2013	2014	2015
National (All People)	15.9%	15.9%	15.8%	15.5%	14.7%
Virginia (All People)	11.5%	11.7%	11.7%	11.8%	11.2%

 Table 7: Percent of People Whose Income in the Past 12 Months is Below the Poverty Level

 Source: U.S. Census Bureau, American Community Survey 1-Year Estimates

Several of Virginia's metropolitan areas have poverty estimates that exceed the state (11.2%), including Lynchburg City (24.8%), Richmond City (24.6%) and Roanoke City (22.4%; Table 8) (United States Census Bureau, 2015).

	Percent			Percent	
Location	2011	2015	Location	2011	2015
Albemarle County	10.4	10.8	Rockingham County	8.8	12.4
Arlington County	7.7	7.1	Spotsylvania County	5.6	7.7
Augusta County	10.1	9.5	Stafford County	6.4	3.7
Bedford County	8.6	8.2	York County	4.6	5
Chesterfield County	6.7	6.5	Alexandria city	6.8	9.1
Fairfax County	6.8	6.1	Chesapeake city	8.6	9.9
Fauquier County	3.6	6.7	Hampton city	15.6	15.1
Frederick County	8.7	6.8	Lynchburg city	22.6	24.8
Hanover County	5.8	6.7	Newport News city	14.9	16.7
Henrico County	11.3	9.2	Norfolk city	18.8	20.5
James City County	6.9	7.2	Portsmouth city	17.2	18
Loudoun County	4.3	4	Richmond city	26.9	24.6
Montgomery County	24.6	22.2	Roanoke city	19.2	22.4
Prince William County	6.8	6.8	Suffolk city	11.3	14
Roanoke County	8.7	7.1	Virginia Beach city	8.6	7.9

 Table 8: Percent of People Below Poverty Level by Location

Source: U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates

Poverty disproportionately affects different segments of the population. For example, trend estimates from 2011 to 2015 indicate children make up the largest portion of the population living in poverty and are 5.9% higher than national percent estimates (Tables 9, 10, 11). Furthermore, there is also an increased prevalence of poverty among females compared to males in both state and national trend estimates (Table 12).

	2011	2012	2013	2014	2015
Under 18	15.3%	15.3%	15.7%	15.8%	14.8%
18-64 years	10.9%	11.3%	11.2%	11.2%	10.8%
65 years and over	7.5%	7.9%	7.4%	7.8%	7.3%
All Families	8.2%	8.6%	8.4%	8.3%	7.8%

 Table 9: Families and People Whose Income is Below the Poverty Level

 Source:
 U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates

	2015
Under 18	14.8%
18-64 years	10.8%
65 years and over	7.3%

Table 10: Poverty by Age Group [2015]

Source: U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates

	2015
US-Under 18	20.7%
VA-Under 18	14.8%

Table 11: Percent of Children Under 18 Whose Income is Below the Poverty Level [2015]Source: U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates

	2011	2012	2013	2014	2015
US-Male	14.7%	14.6%	14.5%	14.2%	13.4%
VA-Male	10.2% 17.2%	10.7% 17.2%	10.5% 17.1%	10.4% 16.8%	10.0% 16.0%
VA-Female	12.8%	12.7%	12.8%	13.1%	12.3%

 Table 12: Poverty Status Estimates by Gender

Source: U.S. Census Bureau, 2011 American Community Survey 1 Year Estimates

Employment

Virginia's unemployment trend estimates for those 16 years of age and over has been consistently lower than the national rate (Table 13) (United States Census Bureau, 2015). Employment inequity does exist between the races; Blacks have more than twice the unemployment rate of Whites, American Indian/ Alaska Natives and Asians (Table 14). Since 2011, unemployment for Blacks decreased from 13.5% to 9.2% in 2015. Residents 18-64 years of age comprise 64% (2014) of the working age population (Table 15); 38% of adults 25-64 years have a bachelor's degree (Table 16) while 10% are working without a high school diploma (Table 17).

	2011	2012	2013	2014	2015
US	10.3%	9.4%	8.4%	7.2%	6.3%
VA	7.6%	6.9%	6.6%	6.1%	5.5%

Table 13: Unemployment Rate for Population 16 Years and Over

Source: U.S. Census Bureau, American Community Survey 1 Year Estimates

	Estimate
American Indian/Alaska Native	3.7%
Asian	4.4%
White	4.5%
Black	9.2%

Table 14: Unemployment Rate by Race

Source: Source: U.S. Census Bureau, American Community Survey 1 Year Estimates

2	2010	2011	2012	2013	2014
VA 6	55%	65%	65%	64%	64%

Table 15: Working Age Population (18-64 yrs.) TrendsSource: U.S Census Bureau, American Community Survey 1Year Estimates

	2010	2011	2012	2013	2014
VA	36%	37%	37%	37%	38%
US	30%	30%	30%	31%	31%

Table 16: Working Age Population (25-64 yrs.) with a Bachelor DegreeSource: American Community Survey

	2010	2011	2012	2013	2014
VA	11%	11%	11%	10%	10%
US	13%	13%	12%	12%	12%

Table 17: Working Age Population (25-64 yrs) without a High School DiplomaSource: American Community Survey

Disability

A factor that contributes to unemployment is disability. The national percentage of adults with disabilities, ages 18-64 years, remains slightly higher than Virginia trend estimates from 2011 through 2015 (Table 17). The highest prevalence of disability is among adults 65 years and over, accounting for 32.8% of the 11.5% of disabled non-institutionalized populace (Table 18). Those employed with a disability account for 3.5% (179,153) of employed adults 18-64 years (Table 19).

	2011	2012	2013	2014	2015
US	10.2%	10.1%	10.5%	10.5%	10.4%
VA	9.1%	8.7%	9.3%	9.4%	9.3%

 Table 17: Population 18-64 Years with a Disability

 Source: U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates

Subject	Total	Subset with a Disability	Percent with a Disability
Total Civilian Noninstitutionalized	8,162,517	935,187	11.5%
Under 18	1,867,092	74,616	4.0%
18-64 years	5,133,209	479,430	9.3%
65 years and over	1,162,216	381,141	32.8%

 Table 18: VA Disability Characteristics [2015]

Source: U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates

	Virginia			
	Percent	Estimate		
Total		5,133,209		
In the Labor Force:	78.6%	4,034,036		
Employed:	74.3%	3,814,621		
With a Disability	3.5%	179,153		
Unemployed:	4.3%	219,415		
With a Disability	0.5%	25,694		
	Percent	Estimate		
Not in the Labor Force:	21.4%	1,099,173		
With a Disability	5.4%	274,583		
No Disability	16.1%	824,590		

Table 19: Employment Status by Disability [2015]: Civilian Noninstitutionalized Population 18-64 Years **Source:** U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates **Note:** Labor Force is made up of employees and people on unemployment who are seeking work, as well as those who receive unemployment benefits.

Insured

Employment is the primary contributor to private insurance, and continues to be more prevalent than public coverage (Barnett & Vornovitsky, 2016). With the passage of the Affordable Care Act in 2010, an increase in the insured, non-institutionalized populations (2011–2015) was observed in both the state and nation (Table 20) (United States Census Bureau, 2015). In 2015, greater than 90% of children (older than 6 years and less than 18 years) and elderly (65+ years) had coverage (Figure 2) (United States Census Bureau, 2015). Furthermore, insurance coverage varied by race, e.g., White (92.1%) residents had the highest insured percentage, compared to American Indian and Alaska Native (84.3%), Black or African American (89.0%) and Asian (90.5%) residents. The percent insured among White Virginians increased to 93.5% when Hispanic or Latino ethnicity is excluded. Among Hispanic or Latino Virginians, 77% are insured, 3.5% lower than national estimates (80.5%) for 2015 (Table 21) (United States Census Bureau, 2015).

Non-institutionalized Population	2011	2012	2013	2014	2015
US	84.9%	85.2%	85.5%	88.3%	90.6%
VA	87.5%	87.5%	87.7%	89.1%	90.9%

 Table 20:
 Civilian Non-institutionalized Population Insured 1-Year Estimates

Source: U.S. Census Bureau, American Community Survey 1-Year Estimates. Health Insurance Coverage Status Accessed 01/03/2017

Insured Population by Age [2015]



Figure 2: Insured VA Population 1 Year Estimates by Age [2015]

Source: U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates. Selected Characteristics of Health Insurance Coverage in the United States. Accessed 11/22/2016

Insured Virginia Population by Race	Estim	ate
	VA	US
White Alone	92.1%	91.6%
Black or African American Alone	89.0%	89.0%
American Indian and Alaska Native Alone	84.3%	79.3%
Asian Alone	90.5%	92.2%
Some other Race Alone	71.3%	78.6%
Ethnicity		
Hispanic or Latino (of any race)	77.0%	80.5%
White alone, not Hispanic or Latino	93.5%	93.7%

Table 21: Insured VA Population 1 Year Estimates by Race [2015]Source: U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates.Selected Characteristics of Health Insurance Coverage in the United States. Accessed 11/22/2016

Homeownership and Cost-Burdened Households

Homeownership rates have decreased nationally and in most states. Renters are also facing increased challenges in meeting monthly housing cost (Schwartz & Wilson, 2007). In Virginia, cost-burdened households, an indicator of housing affordability representing 30% or more of income spent on housing, have increased. Furthermore, the American Community Survey, 5-year rolling estimate trends, gives evidence of Virginia's homeownership having a steady decline from 68.9% (2010) to 66.7% (2014) (Table 22) . In 2014, Harrisonburg City and Fredericksburg City had the lowest homeownership estimate (36%), while Goochland County, Powhatan County, New Kent County and Botetourt County had the highest (88%; Figure 3).

	2010	2011	2012	2013	2014
Home Ownership	68.9%	68.4%	67.8%	67.3%	66.7%

 Table 22: VA Home Ownership 5-Year Rolling Estimate Trend

 Source: American Community Survey





Figure: VA Home Ownership 5-Year Rolling Estimate Trend [2014] **Source:** American Community Survey



Adverse childhood experiences (ACEs) are defined as potentially traumatic events that have a lasting impact on health and well-being. Potentially traumatic events can vary from physical and emotional, to breakdown of the family unit, such as divorce or incarceration. Adverse outcomes linked to ACEs include, depression, alcoholism, smoking, obesity and diabetes. When comparing ACEs between state and national numbers, Virginia has slightly lower prevalence (Figure 4). The types of ACEs that are prevalent in Virginia closely follow national findings, with economic hardship being the most common adverse event, followed by divorce (Table 23).



Number of Adverse Childhood Experiences

Figure 4: Number of Adverse Childhood Experience

Source: Research Brief: Adverse Childhood Experiences: National and State Level Prevalence [July 2014];

Child Trends 2014. Retrieved 11/21/2016: http://www.childtrends.org/wp-content/uploads/2014/07/ Brief-adverse-childhood-experiences_FINAL.pdf

State	Highest	2nd	3rd	4th		
US	Economic Hardship (26.0%)	Divorce (20.0%)	Alcohol (11.0%)	a. Violence (9.0%) b. Mental Illness (9.0%)		
VA	Economic Hardship (21.0%)	Divorce (18.0%)	a. Alcohol (8.0%) b. Mental Illness (8.0%)	Violence (7.0%)		

 Table 23: Four Most Common Adverse Childhood Experiences (and % prevalence) Among Children

 Ages Birth through 17-years

Source: Research Brief: Adverse Childhood Experiences: National and State Level Prevalence [July 2014]; Child Trends 2014. Retrieved 11/21/2016: http://www.childtrends.org/wp-content/uploads/2014/07/ Brief-adverse-childhood-experiences_FINAL.pdf

Arrest

Arrest is a measure of police activity as it relates to crime; agencies count an individual taken into custody as one arrest. Arrest figures cannot be directly compared to offense figures. If the individual is a juvenile, an arrest is counted if the circumstance is such, that if the juvenile had been an adult, an arrest would have been made (Virginia State Police, 2015).

In 2015 there were 282,422 arrests, 43% (121,492) were of residents 18-29 years of age (Table 24; Figure 5). Furthermore, 59.1% of those arrested are White, followed by Black (39.8%), Asian or Pacific Islander (1.0%) and American Indian/Alaskan Native (0.1%) (Table 25) (Virginia State Police, 2015).

The relationship between drugs and crime is complex. According to the National Council on Alcohol and Drug Dependence (NCADD), at the most intense levels of drug use and addiction, "drugs and crime are directly and highly correlated and serious drug use can amplify and perpetuate preexisting criminal activity" (National Council on Alcohol and Drug Dependence, 2015).

In 2015, 35,597 arrests involved drug violations and possession of drug equipment in Virginia. Additionally, marijuana ranked the highest (59.6%) in total volume of drug arrest (Virginia State Police, 2015).

Quarter	Percent	Arrest
1	23.7%	67,018
2	26.6%	75,092
3	26.6%	75,206
4	23.1%	65,106
Total	100.0%	282,422

Table 24: VA Arrest Data by Reporting Quarter [2015]

Source: Virginia Uniform Crime Reporting Program [January-December, 2015]. Department of State Police. Accessed 11/22/16: http://www.vsp.state.va.us/downloads/Crime_in_Virginia/Crime_in_Virginia_2015.pdf



Race	Percent
White	59.1%
Black	39.8%
American Indian/Alaskan Native	0.1%
Asian or Pacific Islander	1.0%

Table 25: Race of VA Arrestee [2015]

Source: Virginia Uniform Crime Reporting Program [January-December, 2015]. Department of State Police. Accessed 11/22/16: http://www.vsp.state.va.us/downloads/Crime_in_Virginia/Crime_in_Virginia_2015.pdf

Teen Pregnancies

Comprehensive family planning and preconception health leads to improved birth outcomes, which are associated with better health and cognition for children. Public-supported family planning services prevent an estimated 1.3 million unintended pregnancies a year across the nation. Teen pregnancy is of special concern. According to the U.S. Department of Health and Human Services, 250,000 babies were born to teen moms and approximately 77% of these were unintended. Teen mothers face mental health concerns and are less likely to complete higher levels of education, limiting their income over time (Rachel, 2016). Teen pregnancy rates in Virginia have decreased from 51.6 per 1,000 (13,157) in 2005, to 24.8 per 1,000 (6,551) in 2014 (Figure 6).



Figure 6: Female Teen Pregnancy Rate, Reported Estimates Trends

Source: Virginia Vital Records and Health Statistics Electronic Birth Certificates, Fetal Death Certificates, Induced Termination of Pregnancy Certificates. Virginia Department of Health.

Communicable Diseases

Human Immunodeficiency Virus (HIV)

In 2015, 39,513 people were diagnosed with HIV in the United States. New HIV diagnoses fell 19% from 2005 to 2014 as a result of increased HIV testing and prevention efforts (Centers for Disease Control and Prevention, 2016).

In 2015, 1,062 cases of HIV disease were reported in Virginia. Although this represents a slight increase of nearly 2% from the 1,044 reported cases in 2014, the number of cases reflects the stability of new HIV disease diagnoses over the last several years. The statewide incidence rate of new HIV diagnoses was 12.8 per 100,000 in 2015 (Figure 7).



Figure 7: VA HIV Ten-Year Trend for Number of Cases and Incidence Rates

The highest HIV incidence rates in 2015 occurred in the 20-29 year age group (32.9 per 100,000), followed by the 30-39 year age group (24.5 per 100,000). The 20-29 year age group has consistently experienced the highest incidence rate of new diagnoses since 2007 and represented 37% of all new diagnoses reported in 2015.

Approximately 63% of all new HIV diagnoses in 2015 were among persons ages 20-39. Incidence rates among Black, non-Hispanics and Hispanics were higher than their White, non-Hispanic counterparts in 2015. Respectively, the Black, non-Hispanic and Hispanic populations were eight and three times more likely than the White, non-Hispanic populations to be newly diagnosed with HIV in 2015. Overall, HIV incidence rates by race/ethnicity have remained relatively stable over the past few years.

Males have consistently shown higher incidence rates of HIV disease compared to females over time, and were over four times as likely as females to be diagnosed with HIV disease in 2015 (21.2 and 4.7 per 100,000, respectively). Regionally in Virginia, the highest incidence rate was observed in the Central region, with 19.2 per 100,000, followed by the Eastern region at 18.6 per 100,000. The region with the lowest HIV incidence rate was the Southwest region with 5.3 per 100,000 population (Figure 8).





Figure 8: VA Incidence Rate by Locality [2015]

In 2015, the most frequently reported transmission category for HIV disease was men who have sex with men (MSM), which represented 45% of the new cases in Virginia. Among identified MSM cases, 53% were 20-29 years of age at diagnosis and 57% were Black, non-Hispanic. Twelve percent of the newly diagnosed cases in 2015 were attributed to heterosexual contact, and 2% to intravenous (IV) drug use. No specific risk factors for transmission were identified for 40% of the new HIV diagnoses in 2015. Due to advances in medical therapies and care strategies, the number of persons living with HIV disease (PLWHA) has continued to increase. As of December 31, 2015, there were 24,853 persons known to be living with HIV disease in Virginia (Figure 9).



Figure 9: Ten-Year Trend of the Number of New Diagnosis and Persons Living with HIV in Virginia

Approximately 75% of PLWHA are male (Figure 10). In addition, 57% of PLWHA were between 40-59 years of age. Among PLWHA in Virginia, 59% were black, non-Hispanic and 47% attributed to male-to-male sexual contact, 19% to heterosexual contact, and 9% to IV drug use. The highest rates of PLWHA were in the Central and Eastern regions of Virginia with 419.6 and 416.8 per 100,000 populations, respectively. The lowest rate of PLWHA was in the Northwest region with 150.3 per 100,000 populations. Approximately 50% of those living with HIV disease have also been diagnosed with an AIDS-defining condition.



Persons Living with HIV Disease by Gender, VA, 2011-2015

Figure 10: Five-Year Trend of the Number of Persons Living with HIV Disease by Gender

Tuberculosis

Tuberculosis cases in the United States rose in 2015, following a decline lasting nearly a quarter of century. Though the increase is considered relatively small (157 more cases), there is a concern of a possible resurgence of the disease (Sun, 2016). In 2015, 212 cases of tuberculosis were reported in Virginia, which was less than the 5-year average of 220.4 cases per year, but represents a 7% increase in reported cases compared to 2014 (Figure 11). The increase in 2015 can largely be attributed to a 14% increase in cases among foreign-born persons, from 147 in 2014 to 167 in 2015. The five most frequent countries of origin for persons with TB born outside the U.S. were the Philippines, India, Vietnam, Ethiopia, and Korea. Among U.S. born cases, the number decreased 12% from 51 persons in 2014 to 45 in 2015.





Incidence rates were higher in adults compared to children and adolescents. The highest incidence occurred among those in the 60 year and older age group (4.6 cases per 100,000), followed by those aged 50-59 (2.9 per 100,000). Incidence among other adult age groups ranged from 2.3 to 2.8 cases per 100,000. Incidence among children ranged from 0.8 per 100,000 in the 1-9 year age group to 0.9 per 100,000 in the 10-19 year age group (Figure 12). No cases occurred among infants in 2015. Information on race is provided for all reported cases. The highest incidence was observed in the "other" race population (14.9 per 100,000) while incidence was substantially lower in the Black and White populations (3.1 and 1.1 per 100,000, respectively). Males had slightly higher incidence (2.7 per 100,000) than females (2.5 per 100,000).



Tuberculosis: Rate by Age Group, Virginia, 2015

Figure 12: VA Tuberculosis Rate by Age [2015]

Figure 11: Ten-Year Trend Data for Tuberculosis

The highest number of cases and highest incidence rate (129 cases; 5.3 per 100,000) occurred in the Northern region, where 72% of the foreign-born TB cases live (Figure 13). Incidence in the other regions ranged from 0.7 per 100,000 in the Southwest region to 2.1 per 100,000 in the Eastern region (Figure 14).



Figure 13: Tuberculosis Rate by Health Planning Region [2015]

Tuberculosis Incidence Rate by Locality Virginia, 2015



Figure 14: VA Tuberculosis Incidence Rate by Locality [2015]

Sexually Transmitted Infections

In 2015, the CDC reported Sexually Transmitted Infections (STIs) as a substantial health challenge in the U.S., with health care costs estimated at 16 billion. Nearly 20 million new sexually transmitted infections occur every year while many cases of Chlamydia, Gonorrhea and Syphilis continue to go undiagnosed and reported (Centers for Disease Control and Prevention, 2016). With each infection, there is an increased risk for acquiring and transmitting HIV infections and suffering chronic and reproductive health issues.

Chlamydia

Chlamydia is the most frequently reported STI in the United States and there is a high prevalence among young women (Centers for Disease Control and Prevention, 2015). In 2014, 423.3 cases per 100,000 populations were reported in Virginia (Figure 15). The majority of cases are among females (589.6 cases per 100,000), compared to males (276.8 cases per 100,000), based largely on the emphasis on female screening. State rates however, are lower than the national rates (Figure 16 & 17).



Chlamydia Cases Per 100,000

Figure 15: Chlamydia Cases Per 100,000

Source: State Data Provided by the Virginia Dept. of Health; Division of Disease Prevention, STD Surveillance, Operations and Data Administration National (US) Data Provided by CDC NCHHSTP Atlas: http:// gis.cdc.gov/grasp/nchhstpatlas/main.html?value=AQT

Male Chlamydia Cases Per 100,000



Figure 16: Male Chlamydia Trend Estimates **Source:** Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention





Source: Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention

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Gonorrhea

Gonorrhea is one of only three organisms currently designated by the Centers for Disease Control and Prevention (CDC) as an antimicrobial resistance "urgent threat". Furthermore, the CDC estimates that up to half of Gonorrhea infections go undiagnosed and unreported. From 2011 to 2014, case rates increased nationally and in the state. However, Virginia rates remain below the national rate (Figure 18). Moreover, there are more female cases (103.9 per 100,000), compared to male (95.5 per 100,000), despite gender population being close to equal (Male 49.2%, Female 50.8%; Figures 19, 20).



Gonorrhea Cases Per 100,000

Figure 18: Gonorrhea Cases Per 100,000

Source: State Data Provided by the Virginia Dept. of Health; Division of Disease Prevention, STD Surveillance, Operations and Data Administration. Data Provided by CDC NCHHSTP Atlas: http://gis.cdc.gov/grasp/nchhstpatlas/main.html?value=AQT



Male Gonorrhea Cases Per 100,000

Source: Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention

Figure 19: Male Gonorrhea Trend Estimates

Female Gonorrhea Cases Per 100,000



Figure 20: Female Gonorrhea Trend Estimates

Source: Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention.

Early Syphilis

Since 2013, Early Syphilis rates in Virginia have decreased from 8.2 to 6.8, and continue to remain below the national rate of 12.4 per 100,000 (Figure 21). Reported Early Syphilis trends indicate men and women remain below national estimates for five-year rates, with no significant changes in rates from 2010 through 2014 (Figures 22, 23).



Total Early Syphilis Per 100,000

Figure 21: Total Early Syphilis Cases Per 100,000

Source: State Data Provided by the Virginia Dept. of Health; Division of Disease Prevention, STD Surveillance, Operations and Data Administration National Data Provided by CDC NCHHSTP Atlas: http://gis.cdc.gov/grasp/nchhstpatlas/main.html?value=AQT Note: Total early syphilis includes primary, secondary and early latent syphilis.





Figure 22: Male Total Early Syphilis Trend Estimates **Source:** CDC NCHHSTP Atlas: http://gis.cdc.gov/grasp/nchhstpatlas/main.html?value=AQT





Figure 23: Female Total Early Syphilis Trend Estimates **Source:** CDC NCHHSTP Atlas: http://gis.cdc.gov/grasp/nchhstpatlas/main.html?value=AQT

Viral Hepatitis B&C

Hepatitis B (HBV) is a liver infection caused by the Hepatitis B virus. Transmitted by bodily fluids, HBV can be acute for some people or chronic for others. Chronic infection is related to the age at infection, with approximately 2%-6% of adults becoming chronically infected following exposure, compared to 90% in infected infants (Centers for Disease Control and Prevention, 2015). Per the CDC, in 2014 a total of 2,953 acute cases, 0.9 cases per 100,000, of HBV was reported from 48 states (data from District of Columbia, Rhode Island, and Wyoming was unavailable in 2014) (Centers for Disease Control and Prevention, 2015). In Virginia, 61 cases of acute HBV were reported in 2014 and 69 cases in 2015.

Overall, there has been a 13% decrease from the five-year average of 79.6 cases per year (Figure 24). The decrease in reported cases in Virginia reflects a national trend related to the availability of hepatitis B vaccine since 1981, and a strategy initiated in 1991 to eliminate hepatitis B transmission in the United States. The highest incidence rate was observed in the 40-49 year age group (2.2 per 100,000), followed by the 30-39 year age group (1.4 per 100,000) (Figure 25). No cases were reported among individuals younger than 20 years of age.

Race was not provided for 35% of cases. Among those with a known race, incidence was similar among the black and white populations (0.6 per 100,000, each), followed closely by those identified as being in the "other" race population (0.3 per 100,000). Incidence rates among males and females were also similar (0.9 and 0.8 per 100,000, respectively).

During 2015, the southwest region had a higher incidence rate for acute hepatitis B infections (2.8 per 100,000) than any other region in Virginia (range 0.2 to 1.3 per 100,000). Notably, incidence rates in the far southwest area of that region were among the highest (Figure 26). Disease onset occurred throughout the year. No acute hepatitis B outbreaks were reported in Virginia in 2015.







Hepatitis B, Acute: Rate by Age Group, Virginia, 2015



Hepatitis B, Acute, Incidence Rate by Locality Virginia, 2015



Figure 26: Hepatitis B, Acute Incidence Rate by Locality [2015]

During 2015, patient history information on potential risk factors was obtained for 68% of the reported cases. Among those reporting at least one potential risk factor in the 6 weeks to 6 months prior to onset of symptoms:

- 46% reported non-injected street drug use
- 25% injected drugs not prescribed by a doctor
- 25% had a blood exposure
- 21% had contact with a person with confirmed or suspected acute or chronic hepatitis B virus infection
- 18% were incarcerated
- 11% received a tattoo
- 7% had a part of their body pierced

No deaths were attributed to acute hepatitis B infection in 2015.

Hepatitis C (HCV) is a liver disease caused by the Hepatitis C virus. HCV can be either acute or chronic and spreads primarily through contact with the blood of an infected person. In 2014, an estimated 30,500 cases were reported nationally. Approximately 75%-85% infected with HCV develop chronic infection (Centers for Disease Control and Prevention, 2016). In 2015, 52 cases of acute hepatitis C infection were reported in Virginia. This is a 25% increase when compared to the 5-year average of 41.6 cases per year (Figure 27). The incidence of HCV is difficult to assess because the data is affected by changes that were made to the national surveillance case definition in 2012 (allowing cases to be counted based on laboratory criteria alone) leading to a higher number of reported cases. Moreover, although incidence has increased, cases are undercounted due to the large percentage of infections that go undetected because of the absence of symptoms.

The highest incidence rate (1.9 per 100,000) occurred in the 20-29 year age group, followed by the 30-39 year age group (1.3 per 100,000). No cases of acute hepatitis C infection were reported in persons less than 10 years of age (Figure 28). Race was available for 71% of cases. Among those with a known race, 35 were among the white population resulting in an incidence rate of 0.6 per 100,000. The rate among both the black and "other" race populations was similar at 0.1 per 100,000. Incidence of acute hepatitis C infection among females was 0.7 per 100,000, while the incidence among males was 0.5 per 100,000.

In 2015, 79% percent of acute hepatitis C cases occurred in two regions in the state. The highest number of cases and incidence rate were both seen in the northwest region with 21 cases and an incidence rate of 1.6 per 100,000. This was followed closely in the southwest region with 20 cases being reported and a rate of 1.5 per 100,000. Nine cases were reported from the central region (0.6 per 100,000), and one case each were reported from the northern and eastern regions (Figure 29). Disease onset occurred throughout the year with 58% of cases having onset in the second and third quarters of the year. No acute hepatitis C outbreaks were reported in Virginia in 2015.



Hepatitis C, Acute: Ten-Year Trend for Number of Cases and Incidence Rate, Virginia, 2006-2015

Figure 27: Hepatitis C, Acute Ten-Year Trend for the Number of Cases and Incidence Rate in VA



Figure 28: Hepatitis C (Acute) Rate by Age Group

Hepatitis C, Acute, Incidence Rate by Locality Virginia, 2015



Figure 29: VA Hepatitis C (Acute) Incidence Rate by Locality [2015]

During 2015, patient history information on potential risk factors was obtained for 40% of cases. Among those reporting at least one potential risk factor in the 2 weeks to 6 months prior to onset of symptoms, 38% injected drugs not prescribed by a doctor, 29% reported non-injected street drug use, 24% had received a tattoo, 14% were incarcerated, and 10% had a part of their body pierced. No deaths were attributed to acute hepatitis C infection in 2015.

Healthcare-Associated Infections (HAIs)

According to the Centers for Disease Control and Prevention (CDC), an estimated 722,000 healthcare-associated infections (HAIs) occurred nationally in 2011, affecting approximately 1 in 25 hospitalized patients. In 2015, all HAIs reported to the Centers for Medicare and Medicaid Services (CMS) Hospital Inpatient Quality Reporting Program were required to also be reported to VDH. Compared to the national experience, Virginia hospitals reported 48% fewer central line-associated bloodstream infections (CLABSI); 42% fewer catheter-associated urinary tract infections (CAUTI); 14% fewer hospital-onset methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia laboratory-identified events; about the same number of surgical site infections (SSIs) following colon surgeries, and 24% more SSIs following abdominal hysterectomies. Prevention of *Clostridium difficile* infections remains a priority for Virginia, as hospitals did not show any significant changes in 2015 from the national baseline.

In 2015, there were 128 outbreaks reported from Virginia healthcare settings, including 117 from nursing homes. Of the 128 outbreaks, 72 were suspected or confirmed to be due to norovirus, and 39 were suspected or confirmed to be due to influenza. Other HAI outbreaks were suspected or confirmed to be due to rhinovirus, sapovirus, *Clostridium difficile*, *Klebsiella pneumoniae*, respiratory syncytial virus, methicillin-resistant *Staphylococcus aureus*, streptococcus, and *Sarcoptes scabiei* (scabies).

Hospitals also reported 48% fewer central line-associated bloodstream infections (CLABSIs); 42% fewer catheter-associated urinary tract infections (CAUTIs); 24% more surgical site infections (SSIs) following abdominal hysterectomies and about the same number of SSIs following colon surgeries; and 14% fewer hospital-onset methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia laboratory-identified events (Table 26).

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			Number of Infections		Standardized Infection Ratio (SIR)* and 95% CI			
HAI	Unit/Type	No. of Facilities	Device Days/ Procedures Performed/ Patient Days	Observed	Predicted	SIR	Lower	Upper
CLABSI	All ICUs and Wards** (total)	81	447,204	411	783.62	0.52	0.48	0.58
	Adult and Pediatric ICUs (only)	78	197,508	203	394.00	0.52	0.45	0.59
	Adult and Pediatric Wards** (only)	81	218,643	177	318.83	0.56	0.48	0.64
	Neonatal ICUs (only)	25	31,053	31	70.80	0.44	0.30	0.61
CAUTI	All ICUs and Wards** (total)	81	464,584	510	877.65	0.58	0.53	0.63
	Adult and Pediatric ICUs (only)	78	231,684	319	472.65	0.68	0.60	0.75
	Adult and Pediatric Wards** (only)	81	232,900	191	404.99	0.47	0.41	0.54
SSI*	Colon Surgery	77	7,158	226	221.03	1.02	0.90	1.16
	Abdominal Hysterectomy	68	8,384	84	67.61	1.24	1.00	1.53
MRSA	Facility-wide LabID	81	3,475,556	178	207.84	0.86	0.74	0.99
CDI	Facility-wide LabID	81	3,153,506	2,542	2556.14	0.99	0.96	1.03

Table 26: Statewide Standardized Infection Ratios (SIRs) for Central Line-Associated Bloodstream Infection (CLABSI), Catheter-Associated Urinary Tract Infection (CAUTI), Surgical Site Infection (SSI), and Laboratory-Identified Hospital-Onset Methicillin-Resistant *Staphylococcus aureus* (MRSA) Bacteremia and *Clostridium difficile* (CDI) Laboratory-Identified Events; Virginia Hospitals; 2015

Note: Green cells indicate an SIR significantly LOWER than the national baseline (Baseline periods: CLABSI, SSI - 2006-2008; CAUTI - 2009; MRSA, CDI - 2010-2011).

Red text indicates an SIR significantly HIGHER than the national baseline.

* SSI SIRs are based on the complex admission/readmission model. For more information on this model, go to: http://www.cdc.gov/nhsn/pdfs/pscmanual/9pscssicurrent.pdf

** Inpatient ward locations included are adult and pediatric medical and medical/surgical wards, as well as adult surgical wards. Pediatric surgical ward data were excluded from device-associated SIR calculations because these data were excluded from device-associated national baselines.
Chronic Disease

Chronic diseases are the leading cause of disability and death in the United States. Although common and costly, chronic illnesses such as hypertension, Type 2 diabetes, arthritis, obesity and select cancers are preventable. In 2012, an estimated 117 million people had one or more chronic health conditions and one in four adults had two or more (Centers for Disease Control and Prevention, 2016). Adopting healthy behaviors such as increased physical activity, balanced nutrition, smoking cessation and reduction or elimination of alcohol consumption can greatly reduce the risk for developing a chronic illness.



Prevalence

Figure 30: Chronic Disease Percent Prevalence of Adults 18 Years and Older

Source: All indicators are derived from Virginia Behavioral Risk Factor Surveillance System (BRFSS) data from 2011 to the most current year

Note: Age Adjusted Prevalence. Arthritis percent's includes adults told by health professional that they have some form of arthritis, rheumatoid arthritis, gout, lupus or fibromyalgia.

Diabetes percentage includes adults told by a doctor, nurse, or health professional they had diabetes. Does not include gestational diabetes.

Arthritis

The CDC identifies arthritis as a leading cause of disability, affecting 52.5 million U.S. adults from 2010 to 2012. Arthritis includes more than 100 rheumatic diseases and conditions, and it is projected that 78 million adults will be diagnosed with arthritis by 2040 (Centers for Disease Control and Prevention, 2016). In Virginia, arthritis decreased from 24.6% (2011) to 21.6% (2015) (Figure 30). Furthermore, it affects females (26.9%; 1,745) more than males (19.4%; 939) (CDC, 2015).

Diabetes

Diabetes is a disease that can cause serious health complications. People who have diabetes have an increased risk of developing heart disease, kidney failure, blindness, stroke, and lower-extremity amputations. In 2012, the CDC estimated 29.1 million (9.3%) people have diabetes and 8.1 million (27.8%) with diabetes are undiagnosed in the U.S. Prevalence of diabetes (both Type 1 and 2) among Virginia adults has maintained relatively stable from 9.9% (2011) to 9.6% (2015) (Figure 30). However, Black non-Hispanics account for 14.5% (270) of the number of cases of diabetes compared to White non-Hispanic at 9.9% (801) in 2015.

Asthma

Asthma is a chronic lung disease that affects more than 25 million people in the U.S. (National Institute of Health, 2014). In Virginia, asthma has decreased slightly from 8.6% (548) in 2011 to 7.9% (692) in 2015. Populations most affected by asthma were young adults age 18-24 years (9.5%; Table 27), women (10.6%; Table 28), Blacks (11.8%; Table 29) and among households with an income less than \$15,000 (13.9%; Table 30).

Age (Years)	Percent
18-24	9.5%
25-34	6.6%
35-44	8.0%
45-54	7.0%
55-64	8.6%
65+	8.2%

Table 27: Asthma Estimates by Age (2015)

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Jan 06, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

	Percent
Male	5.0%
Female	10.6%

Table 28: Asthma Estimates by Gender (2015)

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [Accessed Jan 06, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

	Percent
White	7.5%
Black	11.8%

Table 29: Asthma Estimates by Race (2015)

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [Accessed Jan 06, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

Dollars	Percent
<15,000	13.9%
15,000-24,999	10.2%
25,000-34,999	6.7%
35,000-49,999	7.9%
50,000+	6.3%

Table 30: Asthma Estimates by Income (2015)

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [Accessed Jan 06, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

Cardiovascular Disease

Cardiovascular disease (CVD) refers to a group of disorders that involves the narrowing or blockage of the heart and blood vessels. In the U.S., the leading cause of death for both men and women is CVD (Centers for Disease Control and Prevention, 2015). In Virginia, CVD estimates have remained consistent, with less than a 1% change between 2011 and 2015 (Table 31). An inequity among those affected by CVD is present in Virginia. CVD estimates are greater among males (4.0%) compared to females (2.8%), in White non-Hispanics (4.0%) compared to Black non-Hispanics (2.9%) and those with a family income less than \$15,000 (6.1%) compared to those with a family income greater than \$50,000 (2.5%) (Table 32). Age is an additional factor that influences CVD, as percentage increases with age (Table 33).

	2011	2012	2013	2014	2015
Percent	3.6%	4.3%	3.7%	3.7%	3.1%
Count	349	418	453	525	408

Table 31: Cardiovascular Disease Trend Estimates for Virginia

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [Accessed Jan 10, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

Dollars	Percent	Count
<15,000	6.1%	47
15,000-24,999	4.7%	79
25,000-34,999	4.9%	51
35,000-49,999	3.3%	42
50,000+	2.5%	126

Table 32: Cardiovascular Estimates by Household Income (2015)

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [Accessed Jan 10, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

Age (Years)	Percent	Number
18-24	*	
25-34	*	
35-44	*	
45-54	2.8%	41
55-64	5.0%	98
65+	9.7%	251

Table 33: Cardiovascular Estimates by Age (2015)

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [Accessed Jan 10, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

Note: Crude Prevalence

*Prevalence estimate not available if the unweighted sample size for the denominator was < 50 or the Relative Standard Error (RSE) is > 0.3 or if the state did not collect data for that calendar year.

Obesity

Obesity is a known health problem affecting nearly 35% of the U.S. population (Gonzalez-Campoy, 2016). Obesity is linked to physical, metabolic and psychological health and is a chronic disease. Weight classification is defined by body mass index (BMI). Obesity disproportionately affects some groups more than others. Factors such as age, educational attainment and household income can influence prevalence. BMI classifications are as follow:

- Obese (BMI 30.0-99.8)
- Overweight (BMI 25.0-29.9)
- Normal Weight (BMI 18.5-24.9)
- Underweight (BMI 12.0-18.4).

Obesity in Virginia has remained fairly stable from 2011 (28.6%) to 2015 (28.8%) (Table 34). Obesity is also slightly more prevalent in females (29.7%) than males (28.8%), but there are more overweight men (41.2%) than women (28.4%) (Table 35).

Obesity is also prevalent in adults who are 55-64 of age (34.3%) (Table 36), or have a household income less than \$15,000 (40.0%) (Table 37). Obesity affects children too. Approximately one third of children in the U.S. are overweight or obese and the number is growing (NIH, 2012). In Virginia, high school youth (9th and12th graders) who report overweight or obese status remained consistently below national percentages from 2011 to 2015. Furthermore there was no significant change from 2011 (28.3%) to 2015 (28.1%) (Table 38).

	2011	2012	2013	2014	2015
Obese (BMI 30.0-99.8)	28.6%	26.7%	26.7%	28.0%	28.8%
Overweight (BMI 25.0-29.9)	34.0%	35.9%	36.6%	35.9%	34.6%
Normal Weight (BMI 18.5-24.9)	36.2%	35.2%	34.9%	34.3%	34.6%
Underweight (BMI 12.0-18.4)	1.2%	2.2%	1.9%	1.8%	2.0%

Table 34: Weight Classification Trend Estimates by Body Mass Index (BMI)Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Preventionand Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015.[Accessed Jan 11, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/.Note: Age-adjusted Prevalence

	Male	Female
Obese (BMI 30.0-99.8)	28.8%	29.7%
Overweight (BMI 25.0-29.9)	41.2%	28.4%
Normal Weight (BMI 18.5-24.9)	28.7%	39.3%
Underweight (BMI 12.0-18.4)	1.3%	2.6%

Table 35: Weight Classification of VA Adults 18 Years and Older [2015]Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Preventionand Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015.[Accessed Jan 11, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/.Note: Crude Prevalence

	18-24	25-34	35-44	45-54	55-64	65+
Obese (BMI 30.0-99.8)	16.7%	25.3%	33.2%	33.9%	34.3%	29.3%
Overweight (BMI 25.0-29.9)	24.9%	34.1%	37.5%	35.9%	36.0%	38.5%
Normal Weight (BMI 18.5-24.9)	53.3%	39.7%	27.8%	28.6%	28.9%	30.0%

Table 36: Weight Classification of VA Adults 18 Years and Older By Age [2015] **Source:** Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Jan 11, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

	Normal BMI 18.5-24.9	Overweight BMI 30.0-99.8	Obese BMI 25.0-29.9
Less than \$15,000	29.5%	25.5%	40.0%
\$15,000-\$24,999	30.5%	33.6%	34.0%
\$25,000-\$34,999	34.2%	36.3%	29.2%
\$35,000-\$49,999	31.1%	33.4%	32.4%
\$50,000+	34.5%	37.5%	26.7%

Table 37: Weight By Household Income [2015]

Source: Centers for Disease Control and Prevention, national Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [Accessed Jan 11, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

	VA	US
2011	28.3%	29.9%
2013	26.7%	30.3%
2015	28.1%	29.9%

Table 38: Percent of High School Youth who are Overweight or ObeseSource: Virginia Youth Survey and National Youth Risk Behavior Surveillance System. Accessed 1/11/17:https://nccd.cdc.gov/youthonline/App/Results.aspx?LID=VA

Hypertension

An estimated 75 million American adults (29%) have high blood pressure, with approximately 54% having the condition under control. The annual cost of hypertension is approximately \$46 billion, which includes cost of medications, care services and missed days of work (Centers for Disease Control and Prevention, 2016). For Virginia residents 18 years and older, hypertension has increased slightly from 29.9% (2011) to 31.4% (2015) (Table 39). Hypertension is most prevalent in Black non-Hispanic Virginia residents (43.5%), and least prevalent in Asian non-Hispanics (21.3%) (Table 40).

	2011	2013	2015
Hypertension	29.9%	30.9%	31.4%

 Table 39: Percentage of VA Adults 18 years and Older with Hypertension

Note: Age-adjusted prevalence. Individuals who are considered hypertensive have been told by a doctor, nurse or other health professionals that they have high blood pressure. Does not include pregnancy induced hypertension.

	Percent
White (non-Hispanic)	33.4%
Black (non-Hispanic)	43.5%
American Indian or Alaskan native (non-Hispanic)	25.3%
Asian (non-Hispanic)	21.3%

Table 40: Virginia Adults with High Blood Pressure, 2015

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [Accessed Jan 04, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

Notes: Crude Prevalence. Adults who have been told they have high blood pressure.

Mortality

The mortality rate for chronic diseases has decreased overall in Virginia. Among these leading chronic diseases, heart disease remains the most common cause of death yet the mortality rate per 100,000 for heart disease has decreased from 229.1 (2009) to 212.5 (2013) (Table 41).

	Rate pe	r 100,000
	2009	2013
Heart Disease	229.1	212.5
Stroke	56.5	52.4
Chronic Obstructive Pulmonary Disease	50.9	48.7
Diabetes Type II	26.1	24.6
Hypertension	19.0	19.5

 Table 41: Chronic Disease Death by Indicator

Source: Virginia Vital Records and Health Statistics Electronic Death Certificates Notes: The death rate is age-adjusted based on 2,000 U.S population standard and calculated per 100,000 individuals.

Cancer

In the U.S., cancer is the second leading cause of chronic disease related death after heart disease (Centers for Disease Control and Prevention, 2016). Virginia cancer rates for 2013 – of the 10 primary sites with the highest rates within state and sex specific categories – are lower overall, compared to the nation, with the exception of female breast cancer (Figure 31).



Virginia and National 2013 Cancer Rates per 100,000

Figure 31: VA State and National Rates per 100,000 for 2013

Source: Centers for Disease Control and Prevention: 2013 State vs. National Comparisons. Accessed 12/09/16: https://nccd.cdc.gov/uscs/statevsnational.aspx#text

Note: Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups - Census P25-1130).

Age-Adjusted Invasive Cancer Incidence Rates for the 10 Primary Sites with the Highest Rates within State- and Sex-Specific Categories.

Data are from selected statewide and metropolitan area cancer registries that meet the data quality criteria for all invasive cancer sites combined. See registry-specific data quality information. Rates cover approximately 99% of the U.S. population.

Excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder.

Female breast cancer and prostate cancer are the two most commonly diagnosed cancers in women and men, respectively. Prostate cancer in Virginia has shown a decrease in rates from 2009 (142.7) to 2013 (101.0). Lung cancer and colorectal cancer are the next most common cancers, affecting every segment of the population. Both cancers have decreased from 2009-2013 (Figure 32).



Figure 32: Cancer Rate Per 100,000 by Type Source: Virginia Cancer Registry

Decreasing the risk of developing certain types of cancer is possible by modifying risk-associated behaviors such as minimizing alcohol consumption, eliminating tobacco use and vaccinating against Hepatitis B and the Human Papilloma Virus (HPV). If cancer does develop, early screening can result in better treatment options and outcomes.

Maternal & Child Health

In 2014, an estimated 23,000 infants died in the U.S., with approximately 3,500 attributed to sudden unexpected infant deaths (SUID). Most SUIDs are reported as one of the following three types:

- 1. Sudden Infant Death Syndrome (SIDS), which is, unexplained death, usually during sleep, of a seemingly healthy baby less than a year old
- 2. Unknown causes; or
- 3. Accidental suffocation and strangulation in bed (Centers for Disease Control and Prevention, 2016).

Birth defects are also a leading cause of infant mortality; affecting 1 in 33 babies in the U.S. Babies who survive with birth defects are at an increased risk of developing mental, physical and social challenges (Centers for Disease Control and Prevention, 2016). Infant mortality is also influenced by factors such as gestation period, birth weight, access to medical care, tobacco use and age of expectant mother.

In 2014, there were 102,795 total births in Virginia. Infants born before 37 weeks gestation (Pre-term) accounted for 91.3 per 1,000 live births. Of the total births, the 2014 rate of teen pregnancy was 24.8 per 1,000 live births, a decrease from 40.2 per 1,000 live births in 2010 (Table 42).

Racial and ethnic disparities in infant mortality exist in the United States. Virginia has made progress in helping infants thrive, however the mortality rate among Black babies and White babies are not equal despite a decreasing trend in both.

From 2005 through 2014, there has been a 22.2% reduction in infant mortality among Black babies, from 14.4 deaths per 1,000 live births (2005), to 11.2 deaths per 1,000 live births (2014) (Figure 33).

		Count	
Total Births	102,795		
Infant Death	589		
	Count	Rate [Per 1,000] Live Births	
Infants Born Pre-term	9,389	91.3	
Infants w/ Low Birth Weight	7,966	77.5	
No Prenatal Care During Pregnancy	2,883	28.0	
Tobacco Use During Pregnancy	5,756	56.0	
Teen Pregnancy (15-19) years	6,551	24.8	

 Table 42: VA Maternal and Child Health Birth and Death Data [2014]

Table Notes: The rates are calculated per 1,000 live births. Infant death is counted when infant died within the first year of life.

Infants are born before 37 weeks gestation are considered pre-term. Infants weighing less than 2,500 grams at birth are considered low births weights. A teen pregnancy is a mother between the ages of 15-19 years of age at the time of delivery and birth.



Infant Mortality Rate Per 1,000 live Births

Figure 33: Infant Mortality Rates per 1,000 Live Births Estimate Trends

Source: Virginia Vital Records and Health Statistics Electronic Birth Certificates and Electronic Death Certificates. Virginia Department of Health. Available from: http://www.vdh.virginia.gov/HealthStats/documents/2010/pdfs/InfDeathRace13.pdf

Health Behaviors

Lifestyle behaviors significantly influence health status. Practicing positive behaviors such as obtaining preventive health screenings and vaccinations, eating balanced meals and participating in physical activity may reduce the incidence of chronic illness. Conversely, behaviors such as smoking, excessive use of alcohol or physical inactivity may adversely affect health. Data from the Behavioral Risk Factor Surveillance System (BRFSS) provides information on behaviors, risk factors and utilization of preventive services addressing chronic and infectious disease. Additionally, BRFSS provides information regarding disability, injury and death among noninstitutionalized participants.

Screenings

Per the CDC, Americans receive preventive health services "at about half the recommended rate" (Preventive Health Care, 2015). The result is compromised health and increased economic impact. Early disease detection is an effective way to protect health and reduce long-term cost. Virginia estimates indicate a slightly higher percentage of preventive screenings (Table 43) when compared to the median estimates for all states and DC.

Screenings	VA	VA 95% CI	All States and DC (median)
Colorectal Cancer (50-75+ Yrs)	69.1%	67.3-70.9	66.6%
Mammogram in the Past 2 Years (40+ Years)	75.0%	73.2-76.8	73.0%
Pap Test in the Past 3 Years (18+ Years)	79.5%	77.6-81.4	75.2%

Table 43: 2014 Preventive Screenings Estimates by TypeSource: Behavioral Risk Factor Surveillance System (BRFSS)

Colorectal Cancer Screening

Colorectal Cancer is the second leading cancer cause of death in the U.S. (Centers for Disease Control and Prevention, 2017). Risk of developing colorectal cancer is influenced by increasing age; family history of colorectal cancer or colorectal polyps; genetics and lifestyle factors such as obesity; a diet low in fruits, vegetables and fiber; alcohol consumption; tobacco use; and lack of regular physical activity. Among Virginia adults 50 years and older, 69.1% fully met the U.S. Preventive Services Task Force (USPSTF) recommendation for colorectal cancer screening. In 2015, preventive cancer screening estimates were greater among females (71.6%) than males (66.4%), residents 70-75 year of age (78.8%), in White non-Hispanics (70.0%), college graduates (76.2%), and those with a household income \$50,000 and greater (75.1%) (Table 44).

2014 Virginia Colorectal Cancer Screening				
	Percent	95% CI		
All Responses	69.1%	67.3-70.9		
Gender				
Male	66.4%	63.5-69.2		
Female	71.6%	69.4-73.8		
Age Group				
50-59yrs	62.0%	59.2-64.9		
60-69yrs	74.4%	71.8-76.9		
70-75yrs	78.8%	75.1-82.4		
Race/Ethnicity				
White, non-Hispanic	70.0%	68.1-71.9		
Black, non-Hispanic	66.7%	61.8-71.6		
Hispanic	66.2%	53.1-79.4		
Other, non-Hispanic	68.3%	57.4-79.3		
Education Attained				
Less than H.S	49.3%	42.7-56.0		
H.S or G.E.D	66.1%	62.7-69.5		
Some Post H.S	72.1%	68.8-75.4		
College Graduate	76.2%	73.8-78.6		
Household Income				
Less than \$15,000	47.9%	40.5-55.2		
\$15,000-\$24,999	60.1%	54.7-65.5		
\$25,000-\$34,999	67.6%	61.1-74.0		
\$35,000-\$49,999	68.6%	63.4-73.8		
\$50,000+	75.1%	72.7-77.4		

Table 44: Respondents Aged 50-75yrs Who Have Fully Met the U.S. Preventive Services Task Force (USPSTF) Recommendation for Colorectal Cancer Screening

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. Accessed Nov 10, 2016: https://www.cdc.gov/brfss/brfssprevalence/.

Note: Variables calculated from one or more BRFSS questions. Use caution in interpreting cell sizes less than 50. Crude Prevalence.

Mammogram

According to the CDC, breast cancer is one of the most common cancers in women regardless of race or ethnicity. In 2013, over 230,000 women and 2,000 men in the U.S. were diagnosed with breast cancer, and over 40,000 women and 400 men died as a result (Centers for Disease Control and Prevention, 2014). Mammogram screenings provide the benefit of early detection, which can improve disease outcome.

In 2014, 75% of women 40 and over in Virginia reported having a mammogram within the past two years. Completion of mammogram screenings within the past two years was most prevalent in women 60-64 years (81.9%), Black, non-Hispanic (83.9%), college graduates (79.6%) and households whose income was \$50,000 or greater (81.3%) (Table 45).

Mammogram	2014		
	Percent	95% CI	
All Responses	75.0%	73.2-76.8	
Age Group			
40-49 yrs	65.5%	61.1-70.0	
50-59 yrs	77.7%	74.5-80.9	
60-64 yrs	81.9%	78.0-85.9	
65+	77.9%	75.3-80.5	
Race/Ethnicity			
White, non-Hispanic	74.1%	72.1-76.1	
Black, non-Hispanic	83.9%	80.2-87.5	
Hispanic	63.1%	50.5-75.6	
Other, non-Hispanic	69.8%	57.2-82.5	
Multiracial, non-Hispanic	*		
Education Attained			
Less than H.S	61.3%	54.7-68.0	
H.S or G.E.D	74.3%	70.9-77.7	
Some Post H.S	76.3%	72.7-79.8	
College Graduate	79.6%	77.0-82.2	
Household Income			
Less than \$15,000	66.9%	60.0-73.7	
\$15,000-\$24,999	64.3%	59.1-69.4	
\$25,000-\$34,999	72.4%	66.2-78.5	
\$35,000-\$49,999	73.4%	68.4-78.5	
\$50,000+	81.3%	78.6-83.9	

Table 45: VA Women Aged 40+ Who Have Had a Mammogram Within the Past Two Years Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. Accessed Nov 12, 2016: https://www.cdc.gov/brfss/brfssprevalence/.

Note: * Prevalence estimate not available if the unweighted sample size for the denominator was < 50 or the CI half width was > 10 for any cell, or if the state did not collect data for that calendar year. Variable calculated from one or more BRFSS questions. (Crude Prevalence)

Cervical cancer was the leading cause of cancer death for women in the U.S., however, due to regular pap test, the number of cases and deaths has decreased in the past 40 years (Centers for Disease Control and Prevention, 2016). Among women 18 years and older in Virginia, 79.5% completed a pap test within the past three years. Pap screenings were most prevalent among women 25-34 years (88.4%), Hispanic (86.2%), college graduates (89.6%) and households whose income was \$50,000 or greater (88.4%) (Table 46).

PAP TEST	2014		
	%	95% CI	
All Responses	79.5%	77.6-81.4	
Age Group			
18-24 yrs	61.8%	53.8-69.8	
25-34 yrs	88.4%	85.0-91.8	
35-44 yrs	87.3%	83.5-91.1	
45-54 yrs	84.9%	81.6-88.3	
55-64 yrs	82.9%	79.5-86.3	
65+	63.0%	58.6-67.3	
Race/Ethnicity			
White, non-Hispanic	78.4%	76.2-80.6	
Black, non-Hispanic	80.2%	75.3-85.0	
Hispanic	86.2%	79.7-92.6	
Other, non-Hispanic	73.9%	63.2-84.6	
Multiracial, non-Hispanic	*		
Education Attained			
Less than H.S	71.5%	64.1-78.8	
H.S or G.E.D	71.2%	66.7-75.7	
Some Post H.S	77.5%	73.8-81.2	
College Graduate	89.6%	87.8-91.4	
Household Income			
Less than \$15,000	66.9%	59.6-74.2	
\$15,000-\$24,999	70.9%	64.9-76.8	
\$25,000-\$34,999	73.9%	67.0-80.7	
\$35,000-\$49,999	79.6%	74.2-85.0	
\$50,000+	88.4%	86.0-90.7	

Table 46: VA Women aged 18+ who have had a pap test within the past three years **Source:** Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. Accessed Nov 15, 2016: https://www.cdc.gov/brfss/brfssprevalence/.

Note: * Prevalence estimate not available if the unweighted sample size for the denominator was < 50 or the CI half width was > 10 for any cell, or if the state did not collect data for that calendar year. Use caution in interpreting cell sizes less than 50.Denominator includes all respondents except those with missing, don't know, and refused answers.

Vaccination / Immunization

Vaccines help prevent countless cases of disease by protecting the individual and promoting the development of community immunity through the reduction of contagious diseases. Community immunity helps protect those individuals not eligible for vaccines, such as expectant mothers, the immuno-compromised and infants.

In 2015, estimates for immunized adults in Virginia for shingles (39.9%) exceeded Healthy People 2020 goals (Table 47). Estimates for immunized adults in Virginia for pneumonia (74.3%) exceeded the national average (71.9%) but were below the Healthy People 2020 goal of 90%. The 2015-2016 percent estimates of Virginia adults (46.0%) who were vaccinated for the seasonal flu was 4.3% higher than the national estimates (41.7%). However, these estimates have decreased 2.4% since 2010-2011, whereas national estimates have increased 1.2% (Figure 34).

Immunization is one of the best ways to protect children from potentially harmful diseases that can lead to hospitalization or even death. Approximately 85% of the world's children receive vaccines that protect them against diseases such as tuberculosis, polio and diphtheria, to name a few, and the vaccines save approximately 2.5 million estimated lives. Despite this success, approximately 1.5 million children less than 5 years of age die from vaccine preventable diseases worldwide (Children's Hospital of Philadelphia, 2017).

In Virginia, vaccination coverage estimates among children 19-35 months of age for vaccine preventable diseases were lower than the national estimates (Table 48). Furthermore, adolescents 13-17 years also demonstrate estimates lower than the national percentages (Table 49).

	VA	US	Healthy People 2020
Pneumonia (65+)	74.3%	71.9%	90%
Shingles (60+)	39.9%	Data Not Collected	30.0%
Tetanus, Diphtheria, Pertussis [Tdap] (18+)	37.5%	Data Not Collected	Data Not Collected

Table 47: Percent of Adults Immunized in 2015

Source: Behavioral Risk Factor Surveillance System and The National Center for Immunization and Respiratory Diseases.

- Citation: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015.
 - Accessed Oct 20, 2016: http://www.cdc.gov/brfss/brfssprevalence/.
- 2. Citation: 2008 Through 2014 Adult Vaccination Coverage Trend Report (AdultVaxView): http://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/data-reports/ general-population /trend/index.html

Percent of Adults Immunized for the Flu



Figure 34: Percent of Adults Immunized for the Flu

Source: Influenza vaccination coverage estimates for persons 18 years and older by State, HHS Region, and the United States, National Immunization Survey-Flu (NIS-Flu) and Behavioral Risk Factor Surveillance System (BRFSS), 2010-11 through 2015-16 influenza seasons: http://www.cdc.gov/flu/fluvaxview/reportshtml/trends/index.html

All Children 19-35 Months				
	VA	US	Healthy People 2020	
≥1 Measles, Mumps, Rubella (MMR)	83.4%	91.9%	90.0%	
≥2 Hepatitis A	54.1%	59.6%	85.0%	
≥3 Hepatitis B	87.8%	92.6%	90.0%	
≥4 Diptheria, Tetanus, Pertussis (DTaP)	80.6%	84.6%	90.0%	
Full Series Rotavirus	67.1%	73.2%	80.0%	
≥1 Varicella	84.2%	91.8%	90.0%	
≥3 Polio	90.2%	93.7%	90.0%	
\geq 3 Full Series Haemophilus Influenzae type b (Hib)	73.9%	82.7%	90.0%	
≥4 Pneumococcal Conjugate Vaccine (PCV)	75.3%	84.1%	90.0%	

Table 48: Percent of Vaccination Coverage Among Children 19-35 Months 2015Source: National Center for Immunization and Respiratory Diseases: ChildVaxViewCitation: ChildVaxView: http://www.cdc.gov/vaccines/imz-managers/coverage/childvaxview/data-reports/index.html

NA-Not available (Estimate not reported because data not collected)

All Adolescents Aged (13-17 Years)	VA	US
≥1 Tetanus-Diphtheria (Td) or Diptheria, Tetanus, Pertussis (Tdap)	85.7%	89.6%
≥1 Tdap	82.2%	86.4%
≥1 Meningococcal Conjugate (MenACWY)	66.8%	81.3%
Females Only (13-17 Years)		
≥1 HPV	61.2%	62.8%
≥2 Doses HPV	43.9%	52.2%
≥3 Doses HPV	38.5%	41.9%
Male Only (13-17 Years)		
≥1 HPV	40.1%	49.8%
≥2 Doses HPV	32.0%	39.0%
≥3 Doses HPV	25.7%	28.1%

Table 49: Estimated Vaccination Coverage Among Adolescents Aged 13-17 Years [2015]Source: National Immunization survey-Teen (NIS-Teen)

Smoking

Worldwide, tobacco use is responsible for nearly 6 million deaths per year and there will be an additional estimated 8 million deaths annually by 2030. In the U.S., cigarette smoking is responsible for more than 480,000 deaths per year and second hand smoke contributes to 42,000 of those deaths (Centers for Disease Control and Prevention, 2016).

In Virginia, tobacco use, which includes cigarettes, tobacco chew, snuff or snus, has decreased from 23.7% in 2011 to 21.9% in 2014. Adults who smoke have declined from 21.0% in 2011 to 16.8% in 2015 (Table 50). Smoking trends in adults remain greater in males than females (Table 51) and 2015 estimates indicate smoking is most prevalent in 25-34 year olds (19.8%; Table 52), Black, non-Hispanics (19.2%; Table 53), and adults with less than a high school education (31.4%; Table 54).

	2011	2012	2013	2014	2015
Percent	21.0%	18.9%	19.1%	19.9%	16.8%
95% CI	19.4-22.6	17.6-20.3	17.9-20.3	18.6-21.1	15.6-17.9

Table 50: Percent of Adults (18+) Who Smoke [Age-adjusted Prevalence] **Source:** Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 06, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

	2011	2012	2013	2014	2015
Male	21.3%	21.6%	21.6%	22.6%	18.8%
95% CI	19.0-23.6	19.5-23.7	19.7-23.4	20.8-24.5	17.0-20.6
Female	20.5%	16.6%	16.7%	16.6%	14.4%
95% CI	18.5-22.6	15.0-18.1	15.2-18.1	15.2-18.1	13.1-15.8

 Table 51: Percent of Current Smoking in VA adults - Overall and Gender

 Source: Behavioral Risk Factor Surveillance System (BRFSS)

Age	Percent	95% CI
18-24	18.2%	14.2-22.3
25-34	19.8%	16.6-23.0
35-44	19.1%	16.1-22.2
45-54	17.7%	15.2-20.2
55-64	16.7%	14.5-18.8
65 & Older	8.6%	7.1-10.1

Table 52: Current Smoking by Age [2015]

Source: Behavioral Risk Factor Surveillance System (BRFSS)

	Percent	95% CI
White, Non-Hispanic	16.7%	15.4-17.9
Black, Non-Hispanic	19.2%	16.4-22.0
American Indian or Alaskan Native, Non-Hispanic	*	
Asian, Non-Hispanic	8.5%	3.8-13.2
Native Hawaiian or other Pacific Islander, Non-Hispanic	*	
Other, Non-Hispanic	*	
Multiracial, Non-Hispanic	13.4%	6.6-20.3
Hispanic	15.3%	9.8-20.9

Table 53: Current Smoking by Race/Ethnicity [2015]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 08, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

Note: * Prevalence estimate not available if the unweighted sample size for the denominator was < 50 or the Relative Standard Error (RSE) is > 0.3 or if the state did not collect data for that calendar year. Use caution in interpreting cell sizes less than 50. Denominator includes all respondent except those with missing, don't know, and refused answers.

	Percent %	95% CI
Less than H.S.	31.4%	26.5-36.2
H.S. or G.E.D.	23.1%	20.7-25.6
Some post H.S	14.5%	12.6-16.4
College Grad	7.5%	6.3-8.7

Table 54: Percent of VA Adults, Age 20 and Older Who Smoke Every Day or Some Days, Based on Education [2015]

Source: Behavioral Risk Factor Surveillance System (BRFSS)

Alcohol Consumption

Excessive alcohol consumption is associated with increased safety risk and health problems. Excessive drinking includes binge drinking, heavy drinking and any drinking by expectant mothers, and individuals younger than 21 years of age. Binge drinking is defined as four or more drinks for woman and five or more drinks for a man in a single occasion. Heavy drinking is the consumption of eight or more drinks by women and 15 or more by men in a single week. The CDC reports, excessive alcohol consumption led to approximately 88,000 deaths with 2.5 million years of potential life lost from 2006-2010. The economic cost in 2010 was estimated at \$249 billion (The Centers for Disease Control and Prevention, 2016). From 2011 to 2015, there has been an overall decline in alcohol consumption at both the state and national levels, showing the same estimates at 16.3% in 2015 (Table 55). There was a higher prevalence of binge drinking among males (20.7%; Table 56), adults 18-24 years (Table 57), Hispanics (20.0%; Table 58), adults with some post high school education (18.7%; Table 59), and Virginians with a household income of \$50,000 and greater (Table 60).

	2011	2012	2013	2014	2015
VA	17.9%	15.7%	15.9%	15.2%	16.3%
All States and DC (median)**	18.3%	16.9%	16.8%	16.0%	16.3%

 Table 55: Percent of VA Adults who Binge Drink

 Source: Behavioral Risk Factor Surveillance System (BRFSS)

	Percent	95%Cl
Male	20.7%	18.8-22.6
Female	12.3%	10.8-13.7

Table 56: Percent of VA Adults who Binge Drink by Gender [2015]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 14, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

Age	Percent	95% CI
18-24	29.9%	25.2-34.7
25-34	24.3%	20.9-27.6
35-44	18.7%	15.6-21.8
45-54	14.7%	12.4-16.9
55-64	11.2%	9.1-13.3
65+	3.5%	2.5-4.6

Table 57: Percent of VA Adults who Binge Drink by Age [2015]Source: Behavioral Risk Factor Surveillance System (BRFSS)

	Percent	95% CI
White, Non-Hispanic Black, Non-Hispanic American Indian or Alaskan Native,	16.9% 12.9%	15.6-18.3 10.3-15.5
Non-Hispanic Asian, Non-Hispanic Native Hawaiian or other Pacific	* 12.1%	6.2-18.1
Islander, Non-Hispanic Other, Non-Hispanic	*	
Multiracial, Non-Hispanic Hispanic	15.8% 20.2%	7.3-24.3 14.7-25.7

Table 58: Percent of VA Adults who Binge Drink by Race/Ethnicity [2015] Note: *Prevalence estimate not available if the unweighted sample size for the denominator was < 50 or the Relative Standard Error (RSE) is > 0.3 or if the state did not collect data for that calendar year.

	Percent	95% CI
Less than High School	12.4%	8.6-16.2
High School or G.E.D	14.7%	12.6-16.9
Some post High School	18.7%	16.2-21.1
College Graduate	17.1%	15.3-18.8

Table 59: Percent of VA Adults who Binge Drink by Education Attainment [2015]Source: Behavioral Risk Factor Surveillance System (BRFSS)

	Percent	95% CI
Less than \$15,000	15.7%	10.9-20.5
\$15,000-\$24,999	11.4%	8.7-14.1
\$25,000-\$34,999	15.7%	11.8-19.6
\$35,000-\$49,999	15.9%	12.5-19.3
\$50,000+	18.6%	16.8-20.3

Table 60: Percent of VA Adults who Binge Drink by Income [2015]Source: Behavioral Risk Factor Surveillance System (BRFSS)

In the United States, alcohol is also the most frequently used drug among youth (Centers for Disease Control and Prevention, 2016). In 2010, excessive drinking among underage youth in the U.S. was responsible for more than 4,300 deaths and an estimated cost of \$24 billion (Centers for Disease Control and Prevention, 2016). National and state underage drinking trends from 2011 through 2015 indicate a decrease in alcohol consumption. Likewise in Virginia, estimates have been consistently lower than national values with females demonstrating less prevalence in alcohol consumption compared to their male counterparts (Table 61).

	2011	2013	2015
Male [US]	23.8%	22.0%	18.6%
Male [VA]	15.3%	15.1%	12.1%
Female [US]	19.8%	19.6%	16.8%
Female [VA]	16.2%	13.6%	9.8%

 Table 61: Alcohol Consumption In High School Youth [9th-12th]

Source: National Youth Risk Behavior Surveillance System

Note: Self-Reported Consumption of 5 or More Drinks Within a Couple of hours on at Least 1 Day During the 30 Days Before the Survey

Fruits and Vegetable Consumption

Following a healthy diet and living actively has long-term health benefits. Maintaining a healthy weight is associated with improved quality of life and reduced health risk. Fruit and vegetable consumption is critical to provide the human body with necessary nutrients for good health. Virginia's fruit and vegetable consumption estimates among adults in 2015 are not significantly different from the national median estimates (Table 62). Virginia residents who report the highest fruit and vegetable consumption of one or more times per day are females (Fruit=63.9%; Vegetable=82.3%; Table 63), adults 65 and older for fruit consumption (65.5%) and 35-44 years for vegetable (81.6%; Table 64), college graduates (Fruit=67.6%; Vegetable=87.9%; Table 65), and residents whose income is \$50,000 or more (Fruit=63.9%; Vegetable=83.9%; Table 66).

	Fruit	Vegetables
VA	59.9%	78.3%
All States and DC (median)**	60.3%	77.9%

Table 62: Percent of Respondents Who Consumed Fruit/Vegetable One or More Times per Day [2015] **Source:** Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 09, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

	Fri	Fruits		Vegetables	
	Percent	<u>95%Cl</u>	Percent	<u>95%Cl</u>	
Male	55.7%	53.4-58.0	73.9%	71.9-76.0	
Female	63.9%	61.9-65.9	82.3%	80.7-83.9	

 Table 63: VA Adults Who Have Consume Fruits/Vegetables One or More Times Per Day by Gender

 [2015]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 09, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

	Fruits		Veget	tables
	Percent	95%CI	Percent	95%CI
18-24	53.8%	48.4-59.1	69.3%	64.3-74.3
25-34	60.5%	56.6-64.5	77.3%	73.7-80.9
35-44	56.9%	52.8-60.9	81.6%	78.4-84.8
45-54	59.5%	56.3-62.8	78.2%	75.4-81.0
55-64	61.3%	58.2 - 64.4	80.4%	77.9-82.9
65+	65.5%	62.6-68.4	80.5%	78.2-82.7

 Table 64: VA Adults Who Have Consume Fruits/Vegetables One or More Times Per Day by Age Group

 [2015]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 09, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

	Fruits		Vegetables	
	Percent	<u>95% Cl</u>	Percent	<u>95%Cl</u>
Less than High school	51.9%	46.3-57.6	66.6%	61.1-72.0
High school or G.E.D	54.9%	52.0-57.8	72.3%	69.7-75.0
Some College	58.8%	55.9-61.7	77.1%	74.6-79.7
College Graduate	67.6%	65.4-69.9	87.9%	86.4-89.4

 Table 65: VA Adults Who Have Consumed Fruits and Vegetables One or More Times a Day By Education

 [2015]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 14, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

	Fruits		Veget	ables
	Percent	95% CI	Percent	95% CI
Less than \$15,000	49.1%	42.8-55.3	65.6%	59.4-71.9
\$15,000-\$24,999	52.2%	47.8-56.7	68.8%	64.6-73.1
\$25,000-\$34,999	59.2%	53.6-64.9	74.9%	70.4-79.4
\$35,000-\$49,999	57.7%	53.0-62.4	79.1%	75.2-83.0
\$50,000+	63.9%	61.8-66.0	83.9%	82.2-85.5

Table 66: VA Adults Who Have Consumed Fruits and Vegetables One or More Times a Day ByHousehold Income [2015]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 14, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

Physical Activity

Living an active lifestyle has a physical, mental and emotional impact on health. Physical activity improves anxiety and depression, decreases body fat and strengthens bone mass in both children and adults. Among older adults, physical activity lowers the risk of falls, the leading cause of injury in Virginia. From 2011 through 2015, there was not a significant change in physical activity trend estimates, although three-quarters of Virginia adults report being physically active in the past month (Table 67).

The highest reporting of any physical activity in the past month among Virginia respondents were among males (75.6%) compared to females(74.1%; Table 68), individuals 18-24 years of age (87.1%) (Table 69), Multiracial non-Hispanics (78.2%; Table 70), college graduates (86.1%; Table 71) and residents with incomes \$50,000 and greater (82.4%; Table 71). Similarly, among Virginia high school and middle school students who reported being physically active at least 60 minutes per day on 5 or more days, male youth reported a higher level of physical activity (HS=54.2%; MS=60.6%) compared to females (HS=35.6%; MS=51.0%; Table 73).

	2011	2012	2013	2014	2015
VA	75.0%	77.5%	74.5%	76.5%	74.9%
All States and DC (median)**	73.8%	77.1%	74.7%	77.4%	73.8%

Table 67: Percent of Adults Who Reported Participating in Any Physical Activities in the Past Month **Source:** Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 14, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

Gender	Percent	95% CI
Male	75.6%	73.7-77.6
Female	74.1%	72.3-76.0

Table 68: Percent of Adults Who Reported Participating in Any Physical Activities in the Past Month by Gender [2015]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 14, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

Age	Percent	95% CI
18-24	87.1%	83.6-90.5
25-34	79.9%	76.6-83.2
35-44	73.0%	69.4-76.6
45-54	74.2%	71.0-77.4
55-64	73.4%	70.6-76.3
65+	65.3%	62.4-68.2

Table 69: Percent of Adults Who Reported Participating in Any Physical Activities in the Past Month By Age [2015]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 14, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

	Percent	95% CI
White, Non-Hispanic	77.0%	75.6-78.3
Black, Non-Hispanic	69.2%	65.8-72.5
American Indian or Alaskan Native, Non-Hispanic	63.1%	39.6-86.6
Asian, Non-Hispanic	75.3%	65.6-85.1
Native Hawaiian or other Pacific Islander, Non-Hispanic	*	
Other, Non-Hispanic	*	
Multiracial, Non-Hispanic	78.2%	69.5-86.9
Hispanic	67.8%	60.6-74.9

Table 70: Percent of Adults Who Reported Participating in Any Physical Activity in the Past Month by Race/Ethnicity [2015]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 14, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

Note: * Prevalence estimate not available if the unweighted sample size for the denominator was < 50 or the Relative Standard Error (RSE) is > 0.3 or if the state did not collect data for that calendar year. Denominator includes all respondents except those with missing, don't know, and refused answers.

	Percent	95% CI
Less than High School	55.3%	50.0-60.7
High School or G.E.D	68.7%	66.0-71.4
Some post High School	75.9%	73.4-78.4
College Graduate	86.1%	84.5-87.6

Table 71: Percent of Adults Who Reported Participating in Any Physical Activities in the Past Month by Education Attainment [2015]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 14, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

	Percent	95% Cl
Less than \$15,000	60.3%	54.2-66.4
\$15,000-\$24,999	65.2%	61.0-69.3
\$25,000-\$34,999	65.7%	60.2-71.3
\$35,000-\$49,999	70.9%	66.3-75.5
\$50,000+	82.4%	80.7-84.1

Table 72: Percent of Adults Who Reported Participating in Any Physical Activities in the Past Month by Income [2014]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 14, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

Note: Crude Prevalence

	High School	Middle School
Male	54.2%	60.6%
95% CI	50.6-57.8	55.9-65.2
Female	35.6%	51.0%
95% CI	32.3-39.0	46.6-55.3

Table 73: Percent of VA High School and Middle School Students Who Were Physically Active at Least60 Minutes per Day on 5 or More Days [2015]

Source: Virginia Youth Survey 2015

Note: High School includes 9th grade through 12 grade, and Middle School is 6th grade through 8th grade. Physical activity is defined as any kind of physical activity that increased their heart rate and made them breathe hard some of the time during the 7 days before the survey.

Oral Health

The mouth is the window into the health of the body. Nutritional deficiencies and general infections can first become apparent in the mouth. Some 100 million Americans fail to see a dentist each year, increasing overall risk of health because of lack of preventive care (American Dental Association, 2016). In 2014, 69.3% of Virginia respondents reported visiting the dentist or a dental clinic within the past year for any reason. The highest percentage of Virginia residents that reported seeing a dentist within the past year in 2014 were individuals 55-64 years of age (72.3%; Table 74), White non-Hispanics (72.5%; Table 75), college graduates (83.5%; Table 75) and residents with incomes \$50,000 and greater (82.3%; Table 77).

	Percent	95% CI
18-24	68.8%	64.0-73.5
25-34	65.6%	61.9-69.3
35-44	67.5%	64.2-70.8
45-54	71.0%	68.2-73.8
55-64	72.3%	69.9-74.8
65+	70.5%	68.2-72.7

Table 74: Percent of Adult VA Respondents Who Visited the Dentist or Dental Clinic Within the Past Year for Any Reason by Age [2014]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 15, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

Race/Ethnicity	%	95% CI
White Non-Hispanic	72.5%	71.1-73.9
Black Non-Hispanic	62.8%	59.4-66.2
Hispanic	61.8%	55.3-68.3
Other Non-Hispanic	65.3%	59.0-71.7
Multiracial Non-Hispanic	62.5%	52.3-72.7

Table 75: Percent of Adult VA Respondents Who Visited the Dentist or Dental Clinic Within the Past Year for Any Reason by Race/Ethnicity [2014]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 15, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

Education Attained	Percent	95% CI
Less than H.S	44.0%	38.9-49.1
H.S or G.E.D	62.5%	60.0-65.1
Some Post H.S	70.9%	68.5-73.3
College Graduate	83.5%	81.9-85.0

Table 76: Percent of Adult VA Respondents Who Visited the Dentist or Dental Clinic Within the Past Year for Any Reason by Education Level [2014]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 15, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

Household Income	Percent	95% CI
Less than \$15,000	42.4%	37.2-47.5
\$15,000-\$24,999	52.3%	48.4-56.1
\$25,000-\$34,999	63.1%	58.3-67.8
\$35,000-\$49,999	64.4%	60.2-68.5
\$50,000+	82.3%	80.8-83.9

Table 77: Percent of Adult VA Respondents Who Visited the Dentist or Dental Clinic Within the Past Year for Any Reason by Household Income [2014]

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 15, 2017]. URL: https://www.cdc.gov/brfss/brfssprevalence/. Note: Crude Prevalence

One of the most common chronic conditions experienced by children in the U.S. is cavities. Ensuring good oral health in children is important in preventing pain and infection due to tooth decay, which has been associated with problems in eating, speaking, playing and learning (Centers for Disease Control and Prevention, 2014). From 2014-15, 47.2% of Virginia third graders experienced tooth decay. Furthermore, approximately 15.1% of third graders were not treated for tooth decay even though 52.0% reported sealant on at least one permanent molar for tooth decay prevention (Figure 35).



Figure 35: Percent of Third Grade Students with Carries Experience, Untreated Decay and Dental Sealants

Source: Virginia State Oral Health Survey. Accessed 11/12/2016

Injury

Injuries impact everyone at some point in their lives; representing the leading cause of death and disability in the U.S. and Virginia for those ages 1-44 years. Overall, injury is the third leading cause of death. Although death is the most severe result of injury, it represents only part of the problem. The majority of those who incur injuries survive. Depending on the severity, people with injuries may face life-long mental, physical and financial problems as well as loss of productivity and stress to the victim, family, and other caregivers.

Unfortunately, because injuries are so commonplace, they are often accepted as an inevitable part of life. However, research has shown that the causes of injuries are predictable and preventable and not randomly occurring accidents. Injuries may be prevented through modifiable factors, which affect the occurrence and severity of injury, such as behavior change, policy, environment and the use of safety devices.

Injury is an umbrella term that encompasses a wide variety of mechanisms for which prevention may significantly vary depending on the age group impacted. A common set on injury indicators is used to determine the burden of injury morbidity and mortality, the leading mechanisms of injury and the segments of a population that are most at risk of injury. Developed in 1999 and updated in 2007 by a workgroup of national organizations, the Consensus Recommendations for Injury Surveillance in Health Departments identifies key injuries and risk factors for a standard surveillance process.

In 2014, the leading mechanisms of injury related hospitalizations were (Table 78):

- Falls: 190.9 per 100,000
- Poisoning: 69.1 per 100,000
- Traumatic brain injury: 60.1 per 100,000
- Motor vehicle traffic : 42.5 per 100,000)
- Self-harm (suicide attempts and other attempts at self-harm): 39.2 per 100,000.

Interpreting injury data to understand causation, risk and ultimately prevention requires additional forms of analysis. It is important to understand the intent of the injury which falls into two categories: intentional and unintentional. Unintentional injuries represent the majority of injuries resulting in hospitalization and death. When injury data is analyzed by gender, specific injuries have a higher prevalence in one gender over another. For example, assault related injury in Virginia among males (20.5 per 100,000) is greater than in females (3.7 per 100,000), while falls are more prevalent in females (210.5 per 100,000) than in males (158.8 per 100,000; Table 79).

When injury data is analyzed by age groups it provides further insight into the mechanisms of injury and how the risk of certain types of injuries varies across the lifespan. There is a higher prevalence of falls in age groups 1-14 years and individuals 55 and older, while poisoning is most prevalent among 15-54 year olds (Table 80).

Hospitalization

	Rates per 100,000	
	2010	2014
All Injury	437.9	389.1
Fall	209.3	190.9
Poisoning Traumatic Brain	70.9	69.1
Injury	60.3	60.1
Motor Vehicle Traffic	50.0	42.5
Self-harm	43.6	39.2
Assault	13.9	12.2
Firearms	6.5	7.2
Fire	2.7	2.1
Drowning	0.4	0.5

Table 78: VA Incidence Rate of Acute Care Hospital Injury DischargeSource: Virginia Impatient Hospitalization; Virginia Health InformationNote: Age-Adjusted Rate. Drowning Hospitalization indicator includes drowning injuries of any intent.Fall injury is unintentional

	Rate per 100,000	
	Male	Female
All Injury	381.9	383.3
Fall	158.8	210.5
Traumatic Brain Injury	76.4	45.0
Poisoning	55.6	82.0
Motor Vehicle Traffic	54.7	30.7
Self-harm	29.4	49.1
Assault	20.5	3.7
Firearms	12.8	1.5
Fire	3.1	1.2
Drowning	0.6	0.3

Table 79: VA Incidence of Acute Care Hospital Injury Discharge by Gender [2014] Source: Virginia Impatient Hospitalization; Virginia Health Information Note: Drowning Hospitalization indictor includes drowning injuries of any intent. Fall injury is unintentional

	Injury Hospitalization	Rate per 100,000
<1 yr	TBI	77.6
1-4 yrs	Fall	19.9
5 to 14 yrs	Fall	18.8
15 to 24 yrs	Poisoning	84.5
25 to 34 yrs	Poisoning	83.3
35 to 44 yrs	Poisoning	88.4
45 to 54 yrs	Poisoning	100.9
55 to 64 yrs	Fall	182.2
65 to 74 yrs	Fall	435.9
75 to 84 yrs	Fall	1348.0
85+ yrs	Fall	3676.9

Table 80: Hospitalization Rate by Leading Injury and Age Group [2014]Source: Virginia Resident Death Certificate by VDH Division of Health Statistics

Mortality

In the U.S., injuries account for 59% of all deaths in people 1 to 44 years of age, which is more than the combined amount of deaths because of non-communicable and infectious diseases (Centers for Disease Control and Prevention, 2016). In 2014, Virginia's three leading causes of injury related mortality was due to Traumatic Brain Injury (TBI; 53.7 per 100,000), Suicide (12.7 per 100,000) and Poisoning (12.2 per 100,000; Table 81). The three leading causes of injury related mortality differs by gender. In males, death as a result of TBI (28.4 per 100,000), Suicide (20.3 per 100,000) and Firearms (17.8 per 100,000) are the leading causes, while in females the three leading causes of injury death is Poisoning (9.1 per 100,000), TBI (8.9 per 100,000) and Overdose (8.6 per 100,000; Table 82). When injury related mortality data is analyzed by age groups, Virginia's leading injury related deaths are TBI for ages 1-24 years and 55-74 years, Poisoning for 25-54 age group, and Falls among individuals 75 years and older (Table 83).

	Rate per 100,000	
	2010	2014
All Injury	49.7	53.7
Traumatic Brain Injury	18.4	18.2
Suicide	11.9	12.7
Poisoning	9.0	12.2
Overdose	8.0	11.4
Firearms	10.5	10.2
Fall	6.9	9.0
Motor Vehicle Traffic	8.5	8.5
Homicide	4.6	4.0
Drowning	1.0	0.9
Fire	0.9	0.8

 Table 81: Mortality Annual Rates by All Causes [2014]

Source: Virginia Resident Death Certificate by VDH Division of Health Statistics

Note: Drowning Death Indicator covers Only Unintentional Drownings. These data represent all Virginia resident deaths, regardless of where the death occurred. Virginia residents who died out of state would therefore be included and geographic assignment of cases within these data is based on residence at time of death, as recorded on the death certificate. Age-Adjusted Prevalence.

	Rate per 100,000	
	Male	Female
All Injury	75.8	33.2
Traumatic Brain Injury	28.4	8.9
Suicide	20.3	5.6
Firearms	17.8	3.2
Poisoning	15.3	9.1
Overdose	14.1	8.6
Motor Vehicle Traffic	12.1	5.0
Fall	11.6	7.1
Homicide	5.9	2.1
Drowning	1.5	0.4
Fire	1.1	0.6

Table 82: Mortality Data Rate, All Causes by Gender [2014]Source: Virginia Resident Death Certificate, VDH Division of Health StatisticsNote: Age-Adjusted Prevalence

	Injury Death	Rate per 100,000
<1 yr	Homicide	7.8
1-4 yrs	TBI	3.2
5 to 14 yrs	TBI	2.2
15 to 24 yrs	TBI	18.7
25 to 34 yrs	Poisoning	19.1
35 to 44 yrs	Poisoning	23.5
45 to 54 yrs	Poisoning	21.2
55 to 64 yrs	TBI	20.4
65 to 74 yrs	TBI	23.9
75 to 84 yrs	Fall	69.6
85+ yrs	Fall	246.3

Table 83: Mortality Data Rate by Leading Injury and Age Group [2014]Source: Virginia Resident Death Certificate, VDH Division of Health Statistics

Environmental

Daily interaction with the environment plays a significant role in the quality of life. Environmental health involves preventing and controlling disease through investigation, surveillance and education (Healthy People 2020, 2016). Lead and food safety are well-known environmental health concerns.

Lead

Lead exposure can damage children's nervous, hematopoietic and renal systems. Scientific consensus shows that there is no safe lead level exposure. In 2015, there were 211 Virginia children confirmed to have elevated blood lead levels greater than $10\mu g/dl$. For children under 36 months, 90 had confirmed blood lead levels between 10- $14\mu g/dl$, and one child required chelation therapy due to blood lead levels greater than $45\mu g/dl$ (Figure 36). For children under 72 months, the results were similar with 118 confirmed blood lead levels between 10- $14\mu g/dl$, with two children requiring chelation therapy (Figure 37).



Figure 36: Blood Lead Levels for VA Children <36 Months of Age [2015]

Source: Virginia Electronic Disease Surveillance Systems (VEDSS)

Note: Total Population < 36 Months [303,439] with number of confirmed BLLs [164]. 2010 U.S. Census Population Data were used. Results based on one test per child per year. A confirmed blood lead level is defined as a single elevated venous test $\geq 10\mu g/dL$ or two elevated capillary tests within 84 days/12wks and is only counted once in the year in which it initially occurred.



Confirmed Blood Lead Levels for VA

Figure 37: Blood Lead Levels for VA Children <72 Months of Age [2015] **Source:** Virginia Electronic Disease Surveillance Systems (VEDSS)

Note: Total Population <72 Months [303,439] with number of confirmed BLLs [211]. 2010 U.S. Census Population Data were used. Results based on one test per child per year. A confirmed blood lead level is defined as a single elevated venous test $\geq 10\mu g/dL$ or two elevated capillary test within 84 days/12wks and is only counted once in the year in which it initially occurred.

Food Safety

CDC estimates that each year roughly one in six Americans (or 48 million people) become sick, 128,000 are hospitalized, and 3,000 die of foodborne illness (Centers for Disease Control and Prevention, 2016). In Virginia, this equates to over 1.3 million people annually (United States Census Bureau, 2015).

Foodborne illness occurs by food prepared in restaurants, private homes, hospitals, schools, and multiple other types of locations. Data from the U. S. Food and Drug Administration's Retail Food Risk Factory Study, conducted over 10 years (published in 2009) suggests that the control of certain foodborne illness risk factors has improved in most facility types, but three risk factors need continued improvement: poor personal hygiene (specifically hand washing procedures), improper holding of food, and contaminated food surfaces and equipment (U.S. Food and Drug Administration, 2009). In 2015, approximately 45,000 food service establishment inspections were completed by staff with an average of 326 inspections per Environmental Health Specialist FTE (Figure 38).



Figure 38: Virginia Restaurant Inspections Conducted in 2015

Addressing priority item violations is the most direct ways to reduce the incidence of foodborne illness. In 2015, Northern region health districts corrected 78% of critical violations (10,474) during inspection. The Eastern region health districts had the most critical violations observed (11,548) with 66% corrected during the inspection (Figure 39).

Critical Violations Observed and Corrected at the Time of Inspection (CY2015)



Figure 39: Critical Violations Observed and Corrected during Inspection (2015) Note: Prior to August 1, 2016, priority items were marked as 'critical items' in VDH inspection reports. The use of the term 'priority items' after this date, reflects terminology changes established by the 2009 FDA Food Code.

Next Steps

VDH is committed to the implementation of ongoing state health improvement plans, referred to as the Plan for Well-Being," based on findings from state health assessments. Achieving population health improvement requires alignment, clarity and intentionality. Alignment includes coordination and collaboration of all sectors of the community: government, health care, education, businesses, community organizations including the faith community, and most importantly, individual community members. Clarity refers to focused effort on issues that matter to people with corresponding measurable outcomes. Intentionality refers to designing our communities, policies, and processes to specifically lead to improved outcomes in well-being, while avoiding the unhealthy outcomes.

Virginians working together in alignment, with clarity and shared intention can improve the health of all. VDH will take the prioritized data and work with partners and stakeholders on a framework of action for well-being. Strategies and evidence-based practices will be proposed and engagement with the plan will be empowered. There is a role for everyone as Virginia moves toward becoming the healthiest state in the nation.

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